Final Report on the General Avian Inventories of Black Canyon National Park and Curecanti National Recreation Area, Colorado







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Executive Summary

As part of a new service-wide emphasis on inventory and monitoring, the National Park Service (NPS) developed a Task Agreement with the Rocky Mountain Bird Observatory (RMBO) to conduct avian inventories of Black Canyon National Park (BLCA) and Curecanti National Recreation Area (CURE), in western Colorado. The inventories were components of a suite of biological inventories being conducted within the Northern Colorado Plateau Network (NCPN). The objectives of the inventories were (1) to document the occurrence of bird species, (2) to describe the distribution and, where possible, the population densities of those species, (3) to identify critical bird habitats, (4) to identify bird species of special management concern, and (5) to recommend a long-term bird monitoring program.

To implement the inventory, in 2002 and 2003 I established a series of habitat-stratified point counts and line transects using distance sampling methodology (Buckland et al. 1993, Leukering et al. 2001) in each of the major habitat types of BLCA and CURE (Montane Forest, Montane Shrubland, Piñon-Juniper, Riparian, and Sage Shrubland). I also surveyed wintering, migratory, and nocturnal bird species by conducting point counts along drivable roads in BLCA and CURE. I used the program DISTANCE (Thomas et al. 1998) to analyze the distance data and calculate population densities among the different habitat types for those species with sample sizes greater than 19 individual detections. I used the Global Positioning System (GPS) to describe the distribution of each species' detections.

In BLCA, field workers detected a total (in all habitats combined) of 1920 individual birds of 74 species. Species for which field staff obtained large sample sizes included Green-tailed Towhee (n= 204), Dusky Flycatcher (n = 165), Spotted Towhee (n = 138), Virginia's Warbler (n = 130), and White-throated Swift (n = 119). Field workers detected 12 individual raptors of 8 species: Cooper's Hawk, Northern Goshawk, Swainson's Hawk, Golden Eagle, American Kestrel, Peregrine Falcon, Great Horned Owl, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Wild Turkey, Hammond's Flycatcher, Gray Vireo, Indigo Bunting, and Cassin's Finch.

In CURE, field workers detected a total (in all habitats combined) of 2103 individual birds of 90 species. Species for which field staff obtained large sample sizes included Green-tailed Towhee (n= 234), Brewer's Sparrow (n = 175), Warbling Vireo (n = 137), Virginia's Warbler (n = 103), and Yellow Warbler (n = 100). Field workers detected 22 individual raptors of 9 species: Northern Harrier, Cooper's Hawk, Red-tailed Hawk, Golden Eagle, American Kestrel, Prairie Falcon, Peregrine Falcon, Great Horned Owl, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Hairy Woodpecker, Gray Jay, American Redstart, Blue Grosbeak, and Cassin's Finch.

The following species that were documented during the inventories or have been historically documented in BLCA and/or CURE are listed by the Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000) as "High Priority" for conservation needs in the Colorado Plateau region: Peregrine Falcon, Blue Grouse, Common Poorwill, White-throated Swift, Black-chinned Hummingbird, Broad-tailed Hummingbird, Lewis's Woodpecker, Red-naped Sapsucker, Gray Flycatcher, Western Kingbird, Loggerhead Shrike, Gray Vireo, Pinyon Jay, Horned Lark, Violet-green Swallow, Juniper Titmouse, Western Bluebird, Virginia's Warbler, Black-throated Gray Warbler, Brewer's Sparrow, Sage Sparrow, and Scott's Oriole. In order to provide NPS with management suggestions, I reviewed the COPIF Land Bird Conservation Plan and provide summaries for these species.

Careful monitoring of bird populations is a vital part of identifying changes that could signal trouble for bird species. An advantage of having used distance sampling for this inventory is that the inventory can evolve into a monitoring program if funding is arranged to conduct transects and point counts in future years. In this report I provide detailed directions that will allow for point counts and line transects to be repeated in future years. While this inventory was intensive and may be impractical to repeat annually, conducting a random selection of the total point counts and line transects should suffice for long-term monitoring. It should be noted that a reduction in the number of transects and point counts, however, will result in a reduction of sample size, and in some limited habitats, only the most abundant species would be detected in sufficient numbers to calculate densities. The amount of work to be conducted annually would depend on the objectives of the monitoring program and the funds and personnel available.

Introduction

As part of the NPS Natural Resource Challenge (1999), the Northern Colorado Plateau Inventory and Monitoring Network has identified avian inventory needs at several parks and monuments, including Black Canyon National Park (hereafter, BLCA) and Curecanti National Recreation Area (hereafter, CURE) in western Colorado. A recent review of records indicated that existing information on the avifauna of BLCA and CURE varied from good for some habitats to poor for certain specialized habitats. Species presence/absence had not been adequately determined for some species and/or habitats. Lack of such baseline information potentially limits the National Park Service's ability to develop adequate management guidelines for avian species and their habitats or to adequately protect those species. As part of a new service-wide emphasis on inventory and monitoring, in 2001 the National Park Service entered into a task agreement (Agreement RMB-09) with the Rocky Mountain Bird Observatory (RMBO) to conduct an avian inventory in BLCA and CURE. The inventory was a component of a suite of biological inventories being conducted within the Northern Colorado Plateau Network. The objectives of the inventory were to:

1) Document through existing, verifiable data and field investigations the occurrence of at least 90 percent of the bird species currently estimated to occur in BLCA and CURE;
2) Using systematic surveys, document presence/absence of bird species, and their distribution and qualitative abundance in habitats that were historically under-sampled or not sampled;
3) Identify locations of critical breeding and non-breeding habitats where current records are lacking;
4) Document presence/absence of birds of special management concern that are known or expected to occur in BLCA and CURE based on habitat or historic records;
5) Based on the inventory, recommend an effective monitoring program so that Resource Management staff at each park can assess the condition of bird populations over time and detect significant changes in those populations; and
6) Summarize bird information in appropriate formats to contribute to the population of National Park Service databases.

RMBO staff began work during the winter of 2002, and completed the project during the fall of 2003. This report presents the results of their efforts.

Methods

The inventories consisted of surveys of breeding (spring and summer), wintering, and migratory (spring and fall) birds. To inventory breeding birds, I used distance sampling methods to derive estimates of bird abundance. I established a series of habitat-stratified point count transects using distance sampling methodology (Buckland et al. 1993, Leukering et al. 2001) in each of the major habitat types of BLCA and CURE (Montane Forest, Montane Shrubland, Piñon-Juniper, Riparian, and Sage Shrubland). See below for habitat descriptions.

Montane Forest (MF) – I designated habitat as Montane Forest if the dominant vegetation types were Quaking Aspen (*Populus tremuloides*), Douglas Fir (*Pseudotsuga menziesii*), and/or Ponderosa Pine (*Pinus ponderosa*). Field workers conducted 24 Montane Forest point counts in BLCA and 75 in CURE (Appendix B).

Montane Shrubland (MS) – I designated habitat as Montane Shrubland if the dominant vegetation types were Gambel oak (*Quercus gambelii*), Mountain Mahogany (*Cercocarpus* spp.), and/or Serviceberry (*Amelanchier* spp.). Field workers conducted 90 Montane Shrubland point counts in BLCA and 22 in CURE (Appendix B).

Piñon-Juniper (PJ) – I designated habitat as Piñon-Juniper if the dominant vegetation types were piñon pine (*Pinus edulis*), Utah juniper (*Juniperus utahensis*), and/or Rocky Mountain juniper (*Juniperus scopulorum*). Field workers conducted 75 Piñon-Juniper point counts in BLCA (Appendix B). There were no Piñon-Juniper stands large enough to conduct transects in CURE.

Riparian (RP) – I designated habitat along the Gunnison River and along streams draining into Blue Mesa, Morrow Point, and Crystal reservoirs as Riparian. The dominant vegetation type in Riparian habitat was box elder (*Acer negundo*) and narrowleaf cottonwood (*Populus angustifolia*). Field workers conducted 24 Riparian point counts in BLCA and 57 in CURE (Appendix B).

Sage Shrubland (SA) – I designated habitat as Sage Shrubland if the dominant vegetation types were big sagebrush (*Artemisia tridentata*) and/or mountain sagebrush (*Artemisia vaseynan*). Field workers conducted 15 Sage Shrubland point counts in BLCA and 150 in CURE (Appendix B).

I randomly selected the starting points of transects by overlaying 7.5-minute USGS topographic maps of BLCA and CURE with grids of evenly spaced points (one kilometer between points) and randomly choosing from those points. Field workers ran transects along random bearings where possible (in some situations, topography dictated the directions in which they ran the transects) and conducted point counts every 250 meters. The number of point counts per transect varied with the habitat being sampled, with most transects consisting of 15 point counts. During point counts, field workers recorded every individual bird heard or seen during a five-minute period, and used laser rangefinders to determine distances to the birds. For a more detailed description of field protocol, see Appendix G.

To inventory wintering, migratory, and nocturnal birds, I established a series of point counts along roads in BLCA and CURE that were accessible year-round. Field workers followed the same protocol for wintering and migratory point counts, with the exception of determining distances to birds; the tendency of most wintering and migratory birds to flock makes distance sampling difficult and impractical for this inventory (see Buckland et al. 2001). During nocturnal point counts, field workers played pre-recorded tapes of common nocturnal species for that area to elicit responses. Following the playing of a species' call, observers listened for one minute for responses.

I used the program DISTANCE (Thomas et al. 1998) to analyze distance-estimate data. In this report, all references to density estimates are values provided by DISTANCE and are denoted as "D". 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 or transect line are measured accurately; and 3) birds do not move in response to the observer's presence. I conducted initial analyses of species for which I obtained sample sizes of >19 individuals, examined the data histograms and the detection-function curve fit, and truncated as needed to eliminate outliers. I then conducted the final analyses on the truncated data sets. I should note that I chose a minimum of 20 individuals for analyses in order to include more species in the final analyses. However, 20 individuals may not be a sufficient sample size for statistically significant results, as a low sample size results in a larger confidence interval (Buckland et al. 1993). In this report, densities of species with low sample sizes (n < 30) should be treated with caution, and confidence intervals should be studied closely.

To supplement field investigations, I incorporated the BLCA and CURE Long-term Bird Monitoring Program data (Chase 2003) into this report; those data are reflected in the BLCA and CURE bird checklists (Appendix C, Appendix D). I also reviewed the Colorado Breeding Bird Atlas (Kingery 1998) and its database, Colorado Birds (Andrews and Righter 1992) and its records, Birds of Western Colorado: Plateau and Mesa Country (Righter et al. in press), Colorado Latilong Study (Chase et al. 1982), Birds of Colorado's Gunnison Country (Hyde 1979), and the Natural History Field Observation Cards on file at BLCA and CURE. I also communicated with local birders, particularly Dr. Ron Meyers of Gunnison, to obtain records of rare species that have occurred in BLCA and CURE.

Results

Since the bulk of the fieldwork focused on breeding bird species, and distance sampling protocol allowed me to obtain densities of only breeding bird species, references below refer only to breeding bird point counts. Results of winter, migratory, and nocturnal point counts are reflected in the BLCA and CURE bird checklists (Appendix C, Appendix D).

Black Canyon National Park

In all habitats combined, field workers detected 1920 individual birds of 74 species (Table 1). Species for which field staff obtained large sample sizes included Green-tailed Towhee (n= 204), Dusky Flycatcher (n = 165), Spotted Towhee (n = 138), Virginia's Warbler (n = 130), and White-throated Swift (n = 119) (Table 2). Field workers detected 12 individual raptors of 8 species, including Cooper's Hawk, Northern Goshawk, Swainson's Hawk, Golden Eagle, American Kestrel, Peregrine Falcon, Great Horned Owl, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Wild Turkey, Hammond's Flycatcher, Gray Vireo, Indigo Bunting, and Cassin's Finch (Table 2).

Montane Forest – Field workers detected 200 individual birds of 40 species in Montane Forest habitat (Table 1). I obtained sufficient sample size to calculate density for only two species, White-throated Swift (D = 1.562 birds per hectare), and Western Tanager (D = 0.432 birds per hectare) (Table 3).

Montane Shrubland – Field Workers detected 803 individual birds of 39 species in Montane Shrubland habitat (Table 1). I obtained sufficient sample size to calculate density for 13 species, including Blue-gray Gnatcatcher (D = 4.802 birds per hectare), Green-tailed Towhee (D = 2.375), Spotted Towhee (D = 1.708 birds per hectare), Dusky Flycatcher (D = 0.743 birds per hectare), and Virginia's Warbler (D = 0.702)(Table 3).

Piñon-Juniper – Field workers detected 695 individual birds of 55 species in Piñon-Juniper habitat (Table 1). I obtained sufficient sample size to calculate density for nine species, including White-throated Swift (D = 1.578 birds per hectare), Black-throated Gray Warbler (D = 1.447 birds per hectare), Virginia's Warbler (D = 1.362 birds per hectare), Dusky Flycatcher (D = 1.106 birds per hectare), and Gray Flycatcher (D = 0.980 birds per hectare) (Table 3).

Riparian – Field workers detected 124 individual birds of 20 species in Riparian habitat (Table 1). I obtained sufficient sample size to calculate density for two species, American Robin (D = 1.918 birds per hectare) and Yellow warbler (D = 0.864 birds per hectare) (Table 3).

Sage Shrubland – Field workers detected 98 individual birds of 14 species in Sage Shrubland habitat (Table 1). I obtained sufficient sample size to calculate density for one species, Green-tailed Towhee (D = 1.438 birds per hectare) (Table 3).

I revised the BLCA bird checklist to include 173 species (Appendix C). In addition to the 92 species that were detected by field workers during the inventory, 25 are documented in the BLCA long-term monitoring data (Chase 2000), 23 are confirmed records in the Natural History Observation Cards at BLCA, one is documented in *Colorado Birds; a Reference to Their Distribution and Habitat* (Andrews and Righter 1992), and 32 are documented in *Colorado Birds* as "Probably Present" (those species that have been documented in areas bordering the park).

Table 1. Number of point counts in each habitat with totals of species and individuals detected in Black Canyon National Park.

Habitat	# point counts	# species detected	# individuals
Montane Forest	24	40	200
Montane Shrubland	90	39	803
Piñon-Juniper	75	55	695
Riparian	24	20	124
Sage Shrubland	15	14	98
All Habitats	228	74	1920

Table 2. Birds detected during the General Avian Inventory at Black Canyon National Park, 2003. n = number of individual birds detected; k = number of point counts in which that species was detected. MF = Montane Forest habitat; MS = Montane Shrubland habitat; PJ = Piñon-Juniper habitat; RP = Riparian habitat; SA = Sage Shrubland habitat; All = all habitats combined.

Species	MF		MS		PJ		RP		SA		All	
	n	k	n	k	n	k	n	k	n	k	n	k
Turkey Vulture	3	2	1	1	2	1	12	5	-	-	18	9
Cooper's Hawk	-	-	3	2	2	2	-	-	-	-	5	4
Northern Goshawk	-	-	-	-	-	-	1	1	-	-	1	1
Sawinson's Hawk	1	1	-	-	-	-	-	-	-	-	1	1
Golden Eagle	2	2	-	-	-	-	-	-	-	-	2	2
American Kestrel	1	1	1	1	-	-	-	-	-	-	2	2
Peregrine Falcon	-	-	-	-	1	1	-	-	-	-	1	1
Wild Turkey	-	-	-	-	1	1	-	-	-	-	1	1
Spotted Sandpiper	-	-	-	-	-	-	1	1	-	-	1	1
Rock Dove	1	1	-	-	1	1	-	-	-	-	2	2
Mourning Dove	6	5	32	26	53	39	-	-	-	-	91	70
White-throated Swift	27	10	2	1	36	21	12	10	-	-	119	42
Black-chinned Hummingbird	-	-	-	-	1	1	-	-	-	-	1	1
Broad-tailed Hummingbird	-	-	5	5	8	5	2	2	-	-	15	1
Hairy Woodpecker	2	2	-	-	5	4	-	-	-	-	5	6
Red-shafted Flicker	1	1	1	1	3	3	-	-	-	-	5	5
Western Wood-Pewee	1	1	-	-	2	2	-	-	-	-	3	3
Hammond's Flycatcher	1	1	-	-	-	-	-	-	-	-	1	1
Dusky Flycatcher	5	4	50	34	39	27	-	-	3	3	165	68
Gray Flycatcher	-	-	-	-	48	39	-	-	-	-	48	39
Cordilleran Flycatcher	2	2	-	-	1	1	1	1	-	-	4	4
Say's Phoebe	-	-	-	-	1	1	-	-	-	-	1	1
Ash-throated Flycatcher	-	-	-	-	7	6	-	-	-	-	7	6
Western Kingbird	-	-	2	1	4	4	-	-	-	-	6	5
Gray Vireo	-	-	-	-	1	1	-	-	-	-	1	1
Plumbeous Vireo	7	7	14	13	32	23	-	-	-	-	53	43
Warbling Vireo	9	5	43	25	5	5	4	3	-	-	41	38
Steller's Jay	8	7	-	-	3	3	-	-	-	-	11	10
Western Scrub-Jay	-	-	7	7	14	13	-	-	2	2	23	22
Pinyon Jay	-	-	1	1	17	8	-	-	-	-	18	9
Clark's Nutcracker	1	1	-	-	12	11	-	-	-	-	13	12
Black-billed Magpie	-	-	5	5	6	3	-	-	7	5	18	13
American Crow	-	-	1	1	-	-	-	-	-	-	1	1
Common Raven	3	3	20	17	10	10	-	-	3	3	33	33
Violet-green Swallow	4	3	1	1	3	2	7	6	-	-	15	12
Black-capped Chickadee	1	1	6	5	8	7	-	-	-	-	15	13
Mountain Chickadee	5	5	-	-	-	-	-	-	-	-	5	5

Table 2 continued.

Species	MF		MS		PJ		RP		SA		All	
	N	K	N	K	n	k	n	k	N	k	n	K
Juniper Titmouse	1	1	-	-	12	12	-	-	-	-	13	13
Bushtit	-	-	-	-	5	3	-	-	-	-	5	3
White-breasted Nuthatch	-	-	-	-	10	10	-	-	-	-	10	10
Rock Wren	-	-	2	1	11	10	-	-	3		16	11
Canyon Wren	2	2	-	-	3	3	5	5	-	-	10	10
Bewick's Wren	-	-	-	-	27	22	-	-	-	-	27	22
House Wren	5	4	2	2	2	2	4	3	-	-	13	11
American Dipper	-	-	-	-	-	-	13	8	-	-	13	8
Ruby-crowned Kinglet	2	2	-	-	3	3	-	-	-	-	5	5
Blue-gray Gnatcatcher	3	2	51	36	16	14	-	-	3	3	73	55
Mountain Bluebird	-	-	8	6	14	9	-	-	4	4	26	19
Townsend's Solitaire	1	1	-	-	3	2	-	-	-	-	4	3
Hermit Thrush	5	5	6	6	7	6	-	-	-	-	18	17
American Robin	4	4	23	20	18	10	21	15	-	-	66	49
Sage Thrasher	-	-	6	5	-	-	-	-	1	1	7	6
Orange-crowned Warbler	5	5	9	5	2	2	-	-	-	-	16	12
Virginia’s Warbler	18	13	73	46	36	27	3	3	-	-	130	89
Yellow Warbler	-	-	11	10	-	-	22	15	-	-	33	25
Audubon's warbler	4	4	-	-	1	1	-	-	-	-	5	5
Black-throated Gray Warbler	-	-	1	1	79	54	-	-	-	-	80	55
MacGillivray's Warbler	-	-	1	1	-	-	1	1	-	-	2	2
Western Tanager	30	20	2	2	19	18	4	4	-	-	55	44
Green-tailed Towhee	7	5	154	67	5	3	2	2	36	15	204	92
Spotted Towhee	13	11	101	64	17	14	-	-	7	4	138	93
Chipping Sparrow	2	2	28	18	47	34	-	-	-	-	77	54
Brewer's Sparrow	-	-	25	9	-	-	-	-	19	10	44	19
Vesper Sparrow	-	-	6	5	-	-	-	-	2	2	8	7
Song Sparrow	-	-	-	-	-	-	1	1	-	-	1	1
Gray-headed Junco	1	1	-	-	-	-	-	-	-	-	1	1
Black-headed Grosbeak	4	4	66	48	13	11	1	1	7	5	91	69
Lazuli Bunting	-	-	-	-	-	-	7	5	-	-	7	5
Indigo Bunting	1	1	-	-	-	-	-	-	-	-	1	1
Western Meadowlark	-	-	-	-	7	7	-	-	-	-	7	7
Brown-headed Cowbird	-	-	29	22	6	5	-	-	1	1	36	28
Cassin's Finch	1	1	-	-	-	-	-	-	-	-	1	1
House Finch	-	-	-	-	4	3	-	-	-	-	4	3
Pine Siskin	-	-	-	-	2	2	-	-	-	-	2	2

Table 3. Results of DISTANCE analysis for species with sample sizes >19 in individual habitats at Black Canyon National Park. n=untruncated sample size; D=density estimate, expressed as individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Species	Habitat	n	D	CI	CV(%)
Mourning Dove	Montane Shrubland	32	0.041	0.025-0.067	24.8
Mourning Dove	Piñon-Juniper	53	0.842	0.581-1.222	19.0
White-throated Swift	Montane Forest	27	1.562	0.687-3.552	41.3
White-throated Swift	Piñon-Juniper	36	1.578	0.882-2.825	30.0
Dusky Flycatcher	Montane Shrubland	50	0.743	0.523-1.056	17.9
Dusky Flycatcher	Piñon-Juniper	39	1.106	0.740-1.654	20.5
Gray Flycatcher	Piñon-Juniper	48	0.980	0.733-1.310	14.8
Plumbeous Vireo	Piñon-Juniper	32	0.214	0.142-0.322	20.8
Warbling Vireo	Montane Shrubland	43	0.183	0.099-0.336	31.4
Common Raven	Montane Shrubland	20	0.006	0.003-0.011	30.7
Bewick's Wren	Piñon-Juniper	27	0.191	0.121-0.301	23.2
Blue-Gray Gnatcatcher	Montane Shrubland	51	4.802	2.941-7.841	25.1
American Robin	Montane Shrubland	26	0.208	0.113-0.383	31.4
American Robin	Riparian	21	1.918	0.924-3.983	37.2
Virginia's Warbler	Montane Shrubland	73	0.702	0.440-1.119	23.9
Virginia's Warbler	Piñon-Juniper	36	1.362	0.976-1.901	17.0
Yellow Warbler	Riparian	22	0.864	0.541-1.381	23.5
Black-throated Gray Warbler	Piñon-Juniper	79	1.447	1.123-1.865	12.9
Western Tanager	Montane Forest	30	0.432	0.225-0.829	33.0
Green-tailed Towhee	Montane Shrubland	154	2.375	1.825-3.091	13.4
Green-tailed Towhee	Sage Shrubland	36	1.438	1.007-1.920	14.1
Spotted Towhee	Montane Shrubland	101	1.708	1.309-2.228	13.5
Chipping Sparrow	Montane Shrubland	28	0.689	0.375-1.266	31.4
Chipping Sparrow	Piñon-Juniper	47	0.831	0.566-1.219	19.6
Brewer's Sparrow	Montane Shrubland	25	0.223	0.092-0.539	46.9
Black-headed Grosbeak	Montane Shrubland	66	0.356	0.236-0.536	20.9
Brown-headed Cowbird	Montane Shrubland	29	0.448	0.225-0.787	29.0

Table 4. Results of DISTANCE analysis for all species combined among the different habitat types surveyed in Black Canyon National Park. n=sample size; D=density estimate, individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Habitat	N	D	CI	CV(%)
Montane Forest	200	4.681	3.912 - 5.599	9.0
Montane Shrubland	803	9.493	8.435 - 10.684	6.0
Piñon-Juniper	695	12.732	11.120 - 14.577	6.9
Riparian	124	3.642	2.802 - 4.734	13.2
Sage Shrubland	98	1.693	1.079 – 2.657	22.7

Curecanti National Recreation Area

In all habitats combined, field workers detected 2103 individual birds of 90 species (Table 5). Species for which field staff obtained large sample sizes included Green-tailed Towhee (n= 234), Brewer's Sparrow (n = 175), Warbling Vireo (n = 137), Virginia's Warbler (n = 103), and Yellow Warbler (n = 100) (Table 6). Field workers detected 22 individual raptors of 9 species: Northern Harrier, Cooper's Hawk, Red-tailed Hawk, Golden Eagle, American Kestrel, Prairie Falcon, Peregrine Falcon, Great Horned Owl, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Hairy Woodpecker, Gray Jay, American Redstart, Blue Grosbeak, and Cassin's Finch (Table 6).

Montane Forest – Field workers detected 579 individual birds of 50 species in Montane Forest habitat (Table 5). I obtained sufficient sample size to calculate density for 12 species, including Warbling Vireo (D = 1.106 birds per hectare), Violet-green Swallow (D = 0.722 birds per hectare), Green-tailed Towhee (D = 0.500 birds per hectare), Virginia's Warbler (D = 0.424 birds per hectare), and Orange-crowned Warbler (D = 0.395 birds per hectare) (Table 7).

Montane Shrubland – Field Workers detected 95 individual birds of 27 species in Montane Shrubland habitat (Table 5). I did not obtain sufficient sample size to calculate density for any species.

Riparian – Field workers detected 438 individual birds of 49 species in Riparian habitat (Table 5). I obtained sufficient sample size to calculate density for seven species, including Yellow Warbler (D = 3.428 birds per hectare), Violet-green Swallow (D = 2.191 birds per hectare), House Wren (D = 0.791 birds per hectare), Warbling Vireo (D = 0.768 birds per hectare), and American Robin (D = 0.508 birds per hectare) (Table 7).

Sage Shrubland – Field workers detected 991 individual birds of 62 species in Sage Shrubland habitat (Table 5). I obtained sufficient sample size to calculate density for 12 species, including Green-tailed Towhee (D = 1.511 birds per hectare), Brewer's Sparrow (D = 1.344 birds per hectare), Virginia's Warbler (0.515 birds per hectare), Brewer's Blackbird (D = 0.321 birds per hectare), and Vesper Sparrow (D = 0.223 birds per hectare) (Table 7).

I revised the CURE bird checklist to include 272 species (Appendix D). In addition to the 95 species that were detected by field workers during the inventory, 47 are documented in the Long-term Monitoring data at CURE (Chase 2000), 75 are confirmed records from local National Audubon Society members, 31 are documented in *Birds of Colorado's Gunnison Country* (Hyde 1979), two are documented in *Colorado Birds; a Reference to Their Distribution and Habitat* (Andrews and Righter 1992), 20 are documented in *Colorado Birds* as probably present in the park, and two are listed in *Colorado Birds* as historically present (Andrews and Righter 1992).

Table 5. Number of point counts in each habitat with totals of species and individuals detected in Curecanti National Recreation Area.

Habitat	# point counts	# species detected	# individuals
Montane Forest	75	50	579
Montane Shrubland	22	27	95
Riparian	57	49	438
Sage Shrubland	150	62	991
All Habitats	304	90	2103

Table 6. Birds detected during the General Avian Inventory at Curecanti National Recreation Area, 2003. n = number of individual birds detected; k = number of point counts in which that species was detected. MF = Montane Forest habitat; MS = Montane Shrubland habitat; RP = Riparian habitat; SA = Sage Shrubland habitat; All = all habitats combined.

Species	MF		MS		RP		SA		All	
	n	k	n	k	n	k	n	k	n	k
Great Blue Heron	-	-	-	-	-	-	6	5	6	5
Turkey Vulture	-	-	-	-	2	2	-	-	2	2
Canada Goose	-	-	-	-	-	-	3	1	3	1
Mallard	-	-	-	-	2	1	3	2	5	3
Common Merganser	5	1	-	-	-	-	1	1	6	2
Blue Grouse	4	1	-	-	-	-	-	-	4	1
Northern Harrier	-	-	-	-	-	-	1	1	1	1
Cooper's Hawk	1	1	1	1	-	-	1	1	3	3
Red-tailed Hawk	2	2	-	-	1	1	2	2	5	5
Golden Eagle	-	-	-	-	1	1	-	-	1	1
American Kestrel	3	2	-	-	2	2	3	3	8	7
Prairie Falcon	-	-	-	-	-	-	2	2	2	2
Peregrine Falcon	2	2	-	-	-	-	1	1	3	3
Killdeer	-	-	-	-	1	1	1	1	2	2
Mourning Dove	10	9	1	1	5	4	7	6	23	20
Common Poorwill	-	-	-	-	-	-	2	1	2	1
White-throated Swift	32	15	5	4	34	10	7	3	78	32
Broad-tailed Hummingbird	11	10	3	3	5	5	9	9	28	27
Belted Kingfisher	-	-	-	-	2	2	-	-	2	2
Red-naped Sapsucker	3	3	-	-	-	-	-	-	3	3
Hairy Woodpecker	1	1	-	-	-	-	-	-	1	1
Red-shafted Flicker	14	14	-	-	4	3	10	9	28	26
Western Wood-Pewee	16	13	-	-	9	7	1	1	26	21
Hammond's Flycatcher	4	3	-	-	-	-	-	-	4	3
Dusky Flycatcher	24	19	5	5	1	1	56	45	86	70
Cordilleran Flycatcher	8	8	-	-	3	3	-	-	11	11
Say's Phoebe	-	-	-	-	-	-	3	3	3	3
Ash-throated Flycatcher	-	-	-	-	1	1	-	-	1	1

Table 6 continued.

Species	MF		MS		RP		SA		All	
	n	k	n	k	n	k	n	k	n	k
Western Kingbird	-	-	-	-	1	1	-	-	1	1
Plumbeous Vireo	1	1	2	2	4	4	1	1	8	8
Warbling Vireo	74	40	8	6	39	17	16	12	137	75
Gray Jay	-	-	-	-	-	-	1	1	1	1
Steller's Jay	3	3	-	-	2	2	1	1	6	6
Western Scrub-Jay	-	-	-	-	-	-	1	1	1	1
Clark's Nutcracker	1	1	8	5	-	-	-	-	9	6
Black-billed Magpie	1	1	1	1	15	10	53	36	70	48
American Crow	1	1	-	-	2	2	-	-	3	3
Common Raven	8	7	2	2	3	1	14	13	27	23
Horned Lark	-	-	-	-	-	-	22	11	22	11
Tree Swallow	-	-	-	-	10	5	12	3	22	8
Violet-green Swallow	33	14	2	1	32	15	26	11	93	41
Northern Rough-winged Swallow	-	-	-	-	3	2	-	-	3	2
Bank Swallow	-	-	-	-	1	1	-	-	1	1
Cliff Swallow	-	-	-	-	11	2	12	3	23	5
Barn Swallow	-	-	-	-	-	-	3	2	3	2
Black-capped Chickadee	1	1	1	1	2	2	4	4	8	8
Mountain Chickadee	7	7	-	-	-	-	1	1	8	8
Bushtit	-	-	1	1	-	-	-	-	1	1
Red-breasted Nuthatch	6	6	-	-	-	-	-	-	6	6
Rock Wren	1	1	-	-	1	1	75	60	77	62
Canyon Wren	-	-	-	-	3	3	-	-	3	3
Bewick's Wren	-	-	-	-	-	-	2	2	2	2
House Wren	37	23	-	-	24	18	9	7	70	48
American Dipper	2	2	-	-	2	2	-	-	4	4
Ruby-crowned Kinglet	20	17	1	1	-	-	1	1	22	19
Blue-gray Gnatcatcher	-	-	1	1	-	-	2	2	3	3
Mountain Bluebird	6	6	-	-	1	1	28	23	35	30
Townsend's Solitaire	9	9	-	-	-	-	6	5	15	14

Table 6 continued.

Species	MF		MS		RP		SA		All	
	n	k	n	k	n	k	n	k	n	
Hermit Thrush	7	7	-	-	-	-	1	1	8	8
American Robin	41	24	2	2	36	21	9	7	88	54
Sage Thrasher	-	-	-	-	-	-	28	28	28	28
European Starling	-	-	-	-	7	6	-	-	7	6
Orange-crowned Warbler	27	24	3	3	-	-	1	1	31	28
Virginia’s Warbler	32	26	12	9	15	12	44	31	103	78
Yellow Warbler	4	3	2	2	89	38	5	5	100	48
Audubon's warbler	20	16	-	-	-	-	-	-	20	16
Black-throated Gray Warbler	-	-	3	2	-	-	-	-	3	2
American Redstart	-	-	-	-	-	-	1	1	1	1
MacGillivray's Warbler	16	13	-	-	4	4	-	-	20	17
Western Tanager	31	25	6	5	3	3	2	2	42	35
Green-tailed Towhee	21	16	13	8	5	5	195	100	234	129
Spotted Towhee	2	2	3	3	-	-	2	2	7	7
Chipping Sparrow	4	4	3	3	-	-	7	7	14	14
Brewer's Sparrow	-	-	2	2	-	-	173	88	175	90
Vesper Sparrow	-	-	-	-	-	-	60	43	60	43
Lark Sparrow	-	-	-	-	-	-	2	2	2	2
Song Sparrow	-	-	-	-	31	23	3	3	34	26
Gray-headed Junco	7	6	2	2	-	-	-	-	9	8
Black-headed Grosbeak	2	2	2	2	6	5	5	5	15	14
Blue Grosbeak	1	1	-	-	-	-	-	-	1	1
Lazuli Bunting	-	-	-	-	1	1	-	-	1	1
Red-winged Blackbird	-	-	-	-	3	2	-	-	3	2
Western Meadowlark	-	-	-	-	1	1	2	2	3	3
Brewer’s Blackbird	-	-	-	-	3	2	27	10	30	12
Brown-headed Cowbird	1	1	-	-	1	1	11	9	13	11
Bullock’s Oriole	-	-	-	-	1	1	-	-	1	1
Cassin's Finch	2	1	-	-	-	-	-	-	1	1
House Finch	-	-	-	-	-	-	4	3	4	3
Pine Siskin	8	5	-	-	-	-	-	-	8	5

Table 7. Results of DISTANCE analysis for species with sample sizes >19 in individual habitats at Curecanti National Recreation Area. n=untruncated sample size; D=density estimate, expressed as individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Species	Habitat	n	D	CI	CV(%)
White-throated Swift	Montane Forest	32	0.260	0.131-0.514	35.6
White-throated Swift	Riparian	34	0.707	0.302-1.655	44.8
Dusky Flycatcher	Montane Forest	24	0.499	0.271-0.920	31.4
Dusky Flycatcher	Sage Shrubland	56	0.127	0.069-0.234	31.8
Warbling Vireo	Montane Forest	74	1.106	0.768-1.593	18.6
Warbling Vireo	Riparian	39	0.768	0.350-1.685	40.9
Black-billed Magpie	Sage Shrubland	53	0.062	0.040-0.095	22.2
Horned Lark	Sage Shrubland	22	0.190	0.089-0.408	40.2
Violet-green Swallow	Montane Forest	33	0.722	0.356-1.465	36.9
Violet-green Swallow	Riparian	32	2.191	1.152-4.178	33.2
Violet-green Swallow	Sage Shrubland	26	0.178	0.074-0.428	46.7
Rock Wren	Sage Shrubland	75	0.119	0.058-0.244	37.1
House Wren	Montane Forest	37	0.335	0.192-0.585	28.7
House Wren	Riparian	24	0.791	0.416-1.504	33.0
Ruby-crowned Kinglet	Montane Forest	20	0.116	0.066-0.203	29.0
Mountain Bluebird	Sage Shrubland	28	0.169	0.104-0.276	25.2
American Robin	Montane Forest	41	0.321	0.184-0.561	28.7
American Robin	Riparian	36	0.508	0.275-0.937	31.6
Sage Thrasher	Sage Shrubland	28	0.058	0.035-0.096	26.2
Orange-crowned Warbler	Montane Forest	27	0.395	0.238-0.658	26.0
Virginia's Warbler	Montane Forest	32	0.424	0.295-0.609	18.4
Virginia's Warbler	Sage Shrubland	44	0.515	0.323-0.820	23.9
Yellow Warbler	Riparian	89	3.428	2.081-5.645	25.6
Audubon's Warbler	Montane Forest	20	0.186	0.093-0.373	35.9
Western Tanager	Montane Forest	31	0.205	0.115-0.365	29.5
Green-tailed Towhee	Montane Forest	21	0.500	0.270-0.925	31.6
Green-tailed Towhee	Sage Shrubland	195	1.511	0.954-2.392	23.6
Brewer's Sparrow	Sage Shrubland	173	1.344	1.052-1.718	12.5
Vesper Sparrow	Sage Shrubland	60	0.223	0.163-0.306	16.1
Song Sparrow	Riparian	31	0.496	0.303-0.811	25.1
Brewer's Blackbird	Sage Shrubland	27	0.321	.0143-0.718	42.6

Table 8. Results of DISTANCE analysis for all species combined among the different habitat types surveyed in Curecanti National Recreation Area. n=sample size; D=density estimate, individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Habitat	N	D	CI	CV(%)
Montane Forest	579	7.748	6.662-9.009	7.7
Montane Shrubland	95	4.643	3.119-6.912	20.1
Riparian	438	7.323	5.892-9.102	11.0
Sage Shrubland	991	5.379	4.866-5.946	5.1

Discussion

Documentation of 90 percent of the bird species currently expected to occur in BLCA and CURE

Black Canyon National Park
Of the 173 species on the revised checklist of Black Canyon National Park birds (Appendix C), 140 species are listed as "Present in Park", one is listed as "Historical", and 32 are listed as "Probably Present." Species listed as "Present in Park" account for 81% of the total list.

Curecanti National Recreation Area
Of the 272 species on the revised checklist of Curecanti National Recreation Area birds (Appendix D), 250 species are listed as "Present in Park", two are listed as "historical", and 20 are listed as "Probably Present." Species listed as "Present in Park" account for 92% of the total list.

Because of the unpredictable behavior of migratory birds, their presence in any area can be erratic. Many migratory species expected to occur in BLCA and CURE (listed as "Probably Present") were included based on their occurrences in neighboring areas and the fact that publications (Andrews and Righter 1992, Righter et al. in press) suggest their possible occurrences. Occurrences of these species are hypothetical and do not indicate that the species will actually occur. Documentation of migratory species is always an ongoing process, and it may take many years to confirm some of these species. Some of them may never be confirmed, and some species that have occurred in the park historically may never occur there again (many species wander far form their normal migratory ranges). The confirmation of these species will, therefore, be dependent upon park personnel and visitors submitting Natural History Field Observation Cards. I recommend that BLCA and CURE personnel familiarize themselves with the checklist and submit cards for possible sightings of species listed as "Probably Present." I also recommend posting a list of these species at interpretive sites with an explanation of the importance of documenting the species. Many skilled birders visit BLCA and CURE, and they are valuable assets. Photographs of the birds should accompany field observation cards; however, since photographing birds is often difficult, all cards should include at least detailed descriptions of the birds' identification marks, behaviors, and anything else that may aid in their identification.

Documentation of the distribution and abundance of bird species

Black Canyon National Park
The distribution maps in Appendix A provide visual representations of the distribution of detections of each species within BLCA and the habitats associated with those detections. The maps depict only those species detected during breeding bird point counts. It should be noted that the maps do not depict the overall distribution of the species, as many species are sure to occur in areas that field workers did not survey, or were present but not detected in areas that they did survey. Species such as Dusky Flycatcher, Green-tailed Towhee, and Virginia's Warbler, with wide distributions in several different habitat types, may be considered as generalists in respect to their habitat needs in BLCA. Species such as Gray Vireo, Cassin's Finch, and Indigo Bunting, with limited distributions within one habitat type, may be considered more specialized in respect to their habitat needs in BLCA. The density graphs included with each map provide detail on the habitat associations of each species.

Curecanti National Recreation Area

The distribution maps in Appendix A provide visual representations of the distribution of detections of each species within CURE and the habitats associated with those detections. The maps depict only those species detected during breeding bird point counts. It should be noted that the maps do not depict the overall distribution of the species, as many species are sure to occur in areas that field workers did not survey, or were present but not detected in areas that they did survey. Species such as Green-tailed Towhee, Warbling Vireo, and Virginia's Warbler, with wide distributions in several different habitat types, may be considered as generalists in respect to their habitat needs in CURE. Species such as Lark Sparrow, Lazuli Bunting, and Cassin's Finch, with limited distributions within one habitat type, may be considered more specialized in respect to their habitat needs in CURE. The density graphs included with each map provide detail on the habitat associations of each species.

Identification of locations of critical breeding and non-breeding bird habitats

Black Canyon National Park

In BLCA, Piñon-Juniper boasted the highest overall bird densities (D = 12.732 birds per hectare) of all habitats (Table 4). Bird density was lowest in Sage Shrubland habitat (D = 1.693 birds per hectare) (Table 4); this, however, was likely due to the fact that was very few large patches of sage in BLCA. Species diversity was greatest in Piñon-Juniper habitat with 55 species detected (Table 2). Montane Forest, with 40 species detected, and Montane Shrubland, with 39 species detected, were also diverse (Table 2). Sage Shrubland had the lowest species diversity, with 15 species detected (Table 2). Again, low species diversity in Sage Shrubland may have been a factor of the limited amount of habitat present in BLCA. The limited distribution of the Sage Shrubland and Montane Forest habitats in BLCA may make them vulnerable to loss due to fire, disease, insect infestation, or other natural or human causes, and they should be monitored carefully so that they continue in the park. The same applies to the rich riparian box elder and cottonwood habitats that occur in small patches along the Gunnison River.

The proliferation of Piñon-Juniper habitat may pose a threat to other limited habitats in BLCA. Piñon-Juniper woodlands have expanded over the last 150 years in the West, and now cover areas hundreds of miles north and south of earlier habitats (Monson et al. 1999). Piñons and junipers have become established in and dominated new communities, expanded to both higher and lower elevations, and increased in densities and canopy cover (Monson et al. 1999). While I made no attempt to quantify this in BLCA, my selection of Sage Shrubland habitats made it clear that some advancement of Piñon-Juniper has occurred. I used the 1965 USGS 7.5-minute quad maps of BLCA to identify areas not covered by trees (not green on the maps), and then visited those areas to identify Sage Shrubland habitat. Many of the smaller areas mapped as non-forested in 1965 are now covered by sparse Piñon-Juniper woodland. If there is a trend toward Piñon-Juniper encroachment, much of the park's Sage Shrubland habitat may be lost. This loss would, in turn, negatively affect bird species such as Green-tailed Towhee, Brewer's Sparrow, and Vesper Sparrow, to mention a few that are dependent upon this habitat.

Curecanti National Recreation Area

In CURE, Montane Forest boasted the highest overall bird densities (D = 7.748 birds per hectare) of all habitats (Table 8). Bird density was lowest in Montane Shrubland habitat (D = 4.643 birds per hectare) (Table 8); this, however, was likely due to the fact that was very few large patches of Montane Shrubland in CURE. Species diversity was greatest in Sage Shrubland habitat with 62 species detected (Table 6); this was likely a function of the large amount of habitat sampled.

Montane Forest, with 50 species detected, and Riparian, with 49 species detected, were also diverse (Table 6). Montane Shrubland had the lowest species diversity, with 27 species detected (Table 6). Again, low species diversity in Montane Shrubland may have been a factor of the limited amount of habitat present in CURE. The limited distribution of the Montane Shrubland habitat in CURE may make it vulnerable to loss due to fire, disease, insect infestation, or other natural or human causes, and it should be monitored carefully so that it continues in the park. The same applies to the rich riparian box elder and cottonwood habitats that occur in small patches streams draining into Blue Mesa, Morrow Point, and Crystal reservoirs.

Documenation of the presence/absence of birds of special management concern

The Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000) lists the following species, all of which were either detected in BLCA and/or CURE during our surveys or were historically detected there, as "High Priority" for conservation needs in the Colorado Plateau region: Peregrine Falcon, Blue Grouse, Gunnison Sage-Grouse, Band-tailed Pigeon, Common Poorwill, Burrowing Owl, White-throated Swift, Black-chinned Hummingbird, Broad-tailed Hummingbird, Lewis's Woodpecker, Red-naped Sapsucker, Williamson's Sapsucker, Gray Flycatcher, Western Kingbird, Loggerhead Shrike, Gray Vireo, Pinyon Jay, Horned Lark, Violet-green Swallow, Juniper Titmouse, Western Bluebird, Virginia's Warbler, Black-throated Gray Warbler, Brewer's Sparrow, and Sage Sparrow. In order to provide BLCA with management suggestions, I reviewed the COPIF Land Bird Conservation Plan and provide summaries for these species in Appendix E.

Based on the number of "High Priority" bird species that inhabit the area, I recommend that BLCA and CURE be nominated for recognition as a National Audubon Society Important Bird Area (IBA). The IBA program recognizes sites that provide essential habitat to one or more bird species during breeding season, migration, or winter. The program draws on science-based criteria to identify and conserve a network of key habitats for birds. The recognition of a site does not confer any legal or regulatory status, and is voluntary on the part of the land manager. BLCA and CURE meet the following IBA nomination criteria (National Audubon Society 2000): Because of the presence of wintering Bald Eagles, the area meets Criteria 1 (sites important to endangered or threatened species in Colorado); the presence of breeding populations of Peregrine Falcon, Common Poorwill, American Dipper, Gray Flycatcher, Juniper Titmouse, Gray Vireo, Virginia's Warbler, Black-throated Gray Warbler, and Western Tanager, meets Criteria 2 of the plan (sites important to species of high conservation priority in Colorado); the presence of large, undisturbed areas of Cliff-Rock, Montane Shrubland, Piñon-Juniper, and Sage Shrubland habitats meets criteria 3 of the plan (sites that contain rare or unique habitat or an exceptional representative of a natural habitat); and, the ongoing Peregrine Falcon and Gunnison Sage Grouse studies meet criteria 5 (sites important for long-term research and/or monitoring projects).

Recommendation of an effective monitoring program – Careful monitoring of bird populations is a vital part of identifying changes that could signal trouble for species. Although several monitoring methods are available, distance sampling has been used for more than 30 years to estimate the population densities of animals and is, in most situations, considered the best method for determining relative population densities or trends for most bird species (Buckland et al. 1993, Fancy and Sauer 2000). For a detailed history and description of distance sampling and its use in the National Parks, see Fancy and Sauer (2000). An advantage of having used distance sampling for this inventory is that the inventory can evolve into a monitoring program if funding is arranged to conduct transects and point counts in future years. Appendix B provides detailed

directions that will allow for point counts and line transects to be repeated in future years. While this inventory was intensive and may be impractical to repeat annually, conducting a random selection of the total point counts and line transects should suffice for long-term monitoring. It should be noted that a reduction in the number of transects and point counts, however, will result in a reduction of sample size, and in some limited habitats, only the most abundant species would be detected in sufficient numbers to calculate densities. The amount of work to be conducted annually would depend on the objectives of the monitoring program and the funds and personnel available.

Summarization of bird information in the National Park Service databases – All of the data (raw and electronic) collected during this inventory are on file at the National Park Service – Northern Colorado Plateau Network.

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Literature Cited

Andrews. R. and R. Righter. 1992. Colorado Birds. Denver Mus. of Natural History. 442 pp.

Beidleman. 2000. Land Bird Conservation Plan. Colorado Partners in Flight. www.rmbo.org/pif/bcp.

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.

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.

Chase, C.A., S.J. Bissell, H.E. Kingery, and W.D. Graul, Eds. 1982. Colorado Bird Distribution Latilong Study. Colorado Field Ornithologists and Colorado Division of Wildlife. 82pp.

Chase, M. 2000. Long-term bird monitoring at BLCA and Cure. Unpublished NPS report.

Fancy, S.G. and J.R. Sauer. 2000. Recommended methods for inventorying and monitoring landbirds in National Parks. Unpublished document, National Park Service. 13 pp.

Hyde, S. 1979. Birds of Colorado's Gunnison Country. Western State College.

Kingery, H.E. 1998. Colorado Breeding Bird Atlas. Colorado Bird Atlas Partnership and Colorado Division of Wildlife, Denver. 636 pp.

Leukering, T., M.F. Carter, A. Panjabi, D. Faulkner, and R. Levad. 2001. *Monitoring Colorado's Birds*: The plan for count-based monitoring. Unpublished document, Rocky Mountain Bird Observatory. 21 pp.

Monsen, S. B. and R. Stevens, 1999. Proceedings: Ecology and Management of Pinyon-Juniper Communities Within the Interior West; Proc. RMRS-P-9, Ogden, UT: USDA, FS, Rocky Mountain Research Station. 411pp.

National Audubon Society. 2000. Audubon Important Bird Areas Program. www.audubon.org/bird/iba.

Petersen, K. L. and L. B. Best. 1985. Nest-site selection by Sage Sparrows. Condor 87:217-221.

Righter, R, R. Levad, C. Dexter, and K. Potter. In press. Birds of Western Colorado: Plateau & Mesa Country. Grand Valley Audubon Society.

Thomas, L., J.L. Laake, J.F. Derry, S.T. Buckland, D.L. Borchers, D.R. Anderson, K.P. Burnham, S. Strindberg, S.L. Hedley, M.L. Burt, F.F.C. Marques, J.H. Pollard, and R.M. Fewster. 1998. *Distance 3.5.* Research Unit for Wildlife Population Assessment, University of St. Andrews, UK.

U. S. Fish and Wildlife Service. 1995. Recovery plan for the Mexican Spotted Owl (Strix occidentalis lucida). Albuquerque, New Mexico.

Appendix A. Species Distribution Maps

Index to distribution maps for Black Canyon National Park

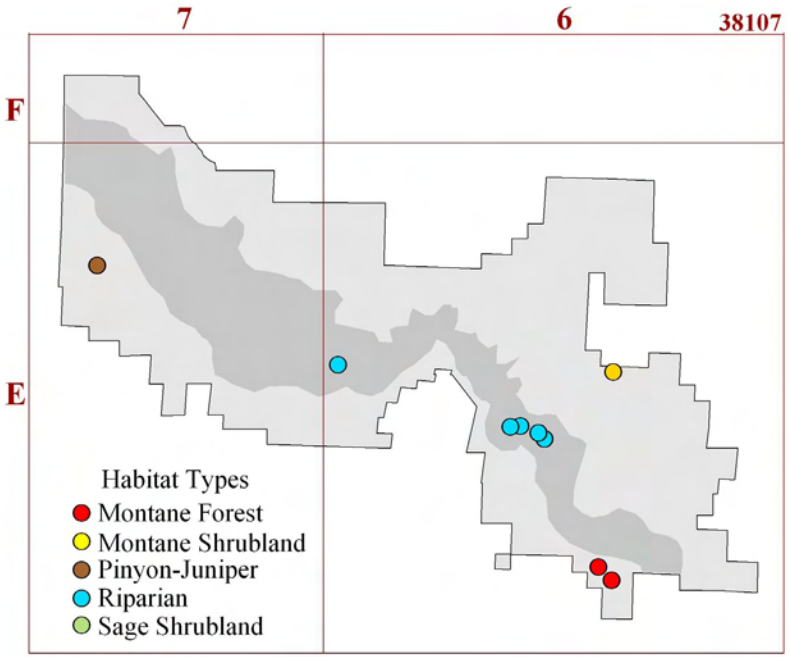
Species	Page	Species	Page	Species	Page
American Crow	A17	Cordilleran Flycatcher	A11	Peregrine Falcon	A4
American Dipper	A23	Dark-eyed Junco (Gray-headed)	A33	Pine Siskin	A37
American Kestrel	A3	Dusky Flycatcher	A10	Pinyon Jay	A15
American Robin	A26	Golden Eagle	A3	Plumbeous Vireo	A13
Ash-throated Flycatcher	A12	Gray Flycatcher	A10	Rock Dove	A5
Bewick's Wren	A22	Gray Vireo	A13	Rock Wren	A21
Black-billed Magpie	A16	Green-tailed Towhee	A30	Ruby-crowned Kinglet	A23
Black-capped Chickadee	A18	Hairy Woodpecker	A8	Sage Thrasher	A26
Black-chinned Hummingbird	A7	Hammond's Flycatcher	A9	Say's Phoebe	A11
Black-headed Grosbeak	A34	Hermit Thrush	A25	Song Sparrow	A33
Black-throated Gray Warbler	A29	House Finch	A37	Spotted Sandpiper	A5
Blue-gray Gnatcatcher	A24	House Wren	A22	Spotted Towhee	A31
Brewer's Sparrow	A32	Indigo Bunting	A35	Steller's Jay	A14
Broad-tailed Hummingbird	A7	Juniper Titmouse	A19	Swainson's Hawk	A2
Brown-headed Cowbird	A36	Lazuli Bunting	A34	Townsend's Solitaire	A25
Bushtit	A20	MacGillivray's Warbler	A29	Turkey Vulture	A1
Canyon Wren	A21	Mountain Bluebird	A24	Vesper Sparrow	A32
Cassin's Finch	A36	Mountain Chickadee	A19	Violet-green Swallow	A18
Chipping Sparrow	A31	Mourning Dove	A6	Virginia's Warbler	A27
Clark's Nutcracker	A16	Northern Flicker (Red-shafted)	A8	Warbling Vireo	A14
Common Raven	A17	Northern Goshawk	A2		
Cooper's Hawk	A1	Orange-crowned Warbler	A27		

Index to distribution maps for Curecanti National Recreation Area

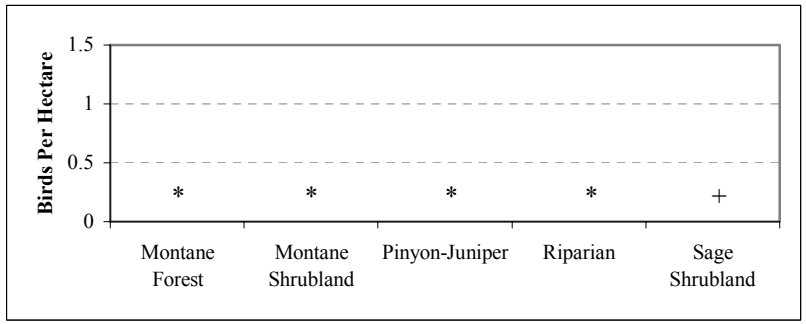
Species	Page	Species	Page	Species	Page
American Crow	A55	Common Poorwill	A45	Peregrine Falcon	A43
American Dipper	A64	Common Raven	A56	Pine Siskin	A81
American Kestrel	A42	Cooper's Hawk	A41	Plumbeous Vireo	A52
American Redstart	A71	Cordilleran Flycatcher	A50	Prairie Falcon	A43
American Robin	A67	Dark-eyed Junco (Gray-headed)	A76	Red-breasted Nuthatch	A61
Ash-throated Flycatcher	A51	Dusky Flycatcher	A49	Red-naped Sapsucker	A47
Bank Swallow	A58	European Starling	A68	Red-tailed Hawk	A41
Barn Swallow	A59	Golden Eagle	A42	Red-winged Blackbird	A78
Belted Kingfisher	A46	Gray Jay	A53	Rock Wren	A62
Bewick's Wren	A63	Great Blue Heron	A38	Ruby-crowned Kinglet	A64
Black-billed Magpie	A55	Green-tailed Towhee	A72	Sage Thrasher	A67
Black-capped Chickadee	A60	Hairy Woodpecker	A47	Say's Phoebe	A50
Black-headed Grosbeak	A76	Hammond's Flycatcher	A49	Song Sparrow	A75
Black-throated Gray Warbler	A70	Hermit Thrush	A66	Spotted Towhee	A73
Blue Grosbeak	A77	Horned Lark	A56	Steller's Jay	A53
Blue-gray Gnatcatcher	A65	House Finch	A81	Townsend's Solitaire	A66
Brewer's Blackbird	A79	House Wren	A63	Tree Swallow	A57
Brewer's Sparrow	A74	Killdeer	A44	Turkey Vulture	A38
Broad-tailed Hummingbird	A46	Lark Sparrow	A75	Vesper Sparrow	A74
Brown-headed Cowbird	A79	Lazuli Bunting	A77	Violet-green Swallow	A57
Bullock's Oriole	A80	MacGillivray's Warbler	A71	Virginia's Warbler	A69
Bushtit	A61	Mallard	A39	Warbling Vireo	A52
Canada Goose	A39	Mountain Bluebird	A65	Western Kingbird	A51
Canyon Wren	A62	Mountain Chickadee	A60	Western Meadowlark	A78
Cassin's Finch	A80	Mourning Dove	A44	Western Scrub-Jay	A54
Chipping Sparrow	A73	Northern Flicker (Red-shafted)	A48	Western Tanager	A72
Clark's Nutcracker	A54	Northern Harrier	A40	Western Wood-Pewee	A48
Cliff Swallow	A59	Northern Rough-winged Swallow	A58		
Common Merganser	A40	Orange-crowned Warbler	A68		

Turkey Vulture

Turkey Vulture was detected in low numbers in Montane Forest (n = 3), Montane Shrubland (n = 1), Pinyon-Juniper (n = 2), and Riparian (n = 12) habitats.



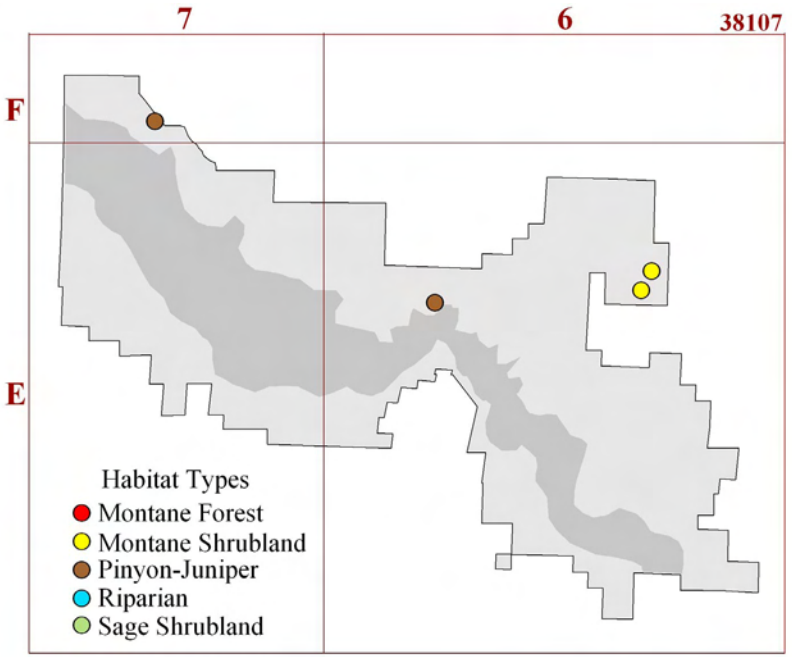
Distribution of Turkey Vulture Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



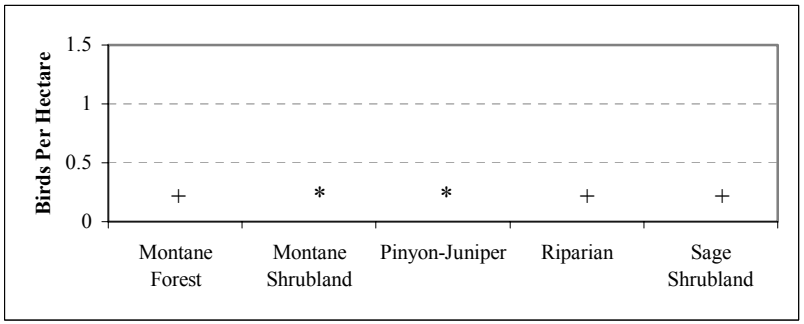
Density of Turkey Vulture among habitat types in Curecanti National recreation area. * Detections of Turkey Vulture were insufficient (<20) to calculate density in this habitat type. +Turkey Vulture was not detected in this habitat type.

Cooper's Hawk

Cooper's Hawk was detected in low numbers in Montane Shrubland (n = 3) and Pinyon-Juniper (n = 2) habitats.



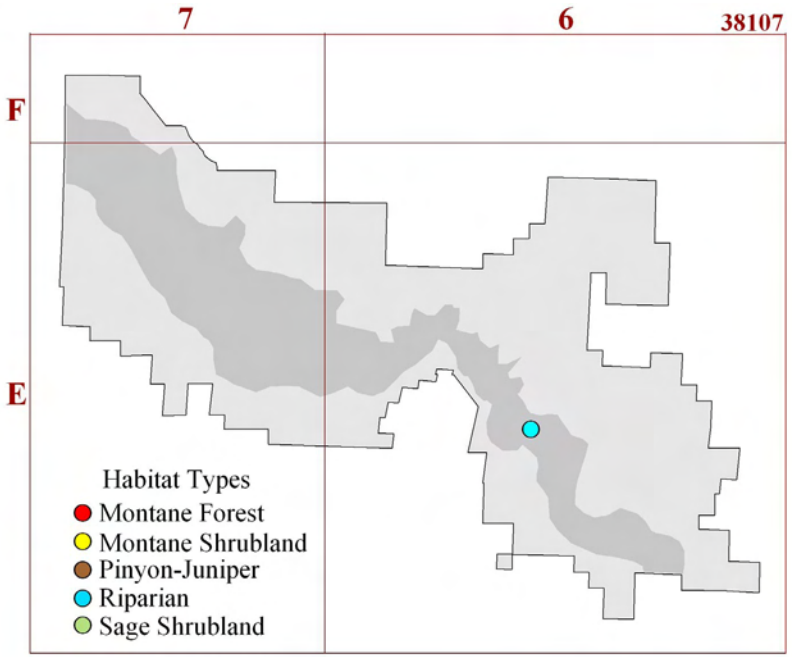
Distribution of Cooper's Hawk Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



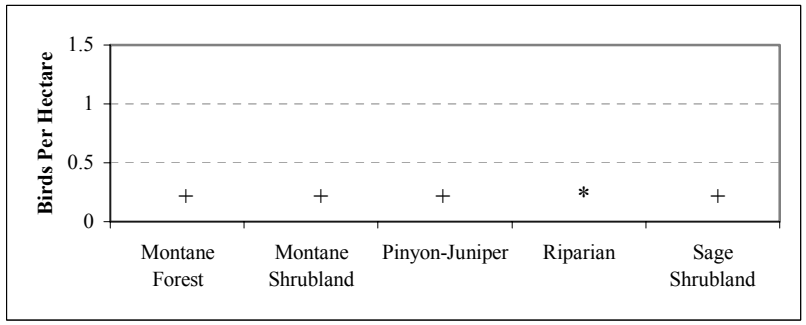
Density of Cooper's Hawk among habitat types in Curecanti National recreation area. * Detections of Cooper's Hawk were insufficient (<20) to calculate density in this habitat type. +Cooper's Hawk was not detected in this habitat type.

Northern Goshawk

Northern Goshawk was detected in low numbers in Riparian (n = 1) habitat.



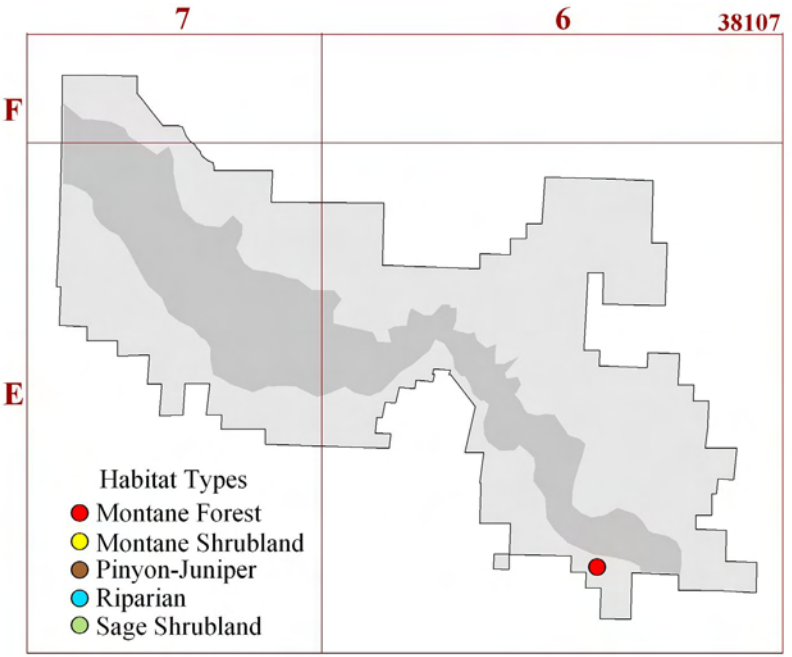
Distribution of Northern Goshawk Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



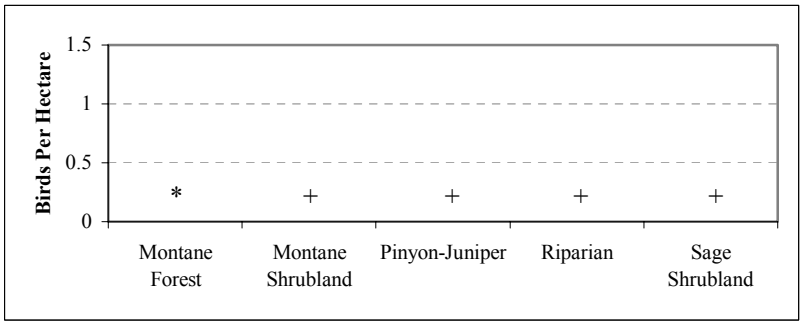
Density of Northern Goshawk among habitat types in Curecanti National recreation area. * Detections of Northern Goshawk were insufficient (<20) to calculate density in this habitat type. +Northern Goshawk was not detected in this habitat type.

Swainson's Hawk

Swainson's Hawk was detected in low numbers in Montane Forest (n = 1) habitat.



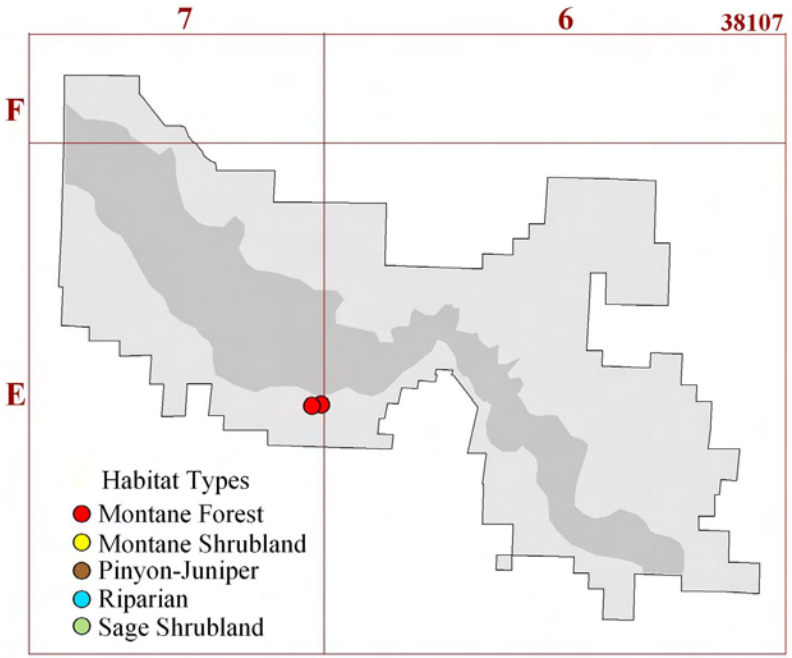
Distribution of Swainson's Hawk Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



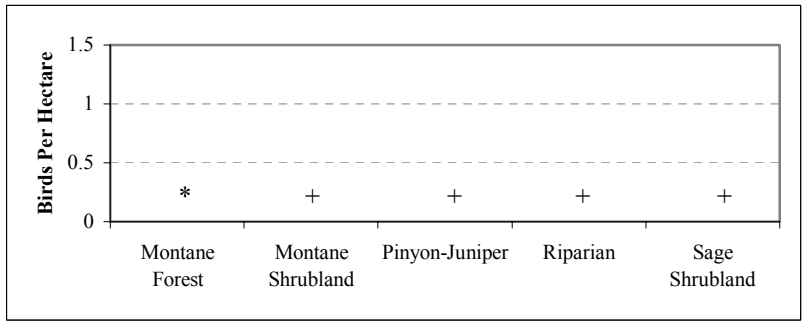
Density of Swainson's Hawk among habitat types in Curecanti National recreation area. * Detections of Swainson's Hawk were insufficient (<20) to calculate density in this habitat type. +Swainson's Hawk was not detected in this habitat type.

Golden Eagle

Golden Eagle was detected in low numbers in Montane Forest (n = 2) habitat**.**



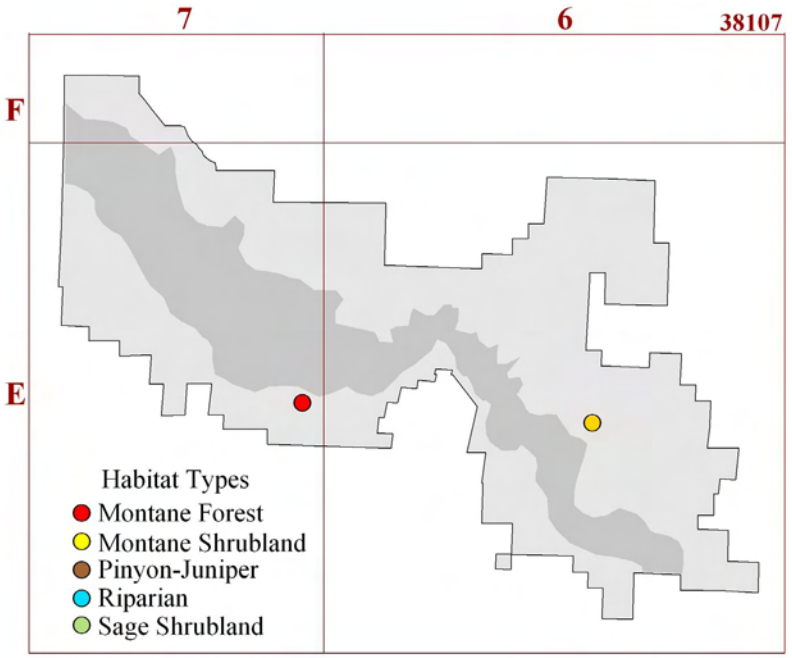
Distribution of Golden Eagle Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



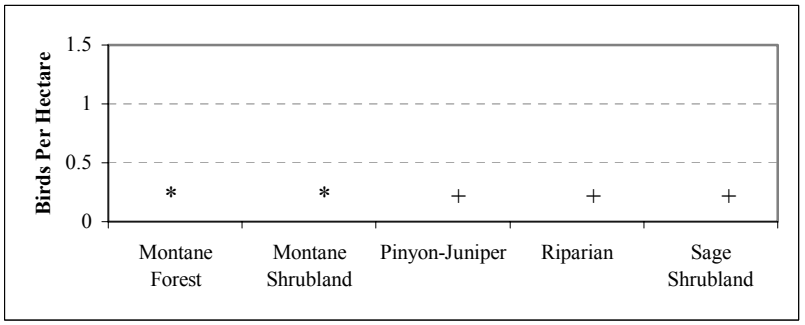
Density of Golden Eagle among habitat types in Curecanti National recreation area. * Detections of Golden Eagle were insufficient (<20) to calculate density in this habitat type. +Golden Eagle was not detected in this habitat type.

American Kestrel

American Kestrel was detected in low numbers in Montane Forest (n = 1) and Montane Shrubland (n = 1) habitats**.**



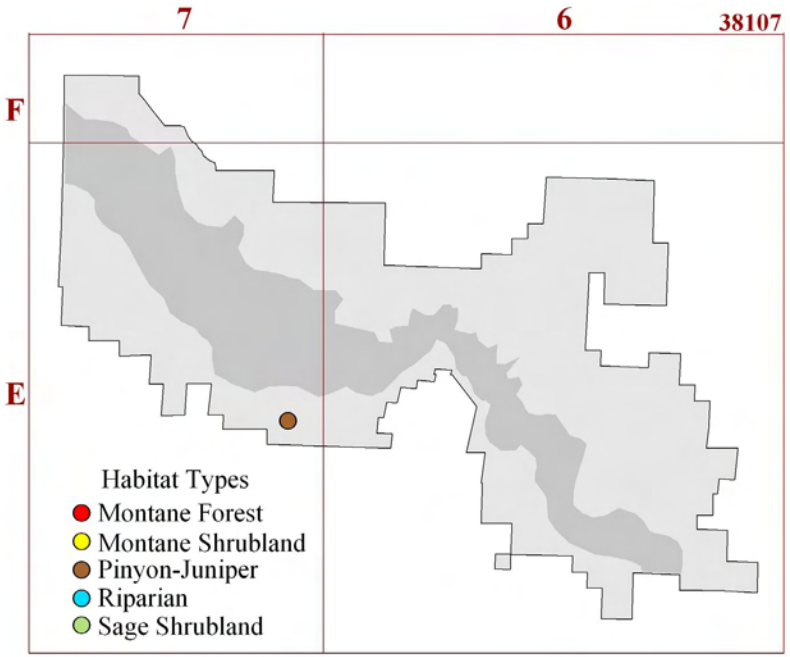
Distribution of American Kestrel Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



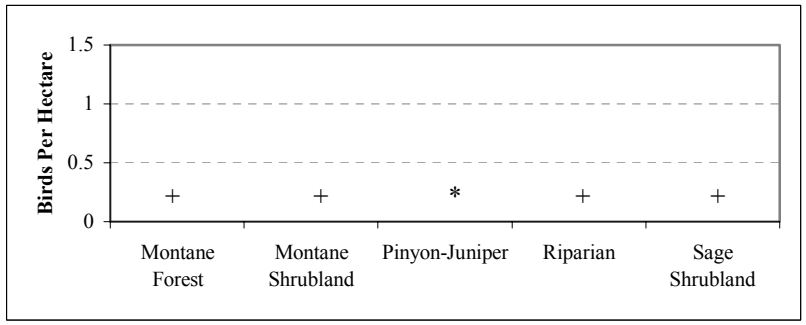
Density of American Kestrel among habitat types in Curecanti National recreation area. * Detections of American Kestrel were insufficient (<20) to calculate density in this habitat type. +American Kestrel was not detected in this habitat type.

Peregrine Falcon

Peregrine Falcon was detected in low numbers in Pinyon-Juniper (n = 1) habitat.



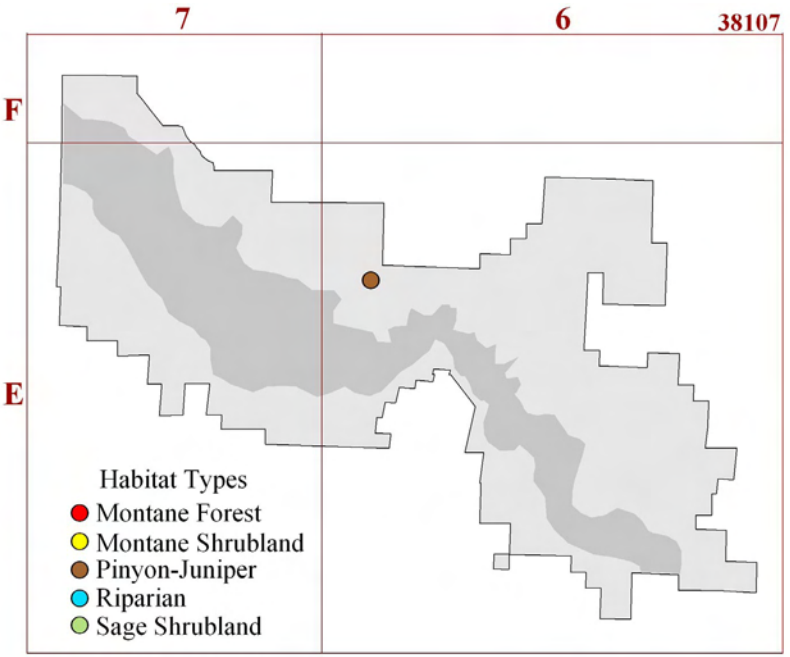
Distribution of Peregrine Falcon Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



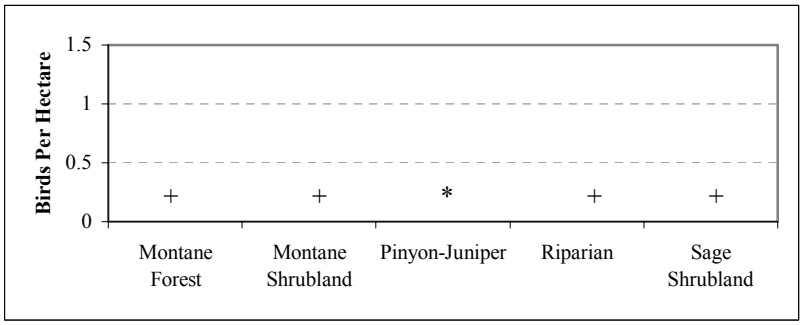
Density of Peregrine Falcon among habitat types in Curecanti National recreation area. * Detections of Peregrine Falcon were insufficient (<20) to calculate density in this habitat type. +Peregrine Falcon was not detected in this habitat type.

Wild Turkey

Wild Turkey was detected in low numbers in Pinyon Juniper (n = 1) habitat.



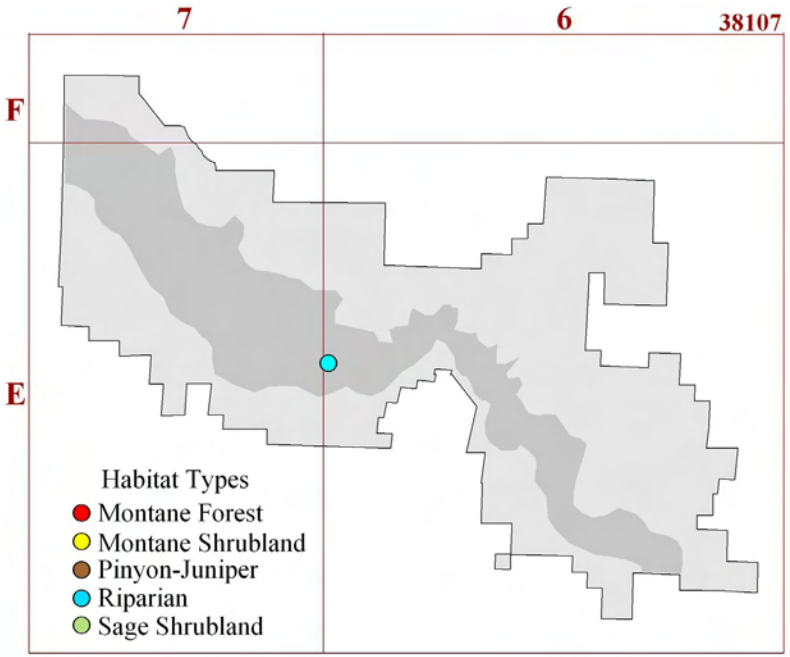
Distribution of Wild Turkey Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



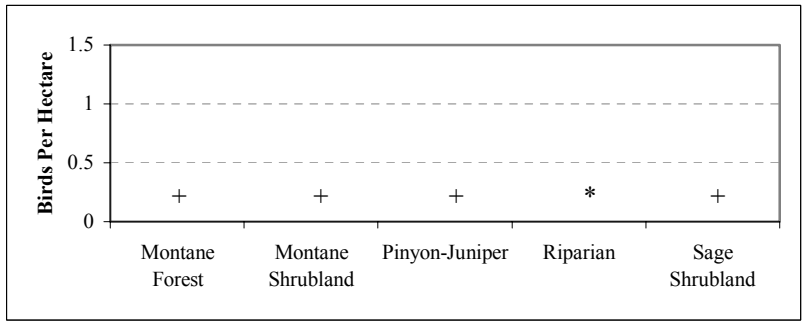
Density of Wild Turkey among habitat types in Curecanti National recreation area. * Detections of Wild Turkey were insufficient (<20) to calculate density in this habitat type. +Wild Turkey was not detected in this habitat type.

Spotted Sandpiper

Spotted Sandpiper was detected in low numbers in Riparian (n = 1) habitat.



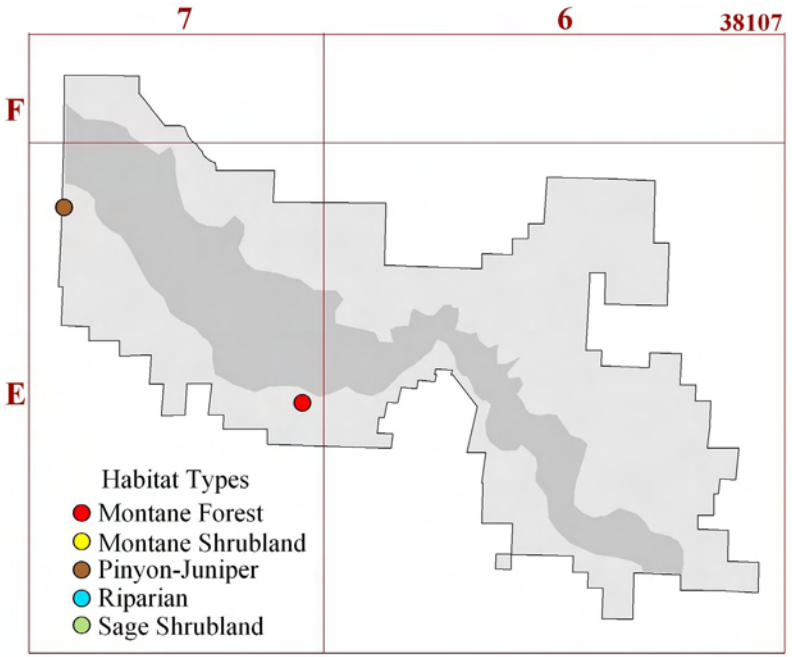
Distribution of Spotted Sandpiper Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



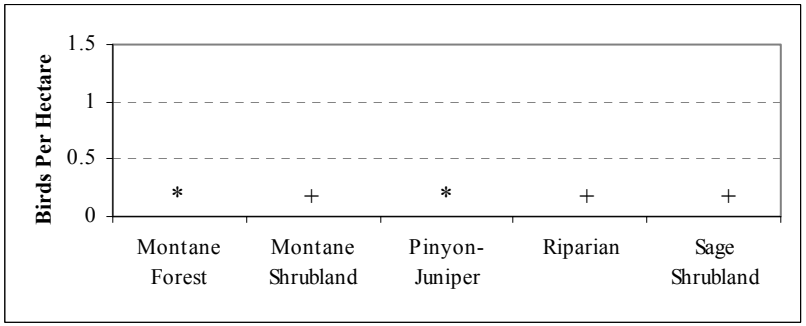
Density of Spotted Sandpiper among habitat types in Curecanti National recreation area. * Detections of Spotted Sandpiper were insufficient (<20) to calculate density in this habitat type. +Spotted Sandpiper was not detected in this habitat type.

Rock Dove

Rock Dove was detected in low numbers in Montane Forest (n = 1) and Pinyon-Juniper (n = 1) habitats.



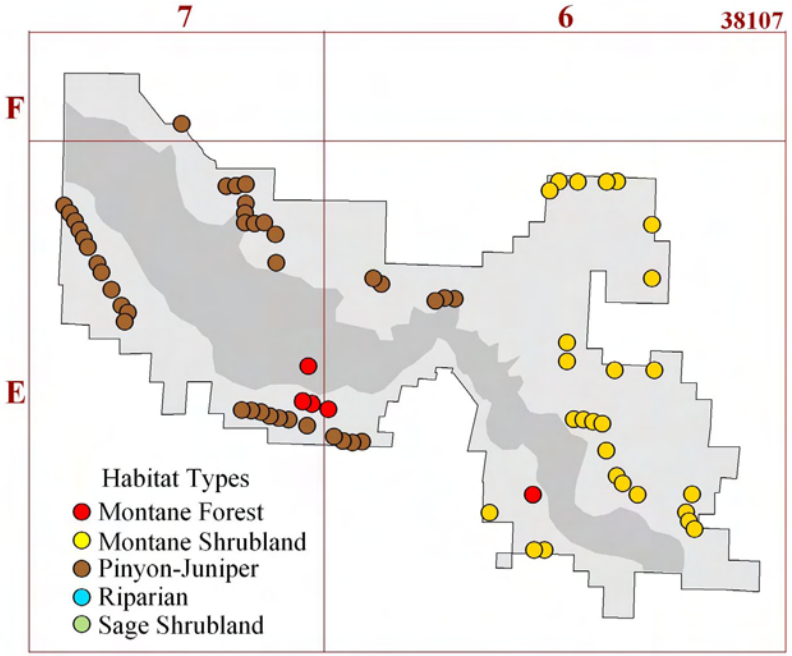
Distribution of Rock Dove Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



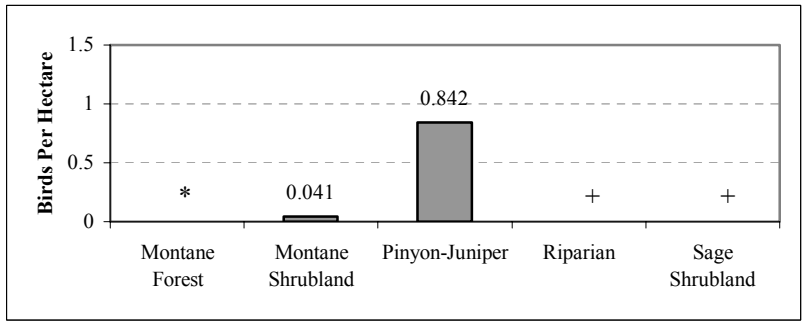
Density of Rock Dove among habitat types in Curecanti National recreation area. * Detections of Rock Dove were insufficient (<20) to calculate density in this habitat type. +Rock Dove was not detected in this habitat type.

Mourning Dove

Detections of Mourning Dove were sufficient to calculate densities in Montane Shrubland (D = 0.041 birds per hectare) and Pinyon-Juniper (D = 0.842 birds per hectare) habitats. Mourning Dove was detected in low numbers in Montane Forest (n = 6) habitat.



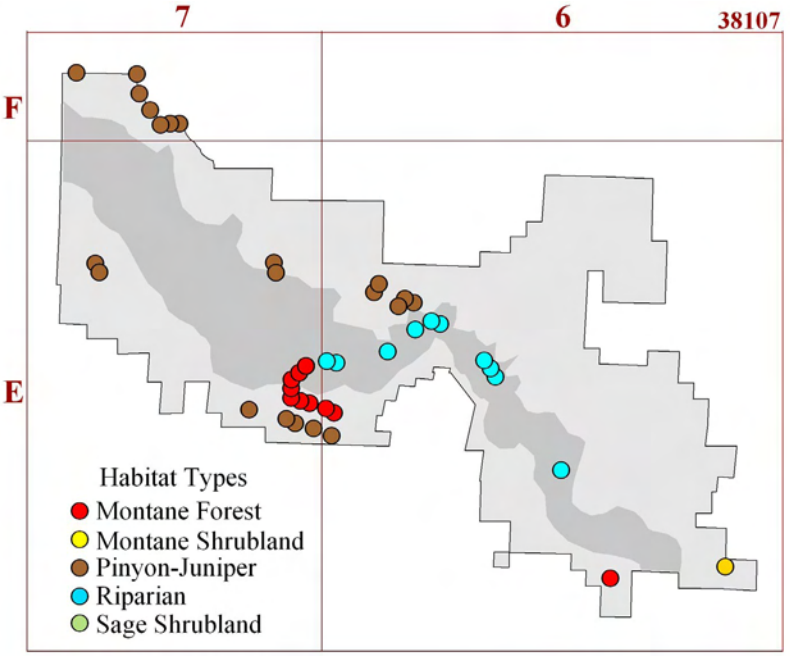
Distribution of Mourning Dove Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



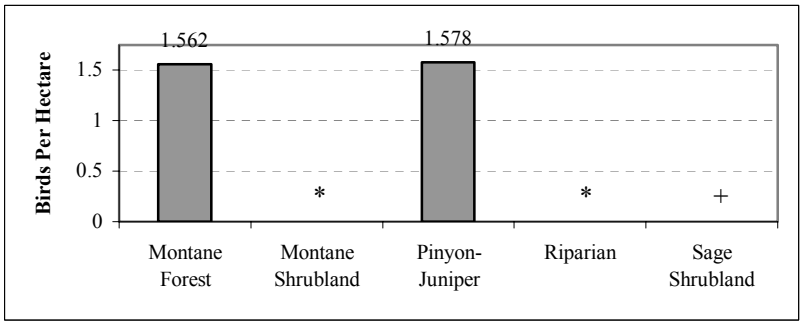
Density of Mourning Dove among habitat types in Curecanti National recreation area. * Detections of Mourning Dove were insufficient (<20) to calculate density in this habitat type. +Mourning Dove was not detected in this habitat type.

White-throated Swift

Detections of White-throated Swift were sufficient to calculate densities in Montane Forest (n = 1.562 birds per hectare) and Pinyon-Juniper (D = 1.578 birds per hectare) habitats. White-throated Swift was detected in low numbers in Montane Shrubland (n = 2) and Riparian (n = 12) habitats.



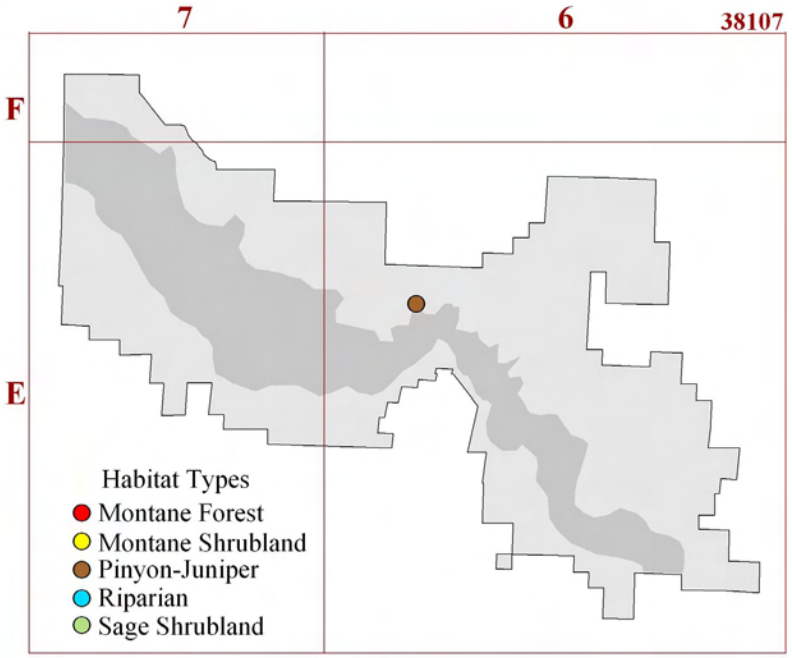
Distribution of White-throated Swift Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



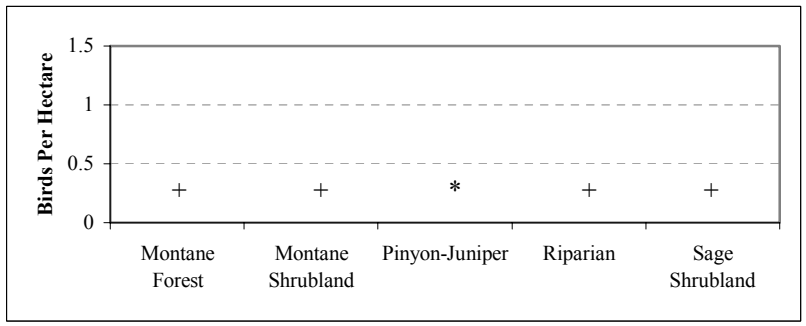
Density of White-throated Swift among habitat types in Curecanti National recreation area. * Detections of White-throated Swift were insufficient (<20) to calculate density in this habitat type. +White-throated Swift was not detected in this habitat type.

Black-chinned Hummingbird

Black-chinned Hummingbird was detected in low numbers in Pinyon-Juniper (n = 1) habitat.



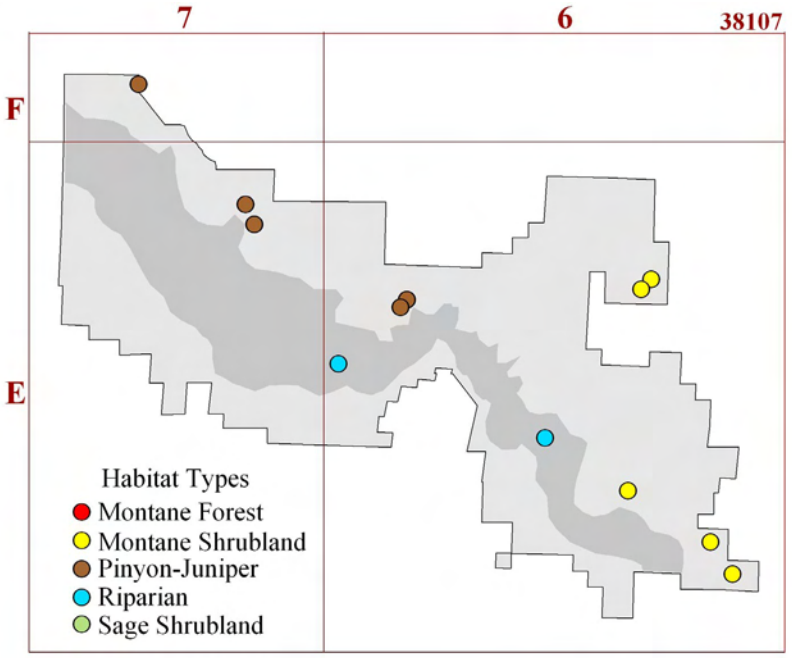
Distribution of Black-chinned Hummingbird Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



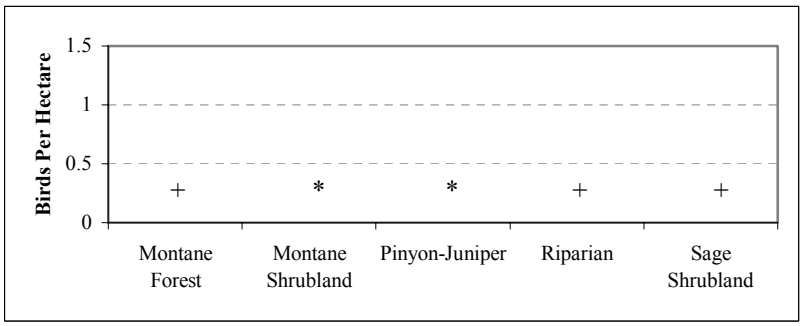
Density of Black-chinned Hummingbird among habitat types in Curecanti National recreation area. * Detections of Black-chinned Hummingbird were insufficient (<20) to calculate density in this habitat type. +Black-chinned Hummingbird was not detected in this habitat type.

Broad-tailed Hummingbird

Broad-tailed Hummingbird was detected in low numbers in Montane Shrubland (n = 5), Pinyon-Juniper (n = 8), and Riparian (n = 2) habitats.



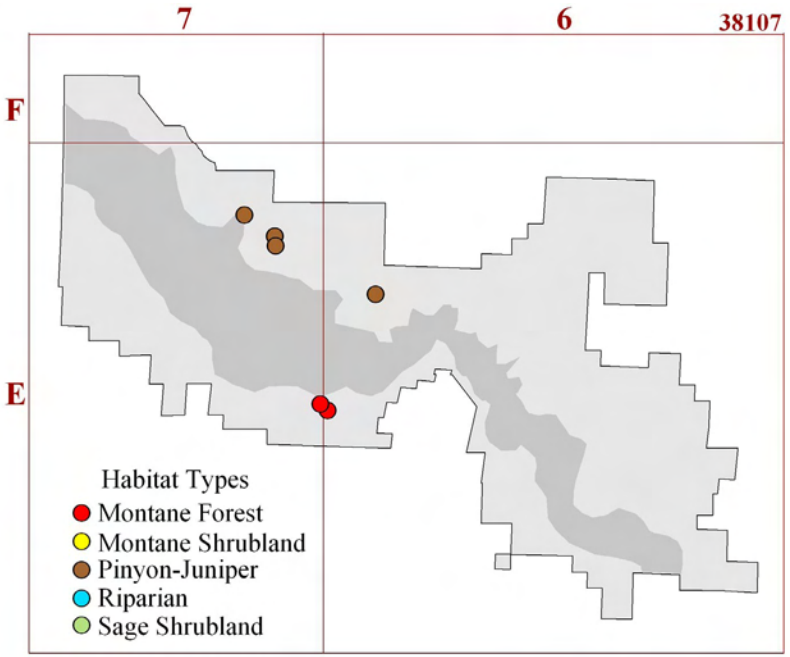
Distribution of Broad-tailed Hummingbird Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



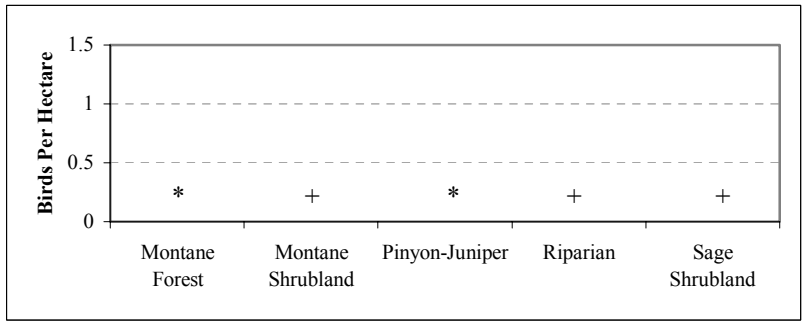
Density of Broad-tailed Hummingbird among habitat types in Curecanti National recreation area. * Detections of Broad-tailed Hummingbird were insufficient (<20) to calculate density in this habitat type. +Broad-tailed Hummingbird was not detected in this habitat type.

Hairy Woodpecker

Hairy Woodpecker was detected in low numbers in Montane Forest (n = 2) and Pinyon-Juniper (n = 5) habitats.



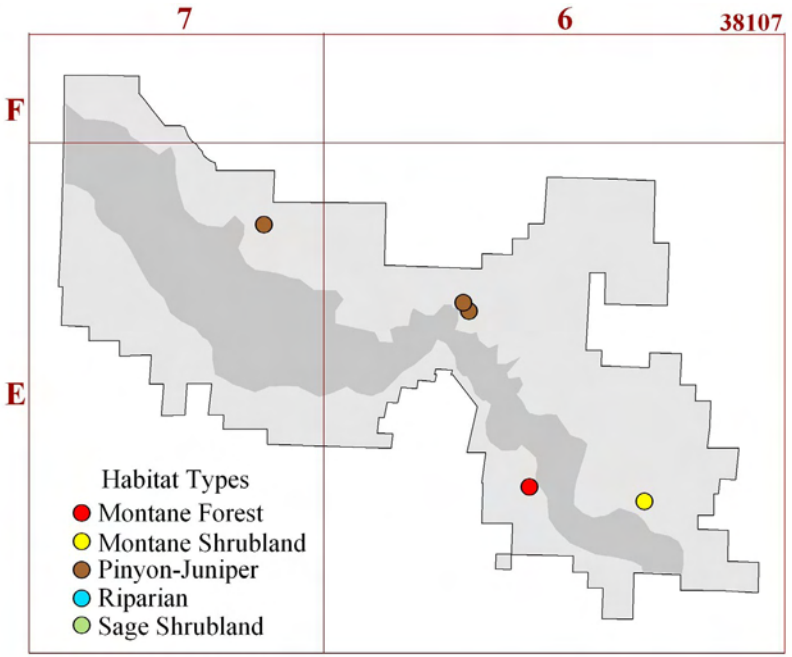
Distribution of Hairy Woodpecker Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



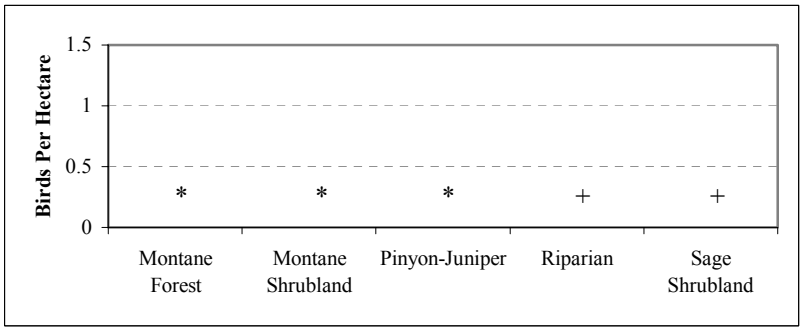
Density of Hairy Woodpecker among habitat types in Curecanti National recreation area. * Detections of Hairy Woodpecker were insufficient (<20) to calculate density in this habitat type. +Hairy Woodpecker was not detected in this habitat type.

Northern (Red-shafted) Flicker

Red-shafted Flicker was detected in low numbers in Montane Forest (n = 1), Montane Shrubland (n = 1), and Pinyon-Juniper (n = 3) habitats.



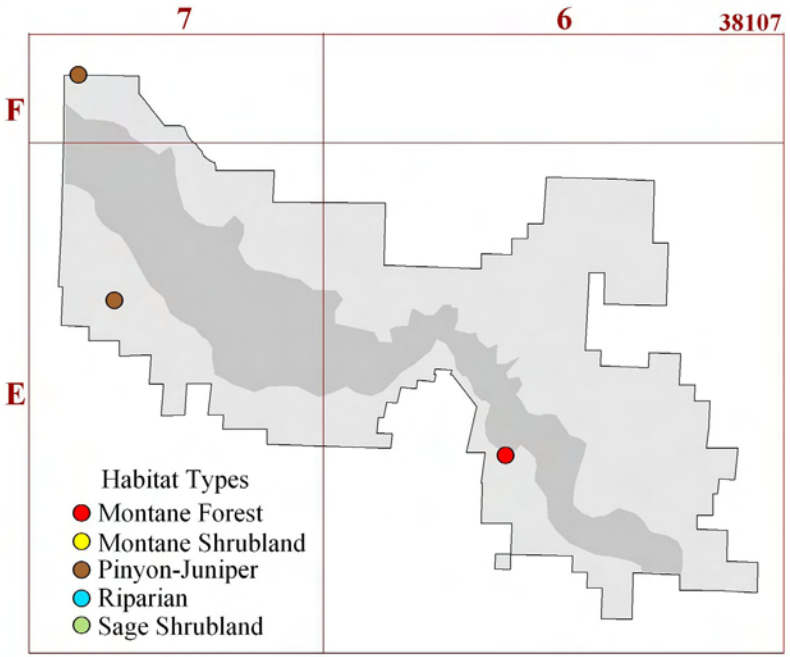
Distribution of Red-shafted Flicker Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



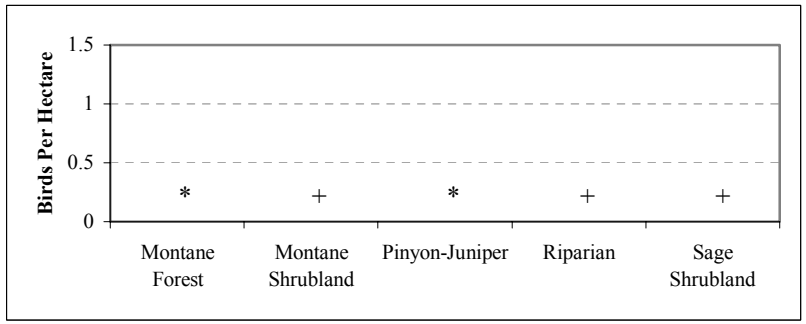
Density of Red-shafted Flicker among habitat types in Curecanti National recreation area. * Detections of Red-shafted Flicker were insufficient (<20) to calculate density in this habitat type. +Red-shafted Flicker was not detected in this habitat type.

Western Wood-Pewee

Western Wood-Pewee was detected in low numbers in Montane Forest (n = 1) and Pinyon-Juniper (n = 2) habitats.



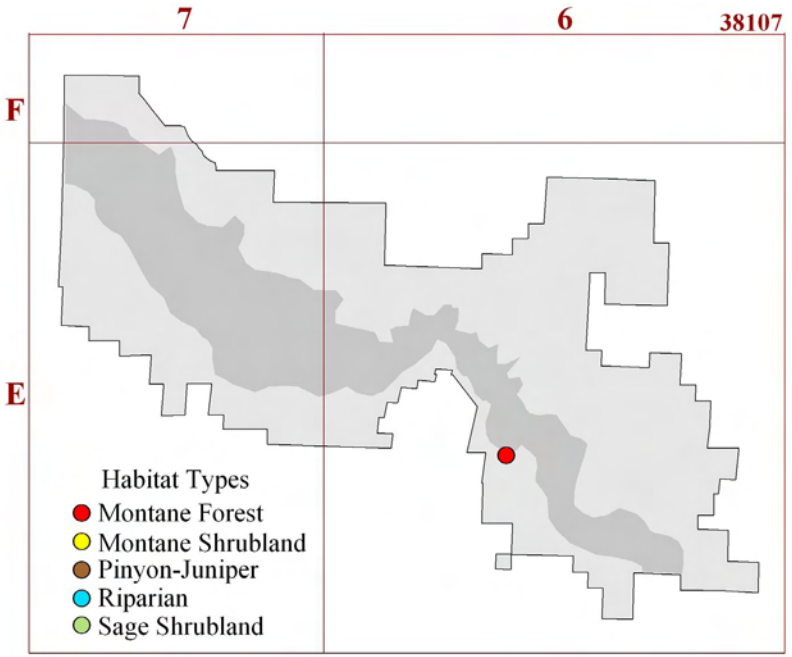
Distribution of Western Wood-Pewee Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



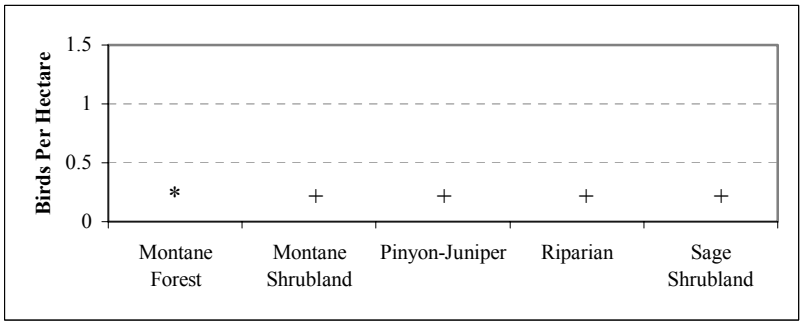
Density of Western Wood-Pewee among habitat types in Curecanti National recreation area. * Detections of Western Wood-Pewee were insufficient (<20) to calculate density in this habitat type. +Western Wood-Pewee was not detected in this habitat type.

Hammond's Flycatcher

Hammond's Flycatcher was detected in low numbers in Montane Forest (n = 1) habitat.



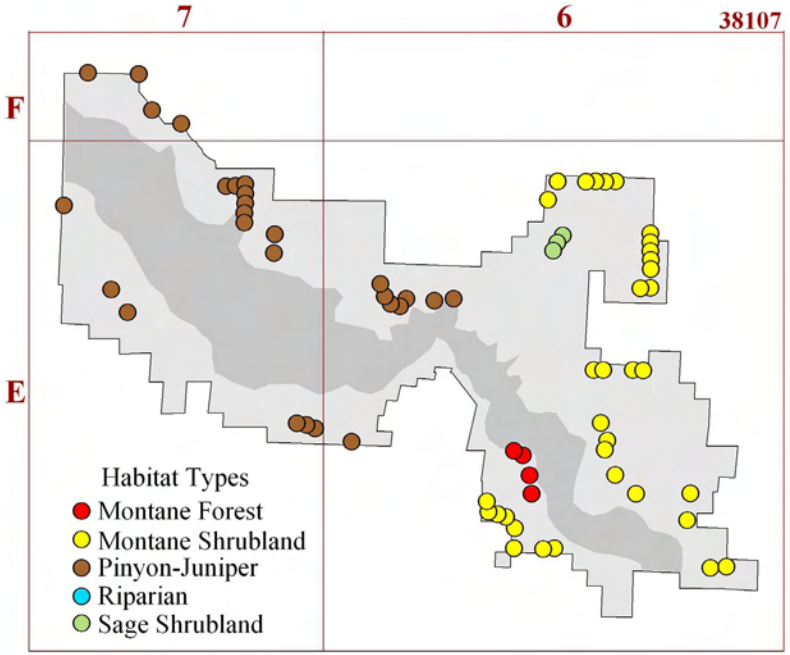
Distribution of Hammond's Flycatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



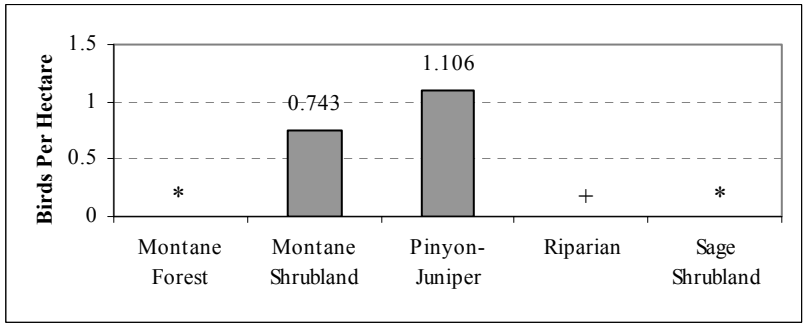
Density of Hammond's Flycatcher among habitat types in Curecanti National recreation area. * Detections of Hammond's Flycatcher were insufficient (<20) to calculate density in this habitat type. +Hammond's Flycatcher was not detected in this habitat type.

Dusky Flycatcher

Detections of Dusky Flycatcher were sufficient to calculate densities in Montane Shrubland (D = 0.743 birds per hectare) and Pinyon-Juniper (D = 1.106 birds per hectare) habitats. Dusky Flycatcher was detected in low numbers in Montane Forest (n = 5) Sage Shrubland (n = 3) habitats.



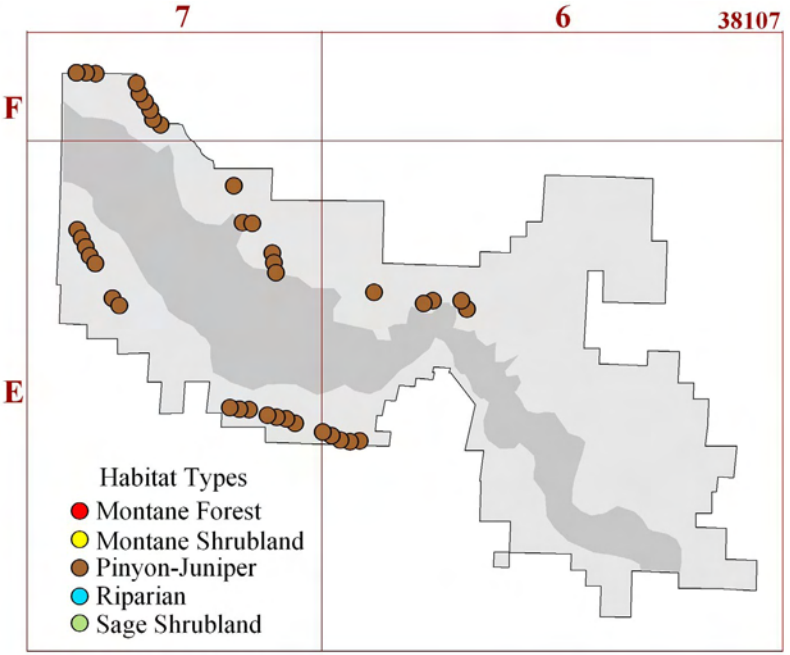
Distribution of Dusky Flycatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



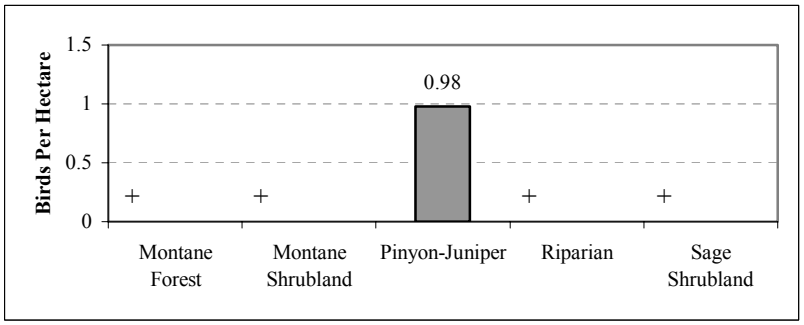
Density of Dusky Flycatcher among habitat types in Curecanti National recreation area. * Detections of Dusky Flycatcher were insufficient (<20) to calculate density in this habitat type. +Dusky Flycatcher was not detected in this habitat type.

Gray Flycatcher

Detections of Gray Flycatcher were sufficient to calculate densities in Pinyon-Juniper (D = 0.980 birds per hectare) habitat.



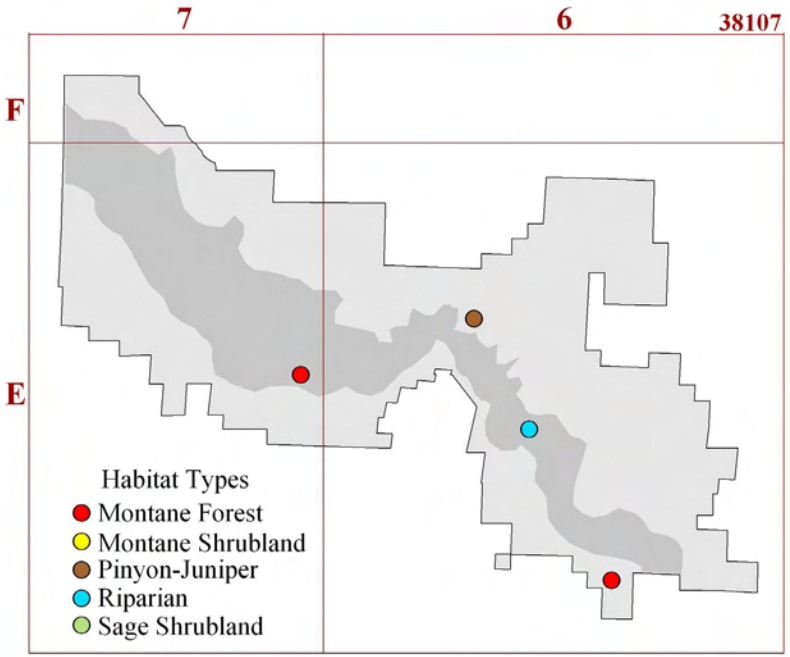
Distribution of Gray Flycatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



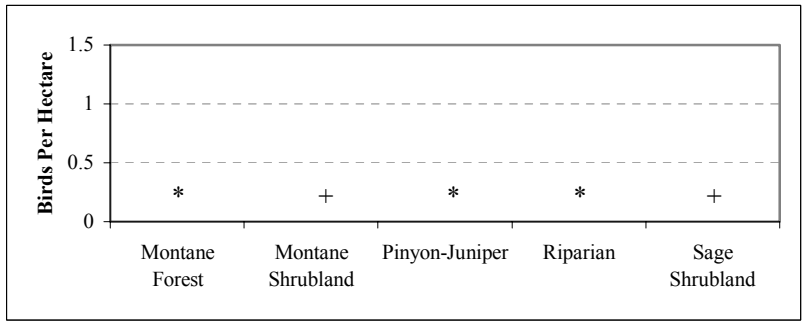
Density of Gray Flycatcher among habitat types in Curecanti National recreation area. * Detections of Gray Flycatcher were insufficient (<20) to calculate density in this habitat type. +Gray Flycatcher was not detected in this habitat type.

Cordilleran Flycatcher

Cordilleran Flycatcher was detected in low numbers in Montane Forest (n = 2), Pinyon-Juniper (n = 1), and Riparian (n = 1) habitats.



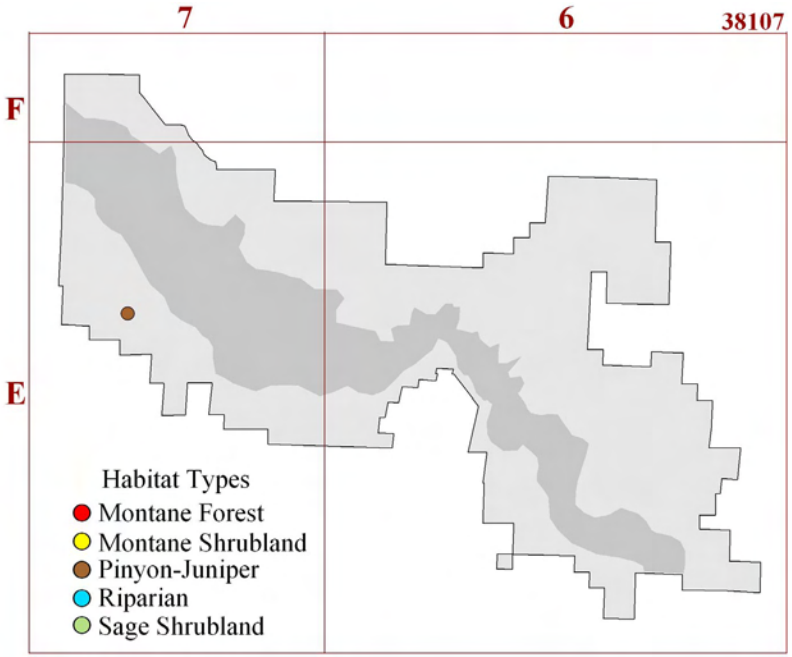
Distribution of Cordilleran Flycatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



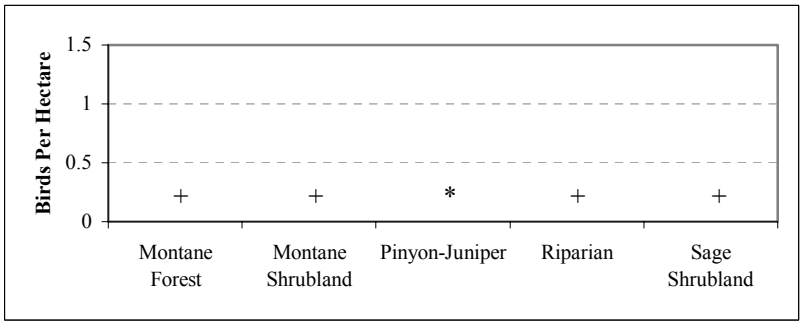
Density of Cordilleran Flycatcher among habitat types in Curecanti National recreation area. * Detections of Cordilleran Flycatcher were insufficient (<20) to calculate density in this habitat type. +Cordilleran Flycatcher was not detected in this habitat type.

Say's Phoebe

Say's Phoebe was detected in low numbers in Pinyon-Juniper (n = 1) habitat.



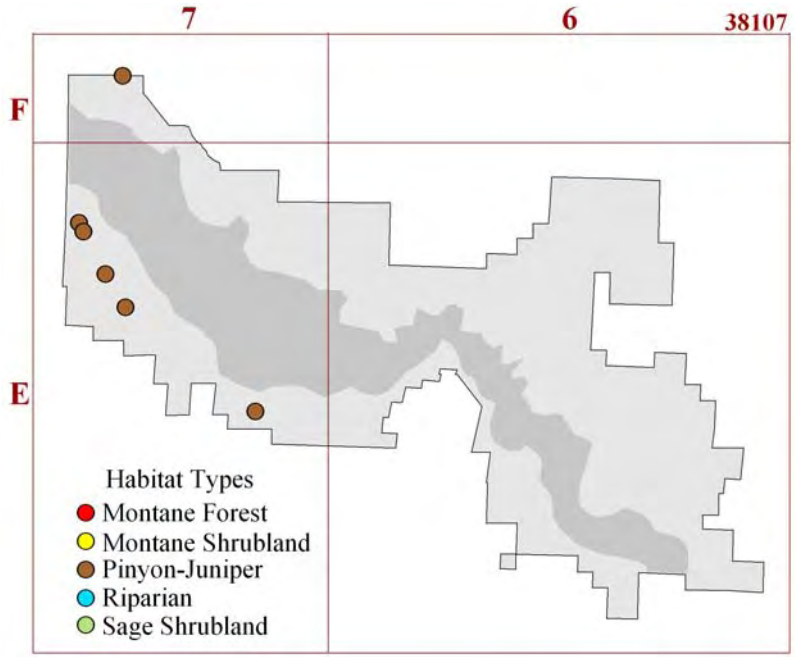
Distribution of Say's Phoebe Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



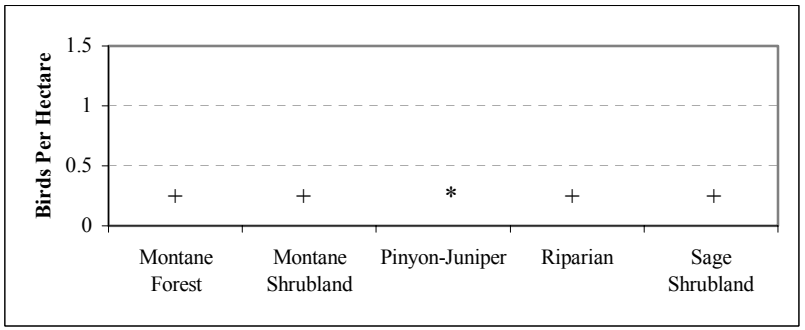
Density of Say's Phoebe among habitat types in Curecanti National recreation area. * Detections of Say's Phoebe were insufficient (<20) to calculate density in this habitat type. +Say's Phoebe was not detected in this habitat type.

Ash-throated Flycatcher

Ash-throated Flycatcher was detected in low numbers in Pinyon-juniper (n = 7) habitat.



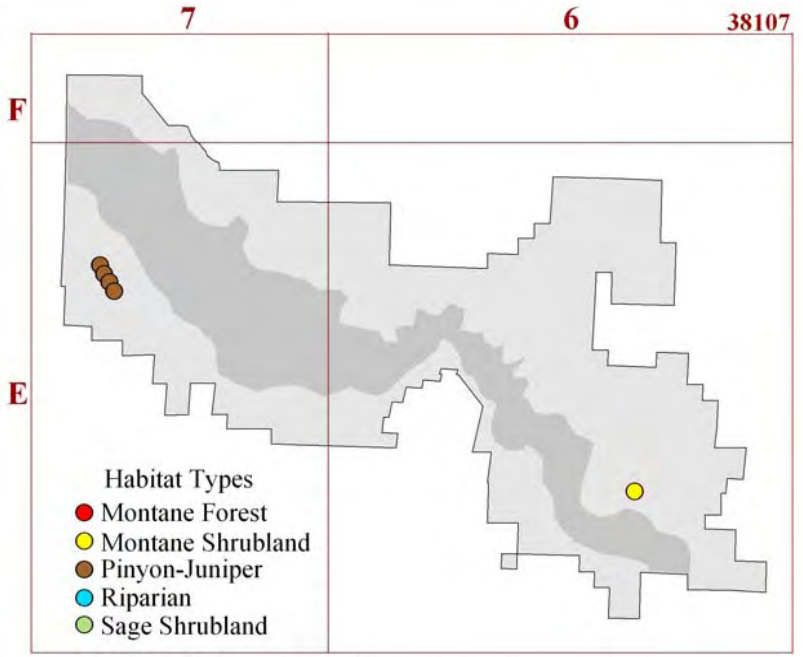
Distribution of Ash-throated Flycatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



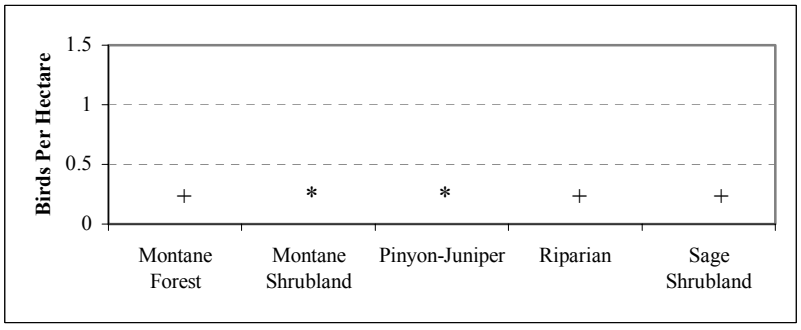
Density of Ash-throated Flycatcher among habitat types in Curecanti National recreation area. * Detections of Ash-throated Flycatcher were insufficient (<20) to calculate density in this habitat type. +Ash-throated Flycatcher was not detected in this habitat type.

Western Kingbird

Western Kingbird was detected in low numbers in Montane Shrubland (n = 2) and Pinyon Juniper (n = 4) habitats.



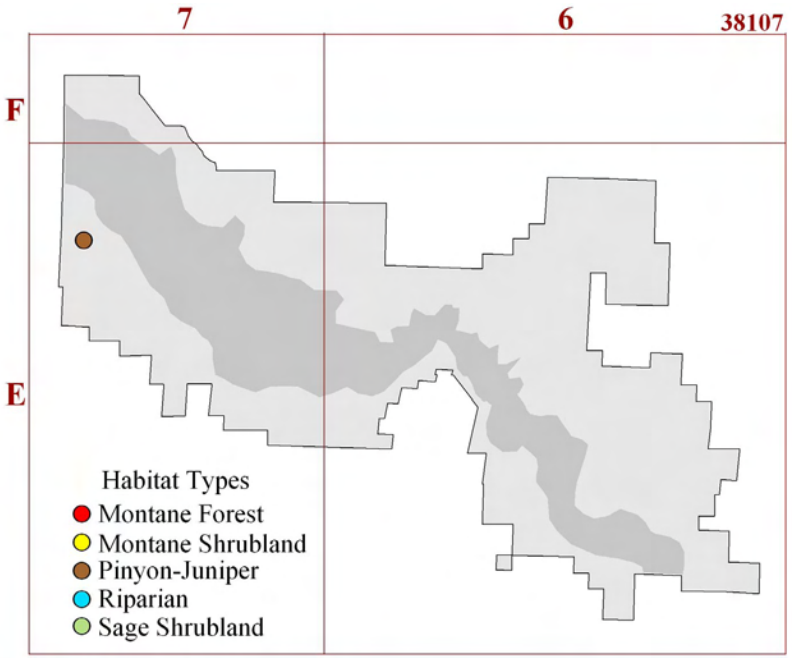
Distribution of Western Kingbird Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



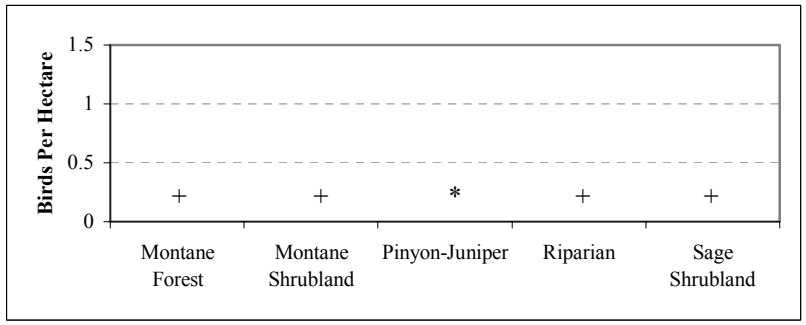
Density of Western Kingbird among habitat types in Curecanti National recreation area. * Detections of Western Kingbird were insufficient (<20) to calculate density in this habitat type. +Western Kingbird was not detected in this habitat type.

Gray Vireo

Gray Vireo was detected in low numbers in Pinyon-Juniper (n = 1) habitat.



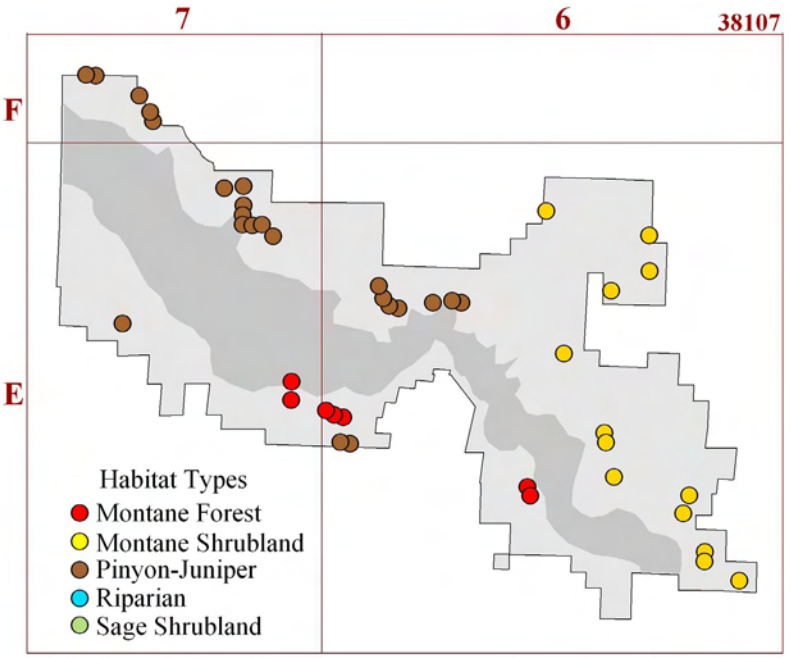
Distribution of Gray Vireo Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



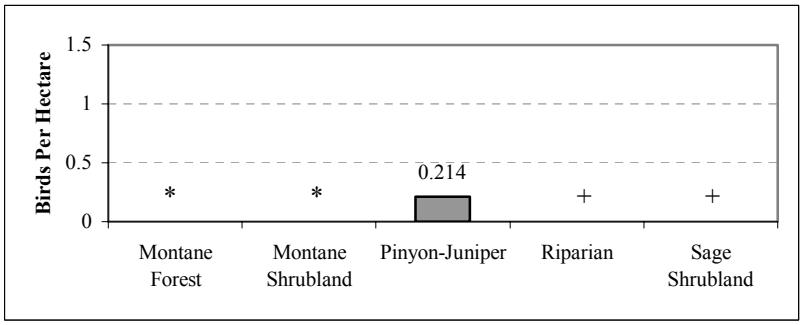
Density of Gray Vireo among habitat types in Curecanti National recreation area. * Detections of Gray Vireo were insufficient (<20) to calculate density in this habitat type. +Gray Vireo was not detected in this habitat type.

Plumbeous Vireo

Detections of Plumbeous Vireo were sufficient to calculate density in Pinyon-Juniper (D = 0.214 birds per hectare) habitat. Plumbeous Vireo was detected in low numbers in Montane Forest (n = 7) and Montane Shrubland (n = 14) habitats.



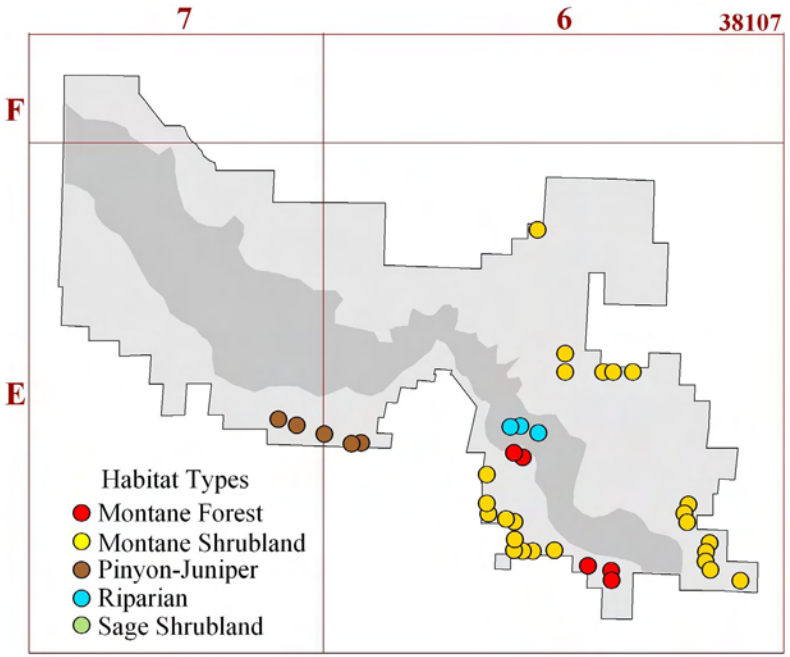
Distribution of Plumbeous Vireo Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



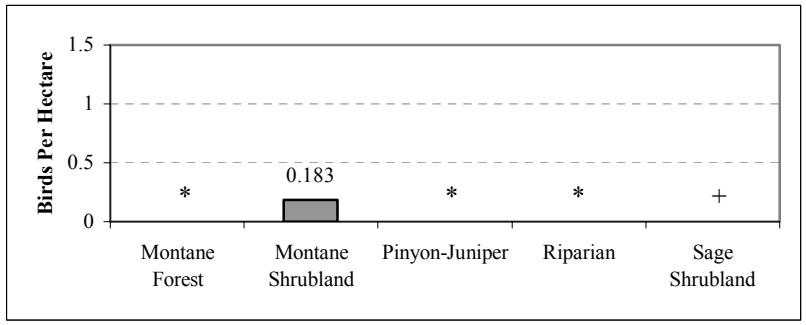
Density of Plumbeous Vireo among habitat types in Curecanti National recreation area. * Detections of Plumbeous Vireo were insufficient (<20) to calculate density in this habitat type. +Plumbeous Vireo was not detected in this habitat type.

Warbling Vireo

Detections of Warbling Vireo were sufficient to calculate densities in Montane Shrubland (D = 0.183 birds per hectare) habitat. Warbling Vireo was detected in low numbers in Montane Forest (n = 9), Pinyon-Juniper (n = 5), and Riparian (n = 4) habitats.



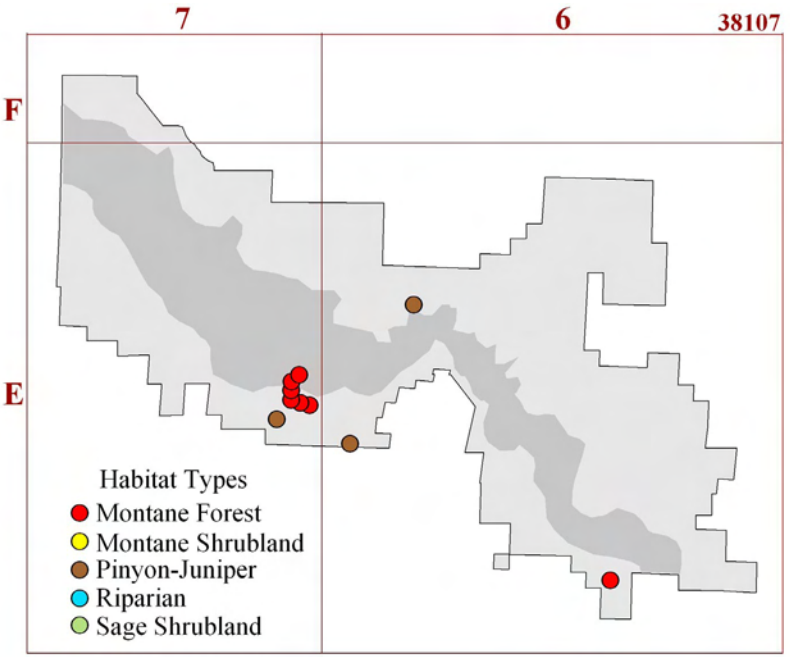
Distribution of Warbling Vireo Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



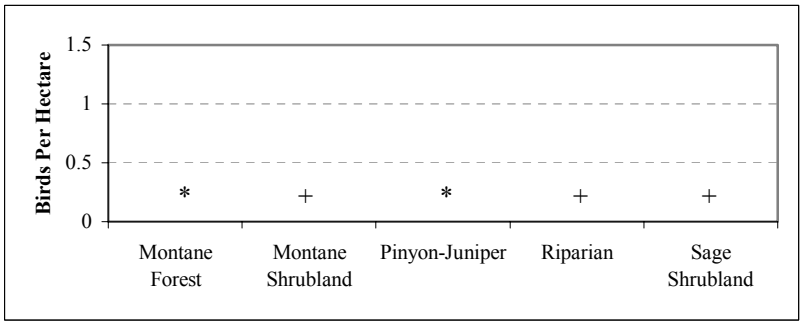
Density of Warbling Vireo among habitat types in Curecanti National recreation area. * Detections of Warbling Vireo were insufficient (<20) to calculate density in this habitat type. +Warbling Vireo was not detected in this habitat type.

Steller's Jay

Steller's Jay was detected in low numbers in Montane Forest (n = 8) and Pinyon-Juniper (n = 3) habitats.



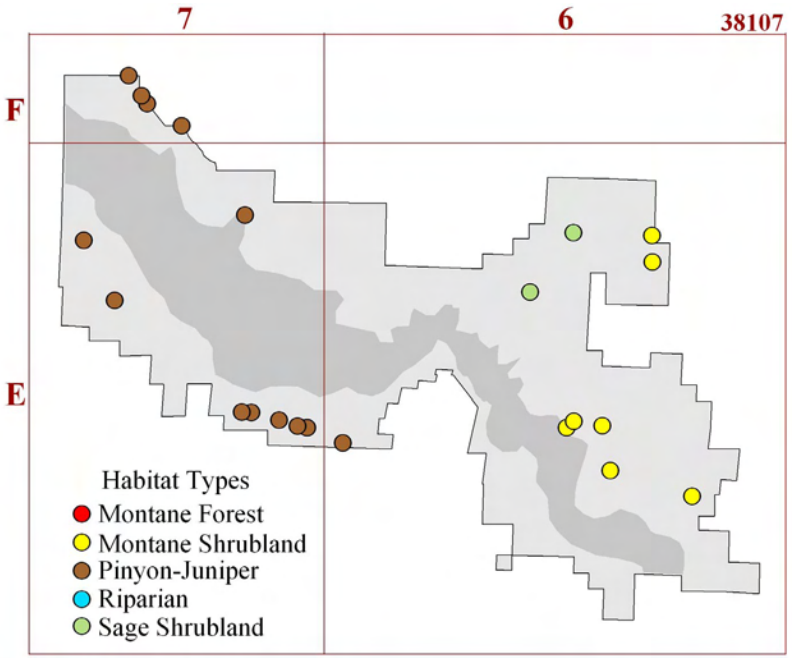
Distribution of Steller's Jay Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



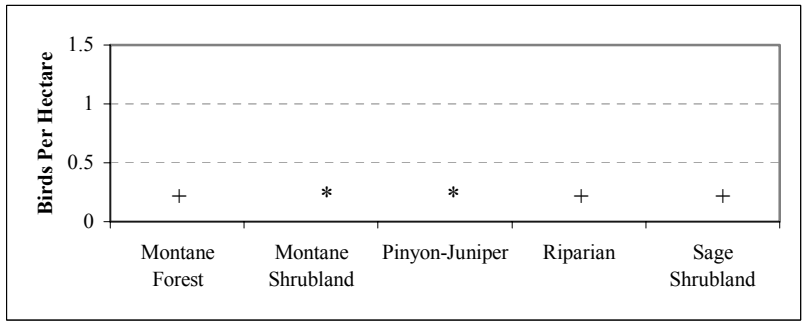
Density of Steller's Jay among habitat types in Curecanti National recreation area. * Detections of Steller's Jay were insufficient (<20) to calculate density in this habitat type. +Steller's Jay was not detected in this habitat type.

Western Scrub-Jay

Western Scrub-Jay was detected in low numbers in Montane Shrubland (n = 7) and Pinyon-Juniper (n = 14) habitats.



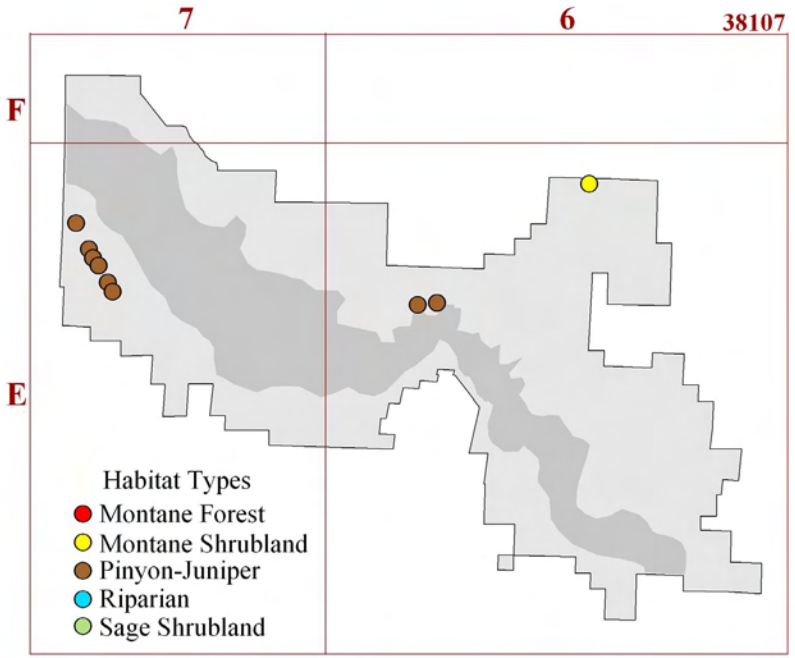
Distribution of Western Scrub-Jay Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



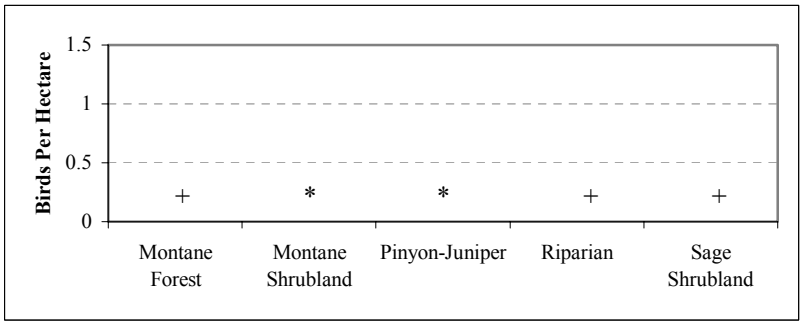
Density of Western Scrub-Jay among habitat types in Curecanti National recreation area. * Detections of Western Scrub-Jay were insufficient (<20) to calculate density in this habitat type. +Western Scrub-Jay was not detected in this habitat type.

Pinyon Jay

Pinyon Jay was detected in low numbers in Montane Shrubland (n = 1) and Pinyon-Juniper (n = 17) habitats.



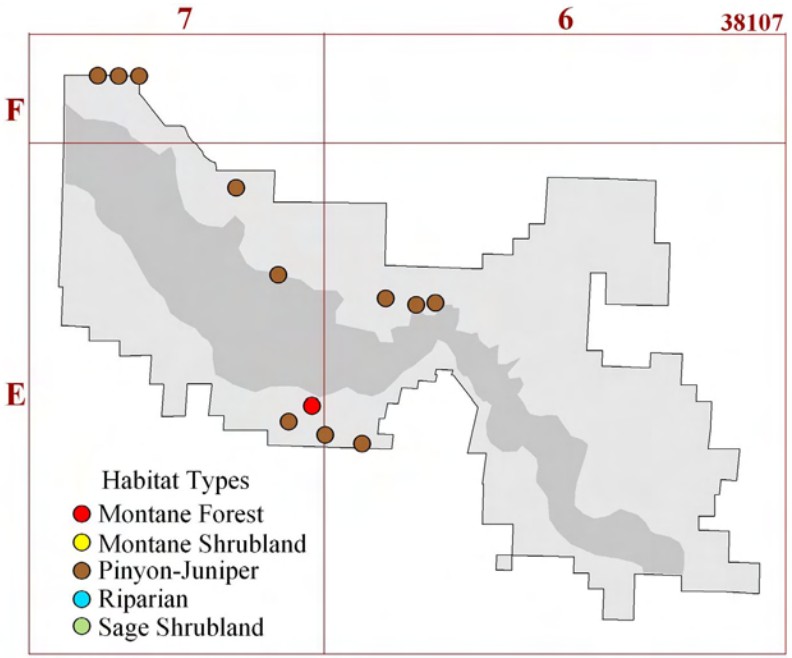
Distribution of Pinyon Jay Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



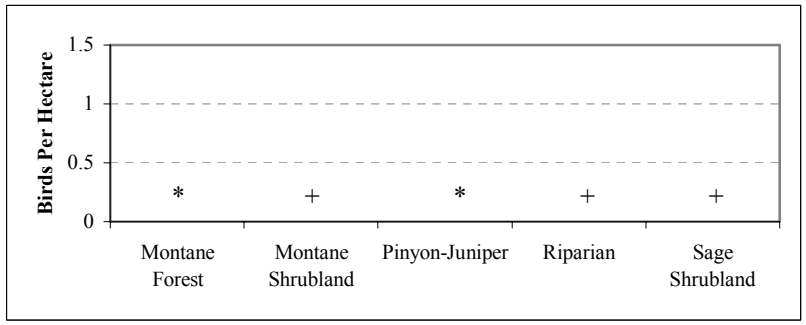
Density of Pinyon Jay among habitat types in Curecanti National recreation area. * Detections of Pinyon Jay were insufficient (<20) to calculate density in this habitat type. +Pinyon Jay was not detected in this habitat type.

Clark's Nutcracker

Clark's Nutcracker was detected in low numbers in Montane Forest (n = 1) and Pinyon-Juniper (n = 12) habitats.



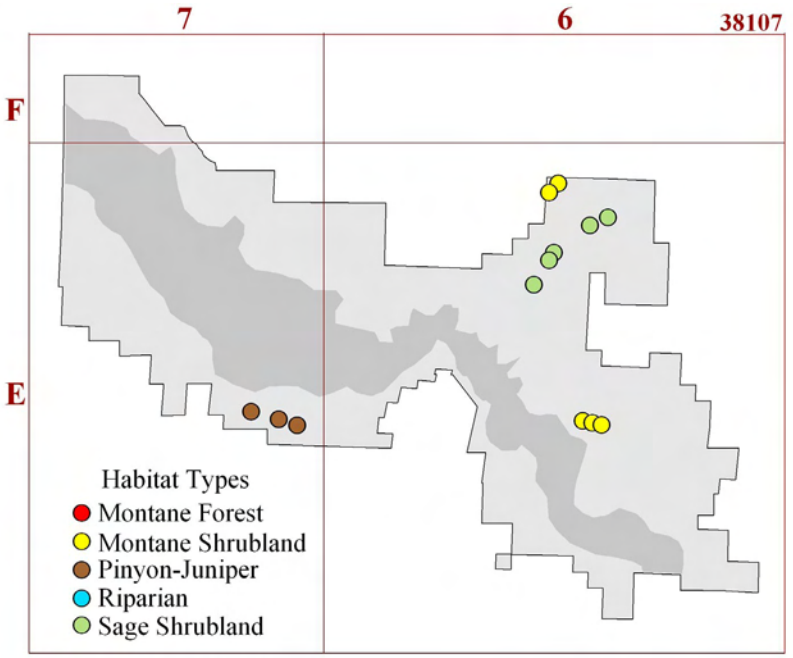
Distribution of Clark's Nutcracker Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



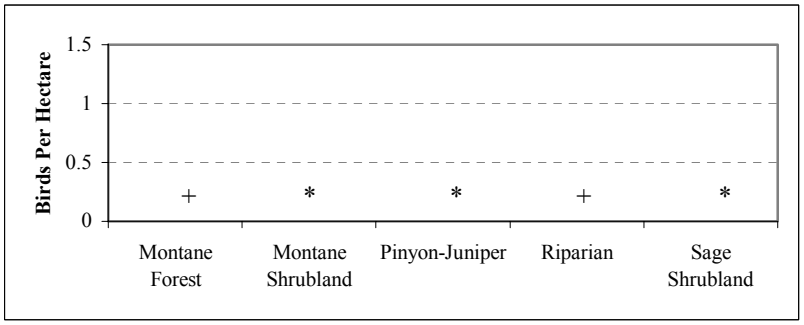
Density of Clark's Nutcracker among habitat types in Curecanti National recreation area. * Detections of Clark's Nutcracker were insufficient (<20) to calculate density in this habitat type. +Clark's Nutcracker was not detected in this habitat type.

Black-billed Magpie

Black-billed Magpie was detected in low numbers in Montane Shrubland (n = 5), Pinyon-Juniper (n = 6), and Sage Shrubland (n = 7) habitats.



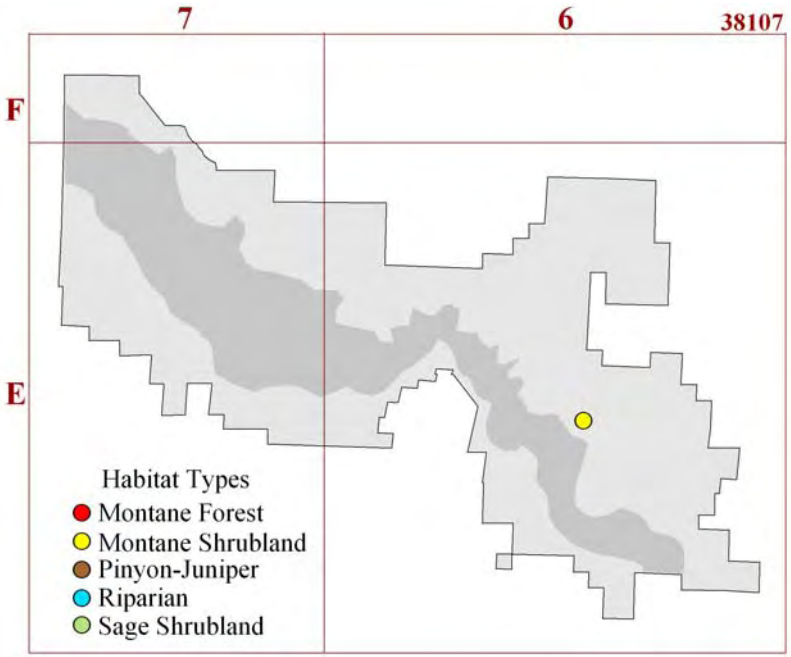
Distribution of Black-billed Magpie Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



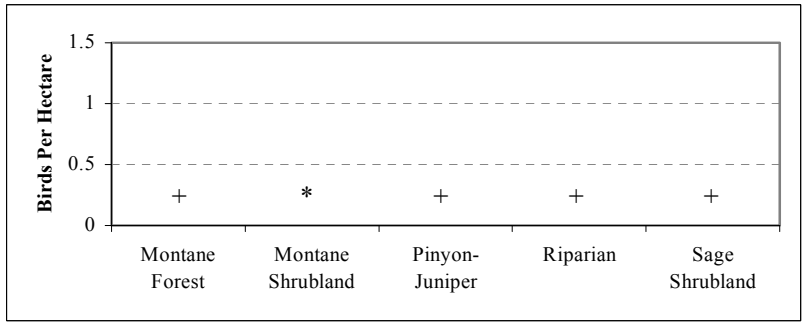
Density of Black-billed Magpie among habitat types in Curecanti National recreation area. * Detections of Black-billed Magpie were insufficient (<20) to calculate density in this habitat type. +Black-billed Magpie was not detected in this habitat type.

American Crow

American Crow was detected in low numbers in Montane Shrubland (n = 1) habitat.



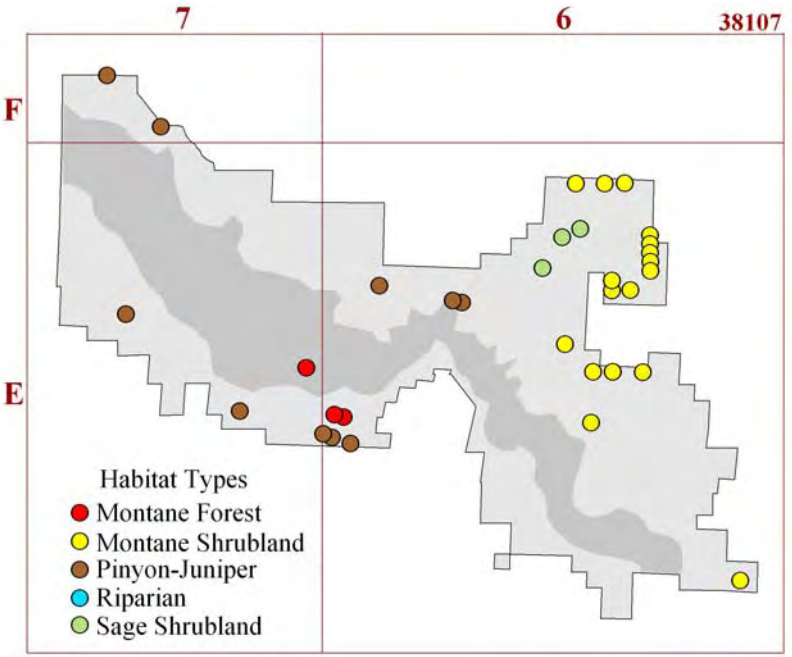
Distribution of American Crow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



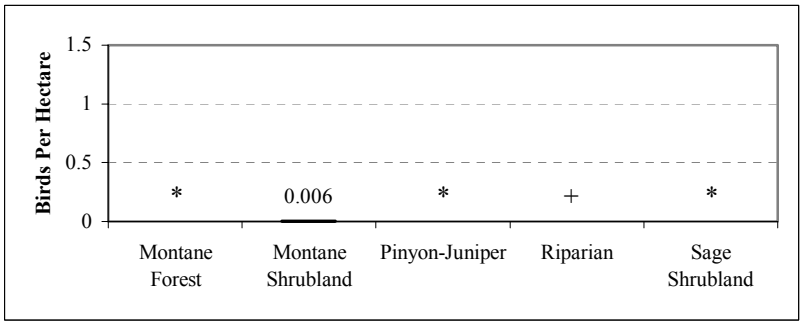
Density of American Crow among habitat types in Curecanti National recreation area. * Detections of American Crow were insufficient (<20) to calculate density in this habitat type. +American Crow was not detected in this habitat type.

Common Raven

Detections of Common Raven were sufficient to calculate densities in Sage Shrubland (D = 0.006 birds per hectare) habitat. Common Raven was detected in low numbers in Montane Forest (n = 3), Pinyon Juniper (n = 10), and Sage Shrubland (n = 3) habitats.



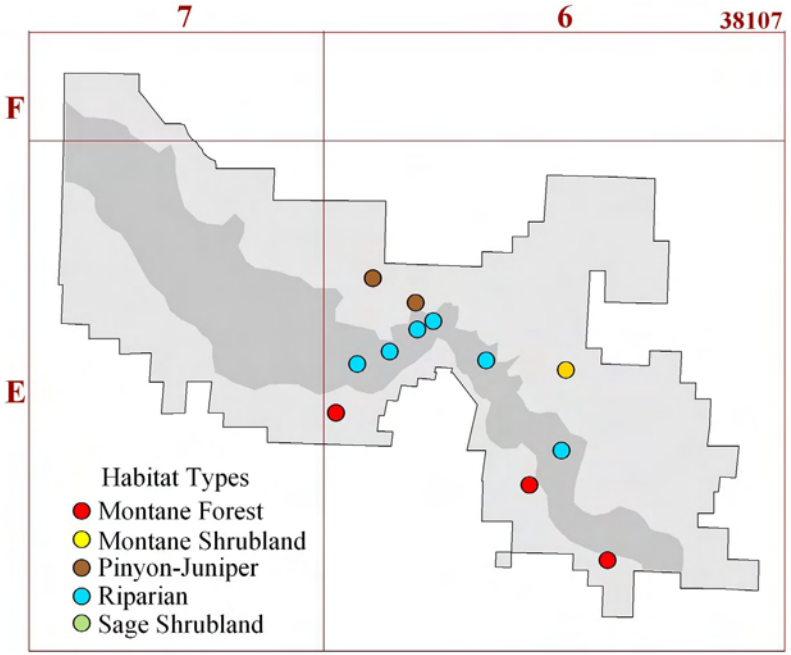
Distribution of Common Raven Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



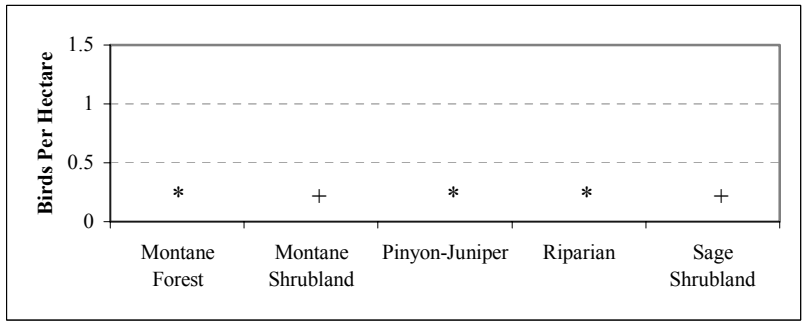
Density of Common Raven among habitat types in Curecanti National recreation area. * Detections of Common Raven were insufficient (<20) to calculate density in this habitat type. +Common Raven was not detected in this habitat type.

Violet-green Swallow

Violet-green Swallow was detected in low numbers in Montane Forest (n = 4), Montane Shrubland (n = 1), Pinyon-Juniper (n = 3), and Riparian (n = 7) habitats.



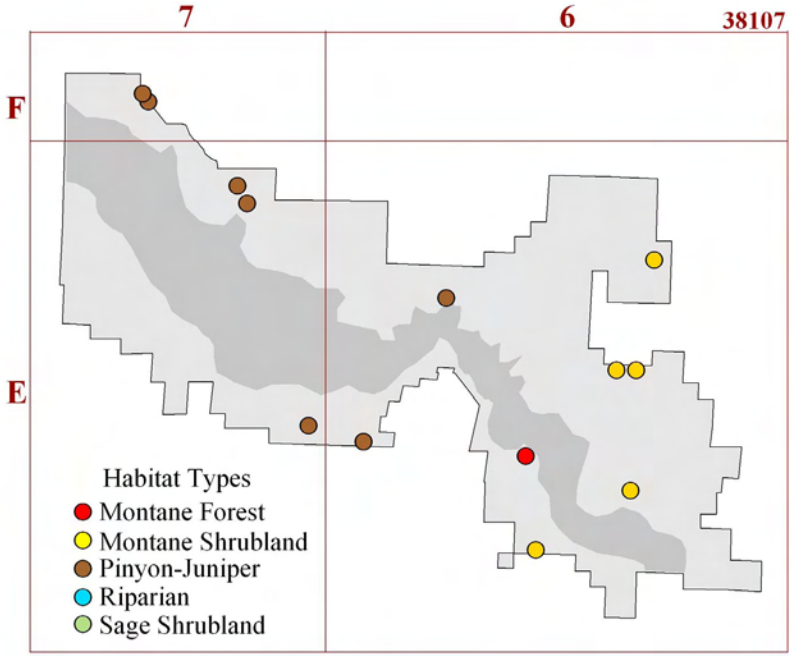
Distribution of Violet-green Swallow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



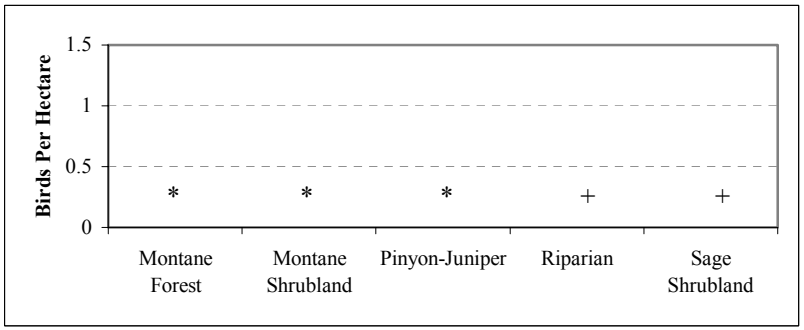
Density of Violet-green Swallow among habitat types in Curecanti National recreation area. * Detections of Violet-green Swallow were insufficient (<20) to calculate density in this habitat type. +Violet-green Swallow was not detected in this habitat type.

Black-capped Chickadee

Black-capped Chickadee was detected in low numbers in Montane Forest (n = 1), Montane Shrubland (n = 6), and Pinyon-Juniper (n = 8) habitats.



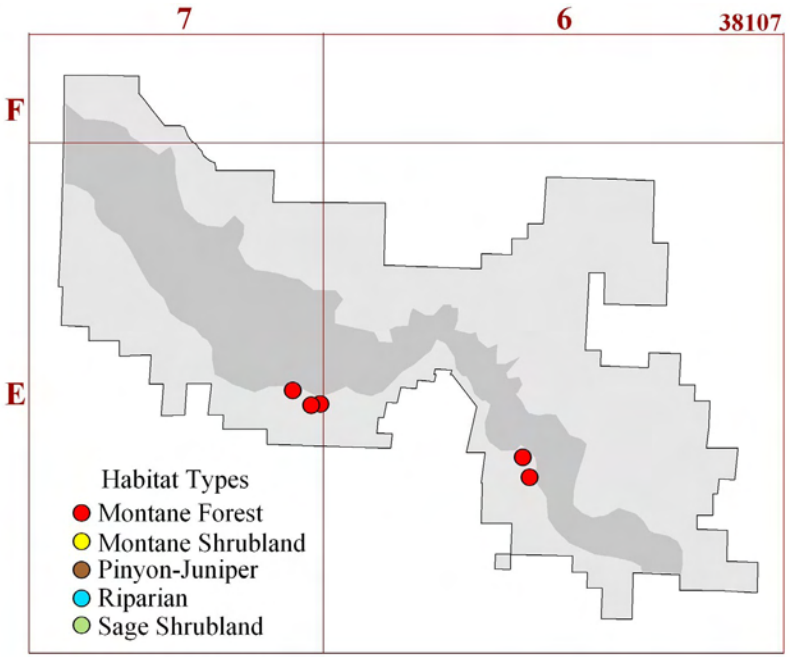
Distribution of Black-capped Chickadee Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



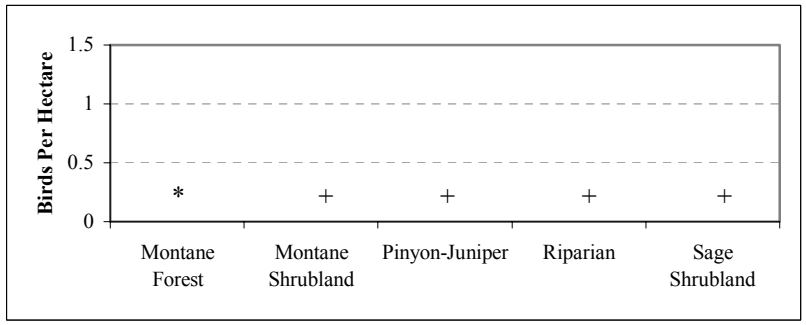
Density of Black-capped Chickadee among habitat types in Curecanti National recreation area. * Detections of Black-capped Chickadee were insufficient (<20) to calculate density in this habitat type. +Black-capped Chickadee was not detected in this habitat type.

Mountain Chickadee

Mountain Chickadee was detected in low numbers in Montane Forest (n = 5) habitat.



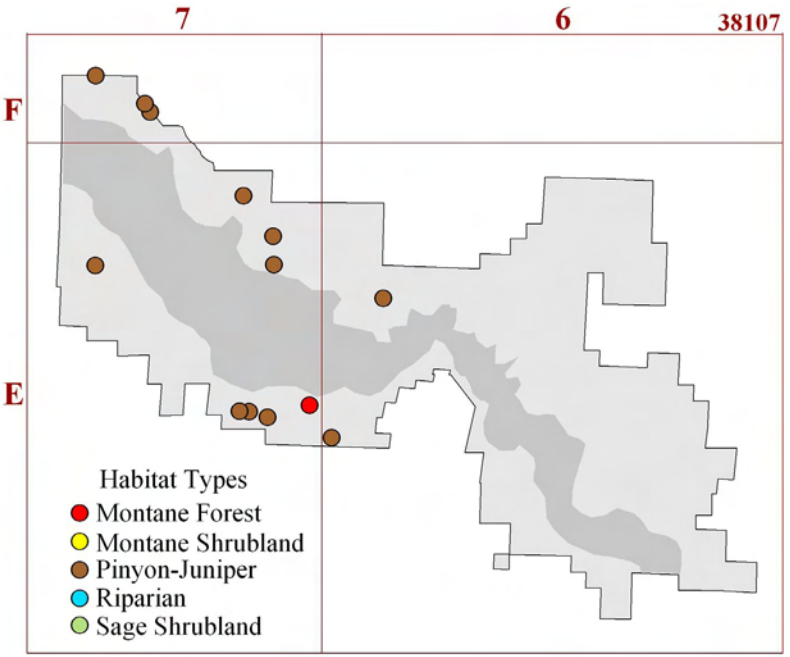
Distribution of Mountain Chickadee Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



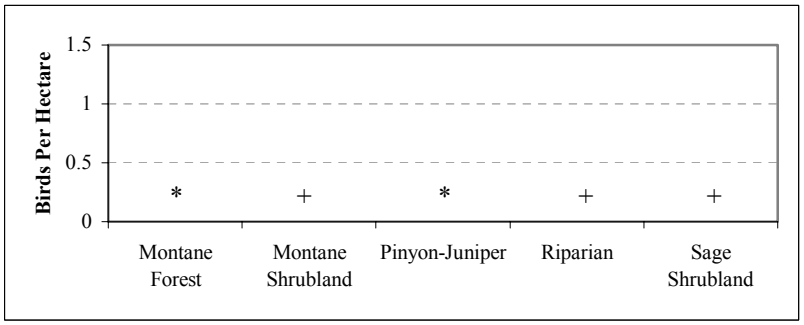
Density of Mountain Chickadee among habitat types in Curecanti National recreation area. * Detections of Mountain Chickadee were insufficient (<20) to calculate density in this habitat type. +Mountain Chickadee was not detected in this habitat type.

Juniper Titmouse

Juniper Titmouse was detected in low numbers in Montane Shrubland (n = 1) and Pinyon-Juniper (n = 12) habitats.



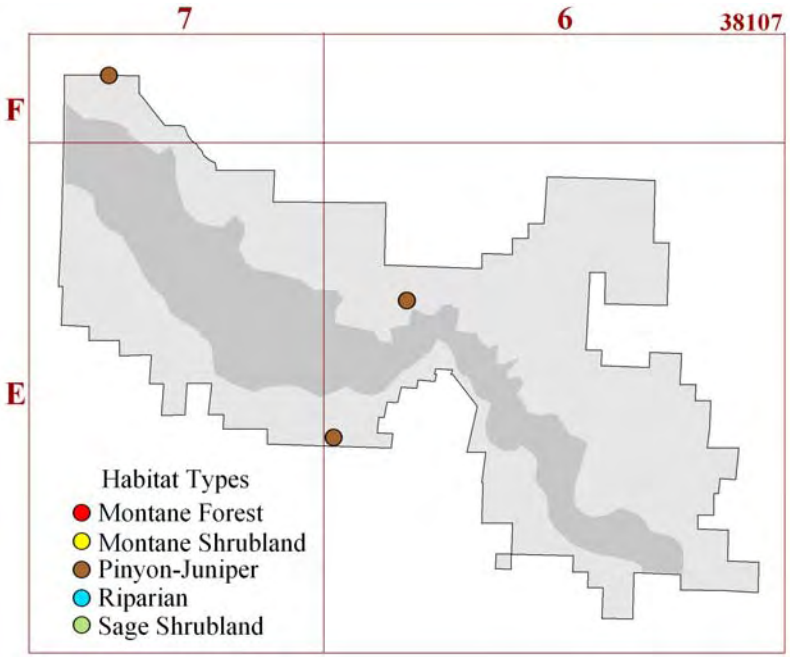
Distribution of Juniper Titmouse Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



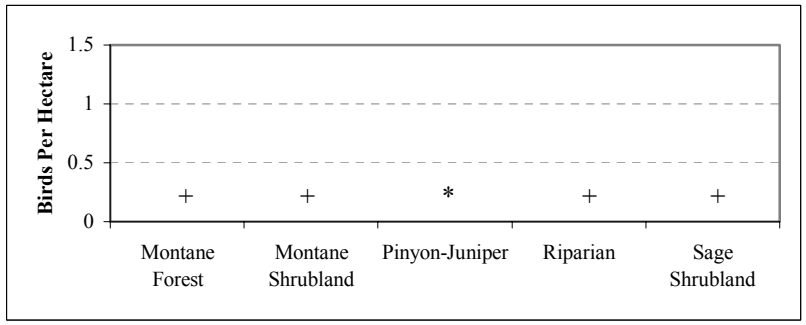
Density of Juniper Titmouse among habitat types in Curecanti National recreation area. * Detections of Juniper Titmouse were insufficient (<20) to calculate density in this habitat type. +Juniper Titmouse was not detected in this habitat type.

Bushtit

Bushtit was detected in low numbers in Pinyon-Juniper (n = 5) habitats.



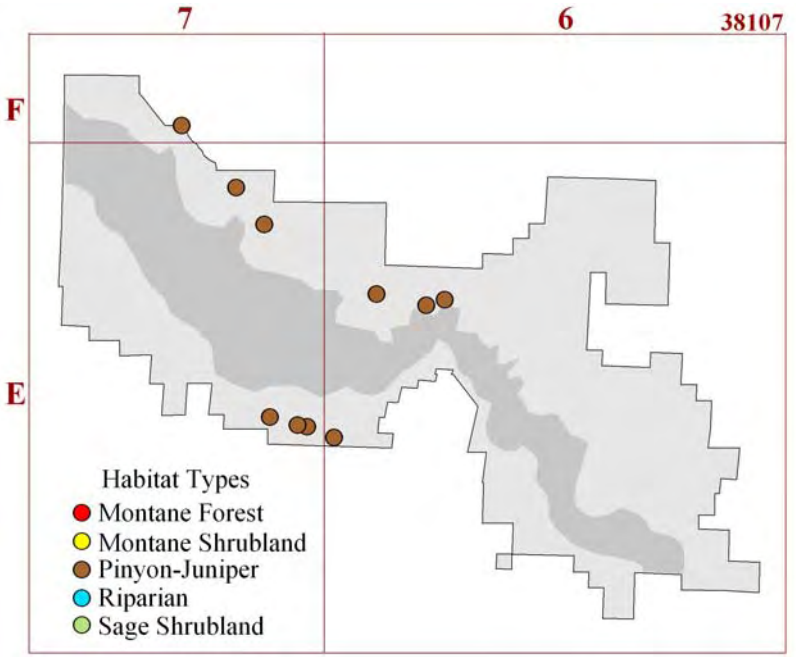
Distribution of Bushtit Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



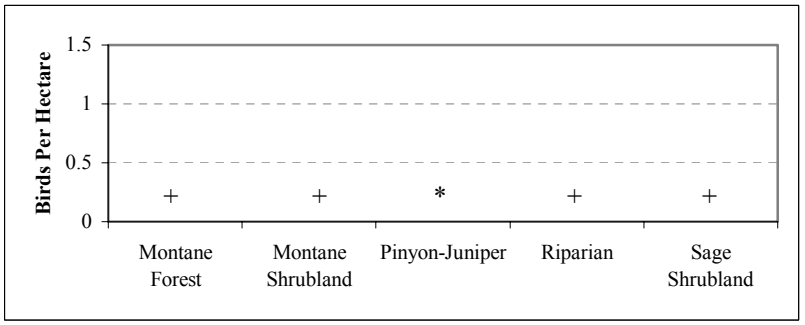
Density of Bushtit among habitat types in Curecanti National recreation area. * Detections of Bushtit were insufficient (<20) to calculate density in this habitat type. +Bushtit was not detected in this habitat type.

White-breasted Nuthatch

White-breasted Nuthatch was detected in low numbers in Pinyon-Juniper (n = 10) habitat.



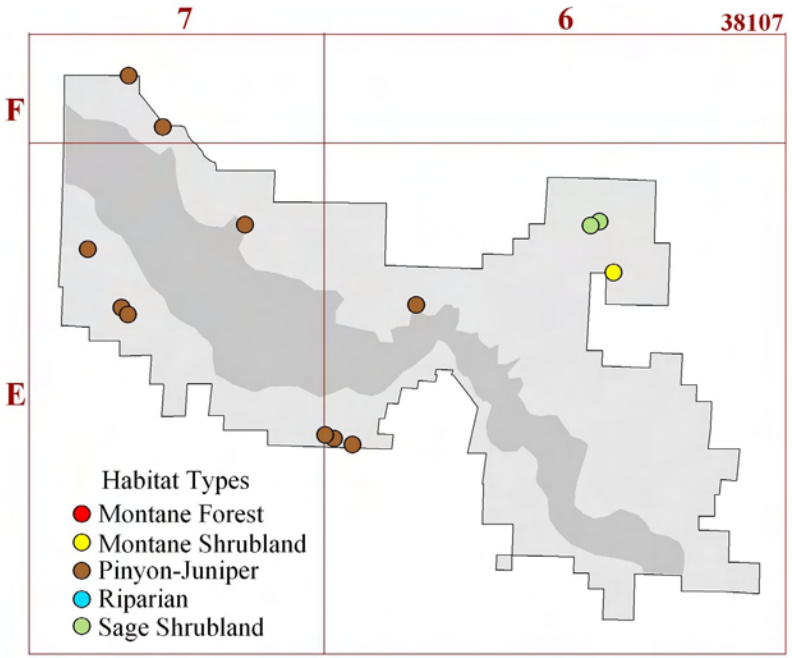
Distribution of White-breasted Nuthatch Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



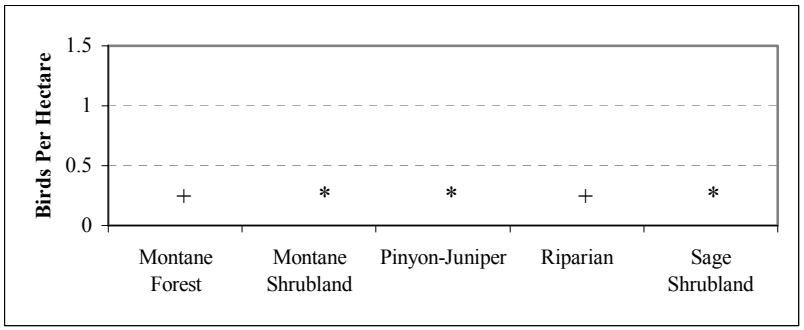
Density of White-breasted Nuthatch among habitat types in Curecanti National recreation area. * Detections of White-breasted Nuthatch were insufficient (<20) to calculate density in this habitat type. +White-breasted Nuthatch was not detected in this habitat type.

Rock Wren

Rock Wren was detected in low numbers in Montane Shrubland (n = 2), Pinyon-Juniper (n = 11), and Sage Shrubland (n = 3) habitats.



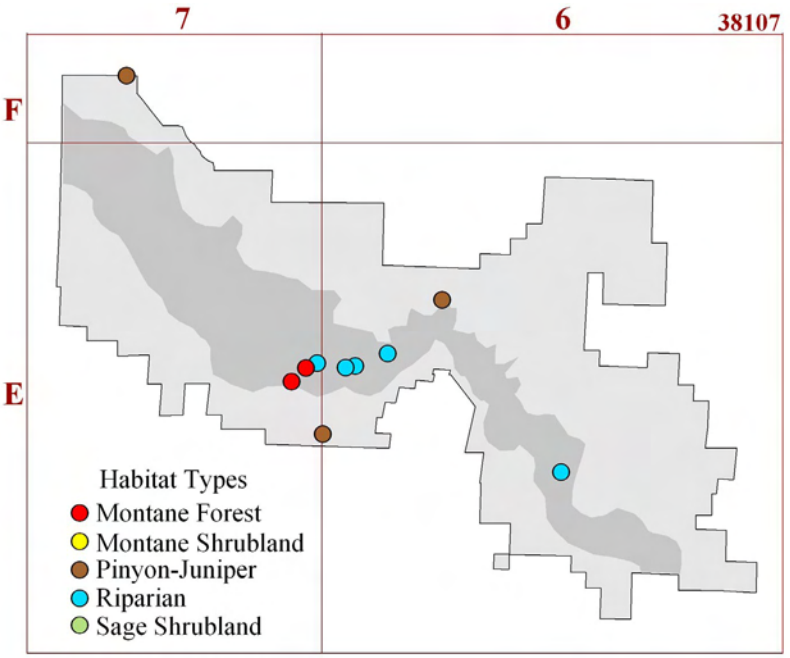
Distribution of Rock Wren Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



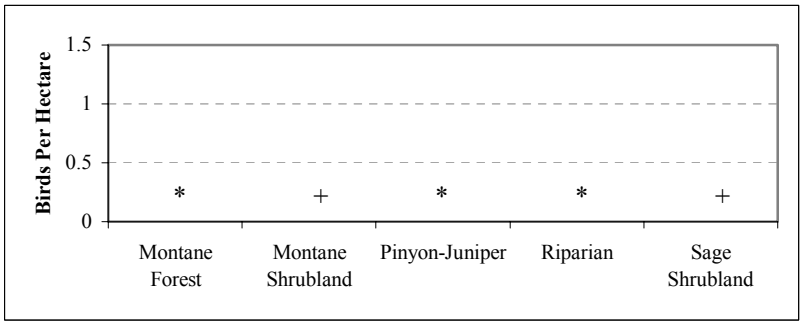
Density of Rock Wren among habitat types in Curecanti National recreation area. * Detections of Rock Wren were insufficient (<20) to calculate density in this habitat type. +Rock Wren was not detected in this habitat type.

Canyon Wren

Canyon Wren was detected in low numbers in Montane Forest (n = 2), Pinyon-Juniper (n = 3), and Riparian (n = 5) habitats.



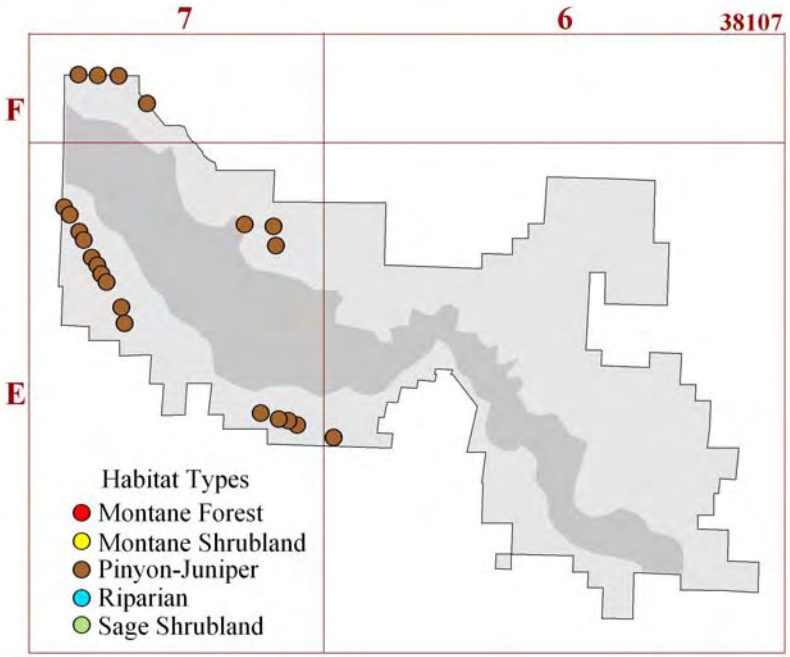
Distribution of Canyon Wren Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



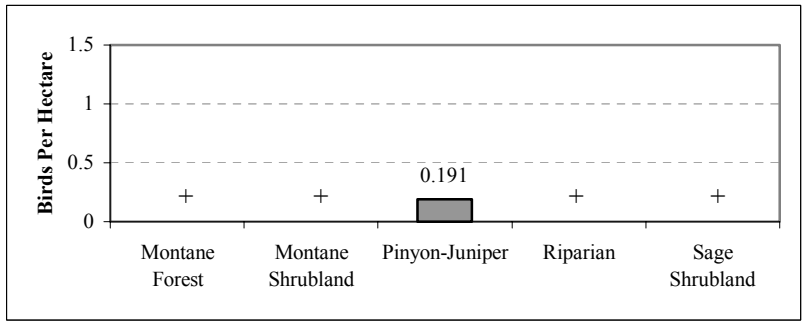
Density of Canyon Wren among habitat types in Curecanti National recreation area. * Detections of Canyon Wren were insufficient (<20) to calculate density in this habitat type. +Canyon Wren was not detected in this habitat type.

Bewick's Wren

Detections of Bewick's Wren were sufficient to calculate density in Pinyon-Juniper (D = 0.191 birds per hectare) habitat. Bewick's Wren was detected in no other habitat.



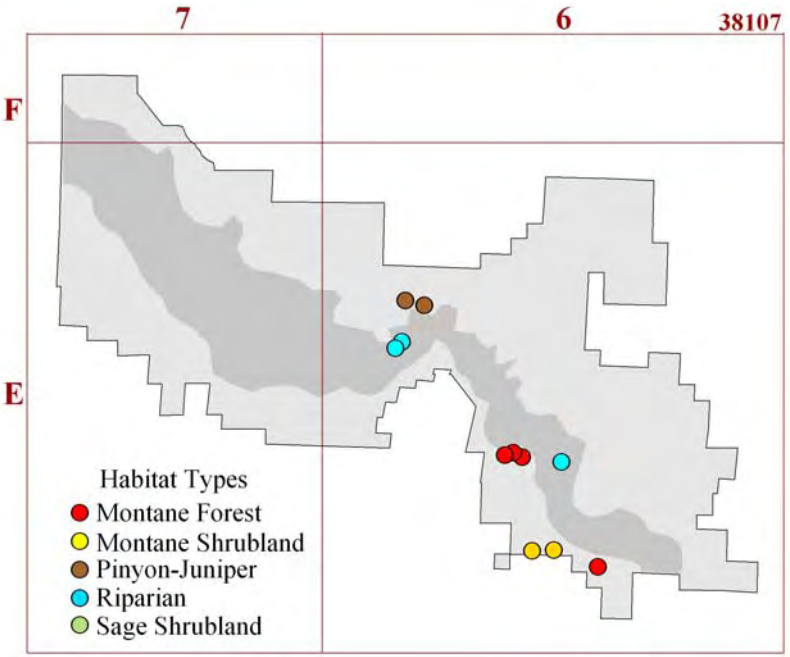
Distribution of Bewick's Wren Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



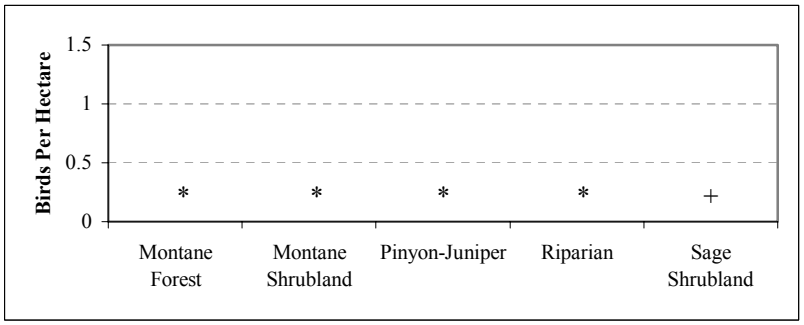
Density of Bewick's Wren among habitat types in Curecanti National recreation area. * Detections of Bewick's Wren were insufficient (<20) to calculate density in this habitat type. +Bewick's Wren was not detected in this habitat type.

House Wren

House Wren was detected in low numbers in Montane Forest (n = 5), Montane Shrubland (n = 2), Pinyon-Juniper (n = 2), and Riparian (n = 4) habitats.



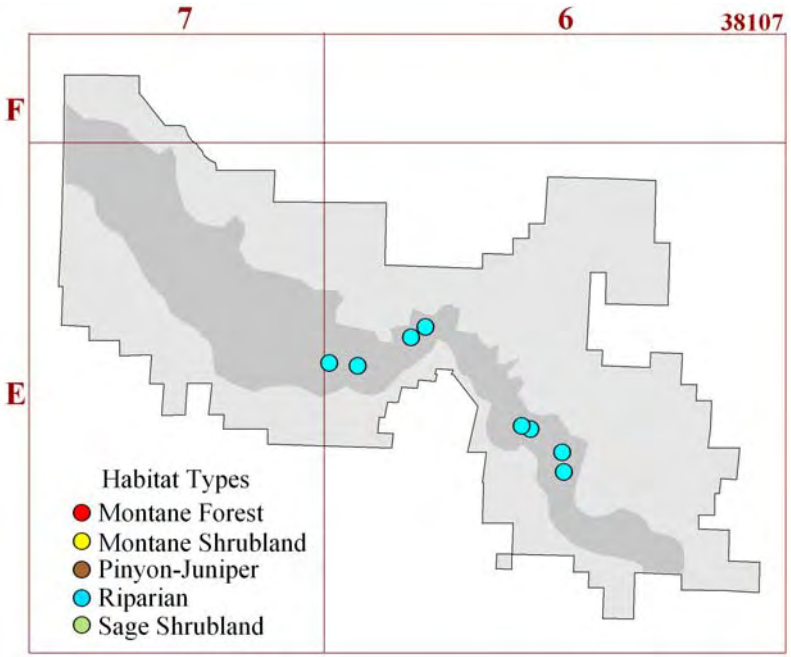
Distribution of House Wren Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



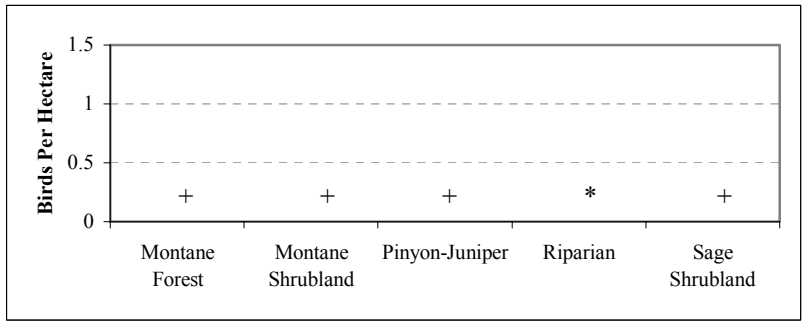
Density of House Wren among habitat types in Curecanti National recreation area. * Detections of House Wren were insufficient (<20) to calculate density in this habitat type. +House Wren was not detected in this habitat type.

American Dipper

American Dipper was detected in low numbers in Riparian (n = 13) habitat.



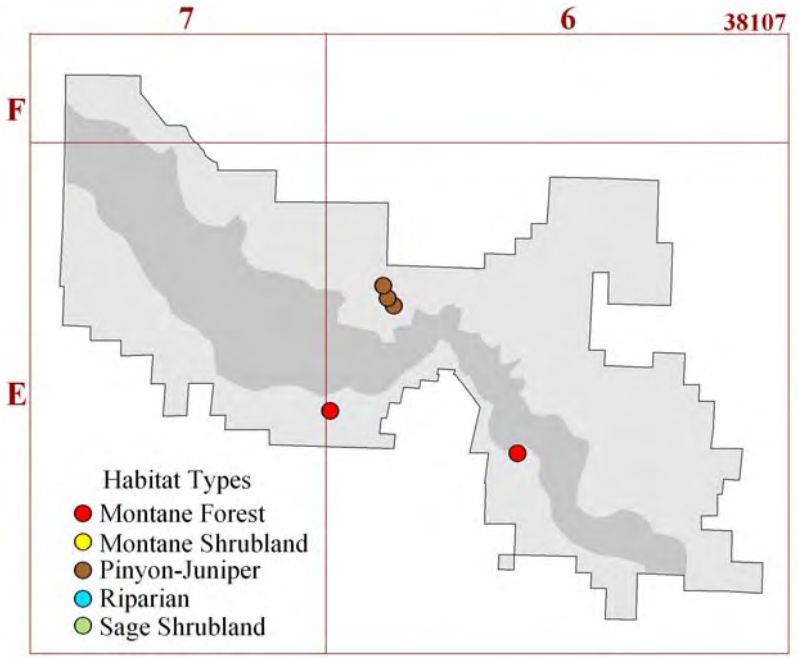
Distribution of American Dipper Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



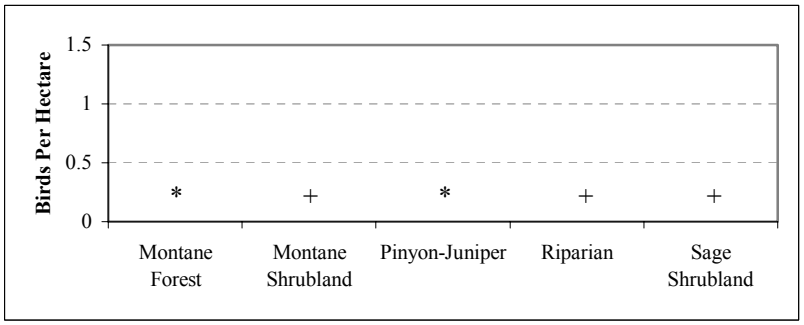
Density of American Dipper among habitat types in Curecanti National recreation area. * Detections of American Dipper were insufficient (<20) to calculate density in this habitat type. +American Dipper was not detected in this habitat type.

Ruby-crowned Kinglet

Ruby-crowned Kinglet was detected in low numbers in Montane Forest (n = 2) and Pinyon-Juniper (n = 3) habitats.



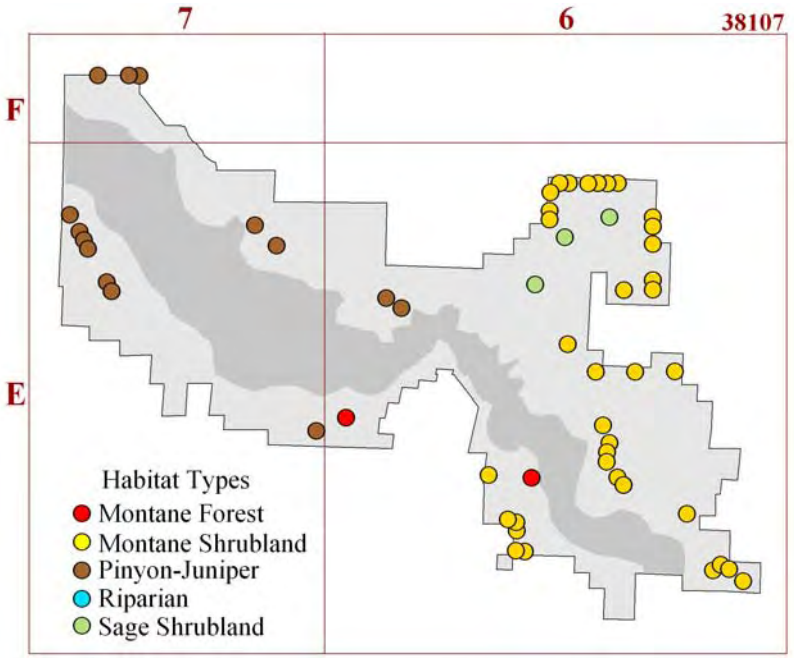
Distribution of Ruby-crowned Kinglet Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



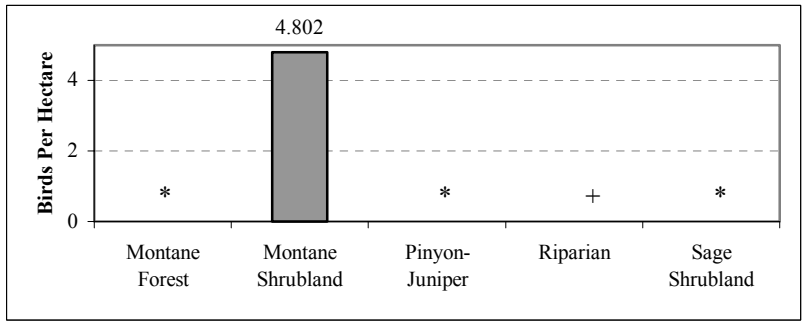
Density of Ruby-crowned Kinglet among habitat types in Curecanti National recreation area. * Detections of Ruby-crowned Kinglet were insufficient (<20) to calculate density in this habitat type. +Ruby-crowned Kinglet was not detected in this habitat type.

Blue-gray Gnatcatcher

Detections of Blue-gray Gnatcatcher were sufficient to calculate density in Montane Shrubland (D = 4.802 birds per hectare) habitat. Blue-gray Gnatcatcher was detected in low numbers in Montane Forest (n = 3), Pinyon-Juniper (n = 16), and Sage Shrubland (n = 3) habitats.



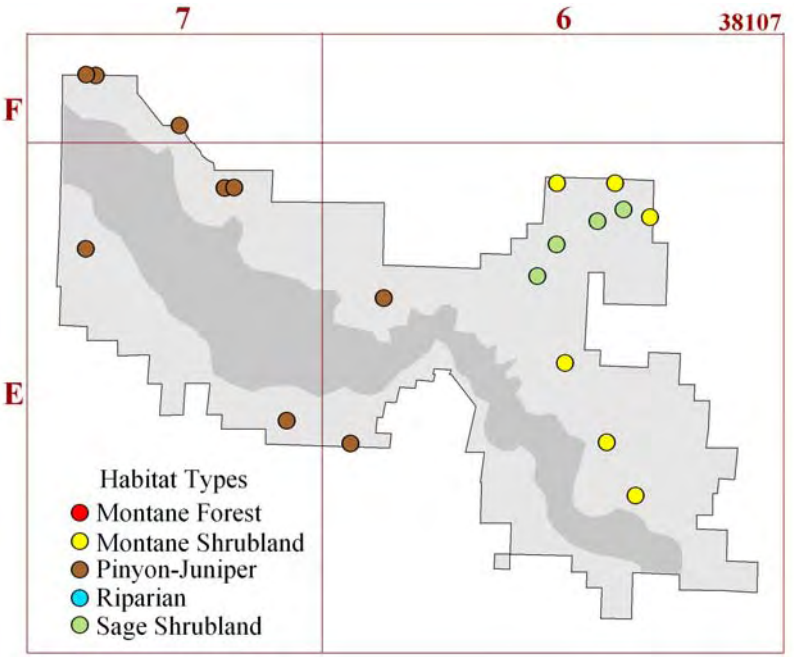
Distribution of Blue-gray Gnatcatcher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



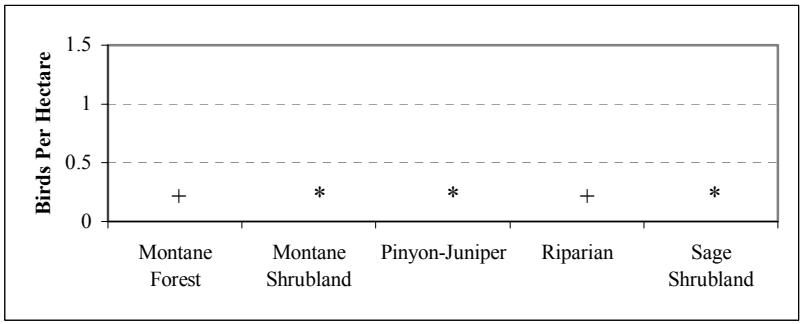
Density of Blue-gray Gnatcatcher among habitat types in Curecanti National recreation area. * Detections of Blue-gray Gnatcatcher were insufficient (<20) to calculate density in this habitat type. + Blue-gray Gnatcatcher was not detected in this habitat type.

Mountain Bluebird

Mountain Bluebird was detected in low numbers in Montane Shrubland (n = 8), Pinyon-Juniper (n = 14), and Sage Shrubland (n = 4) habitats.



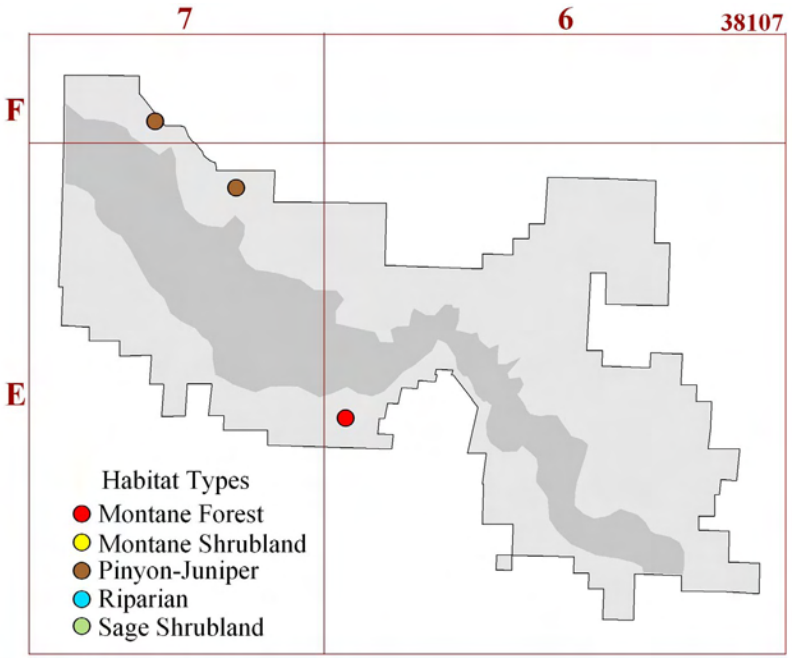
Distribution of Mountain Bluebird Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



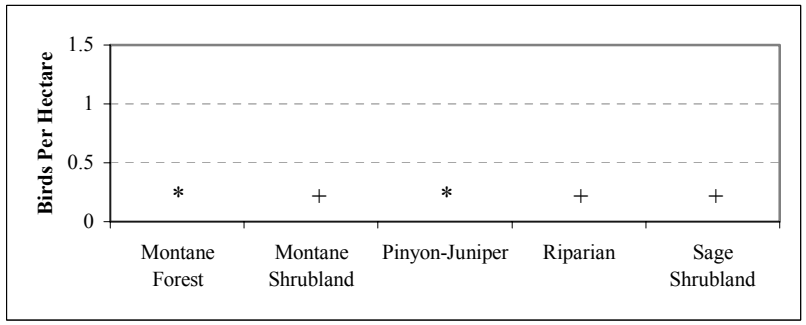
Density of Mountain Bluebird among habitat types in Curecanti National recreation area. * Detections of Mountain Bluebird were insufficient (<20) to calculate density in this habitat type. + Mountain Bluebird was not detected in this habitat type.

Townsend's Solitaire

Townsend's Solitaire was detected in low numbers in Montane Forest (n = 1) and Pinyon-Juniper (n = 3) habitats.



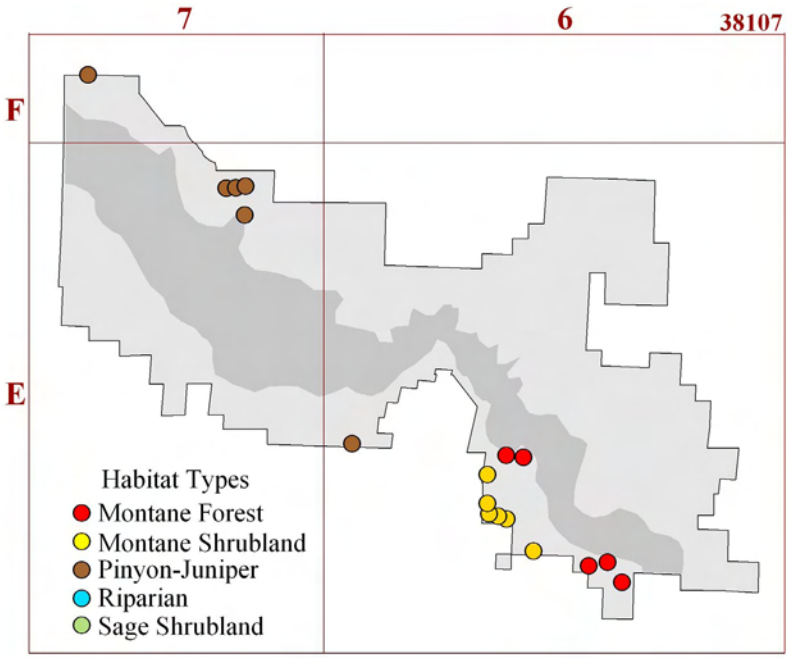
Distribution of Townsend's Solitaire Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



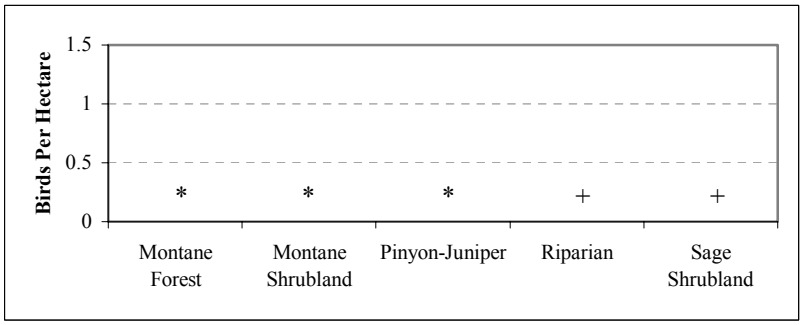
Density of Townsend's Solitaire among habitat types in Curecanti National recreation area. * Detections of Townsend's Solitaire were insufficient (<20) to calculate density in this habitat type. +Townsend's Solitaire was not detected in this habitat type.

Hermit Thrush

Hermit Thrush was detected in low numbers in Montane Forest (n = 5), Montane Shrubland (n = 6), and Pinyon-Juniper (n = 7) habitats.



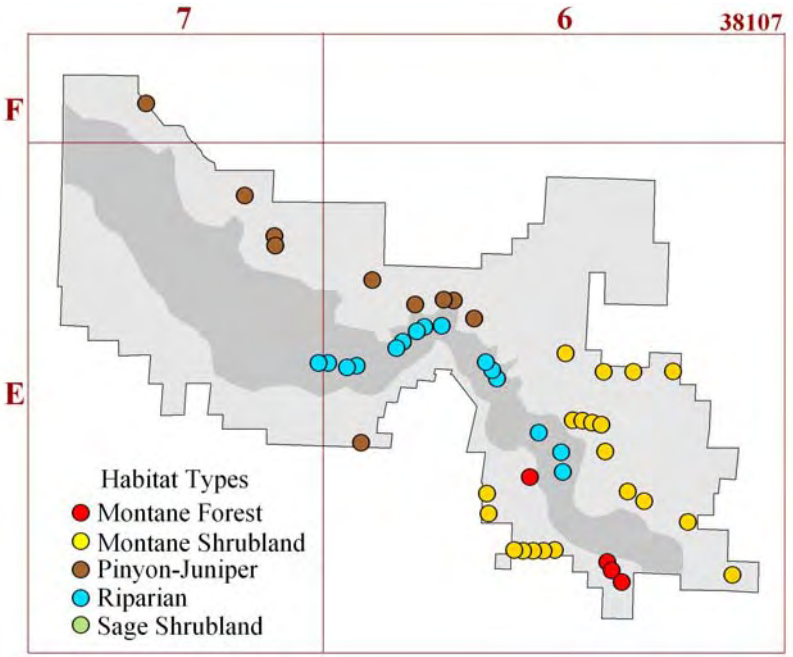
Distribution of Hermit Thrush Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



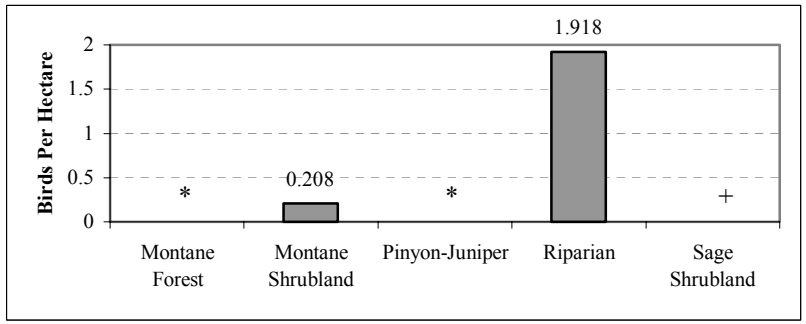
Density of Hermit Thrush among habitat types in Curecanti National recreation area. * Detections of Hermit Thrush were insufficient (<20) to calculate density in this habitat type. +Hermit Thrush was not detected in this habitat type.

American Robin

Detections of American Robin were sufficient to calculate densities in Montane Shrubland (D = 0.208 birds per hectare) and Riparian (D = 1.918 birds per hectare) habitats. American Robin was detected in low numbers in Montane Forest (n = 4), and Pinyon-Juniper (n = 18) habitats.



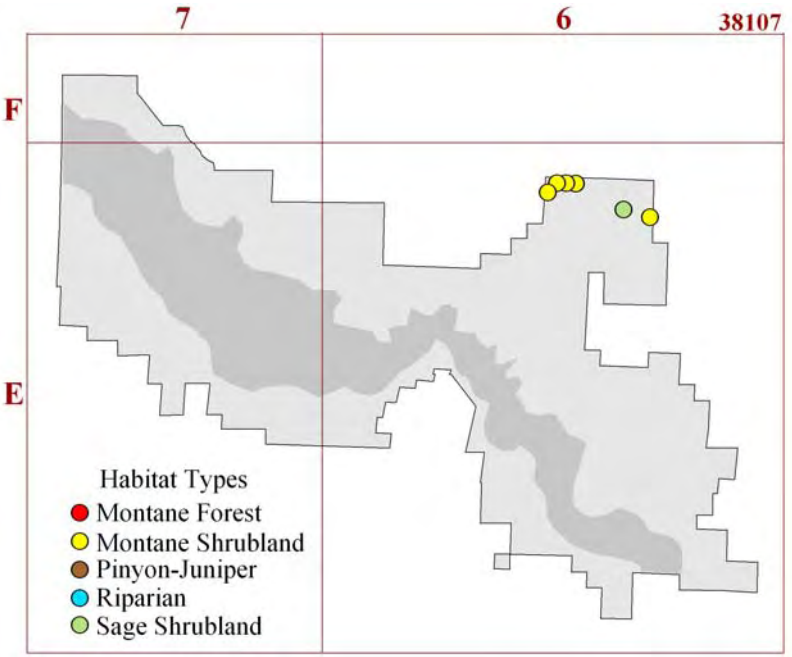
Distribution of American Robin Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



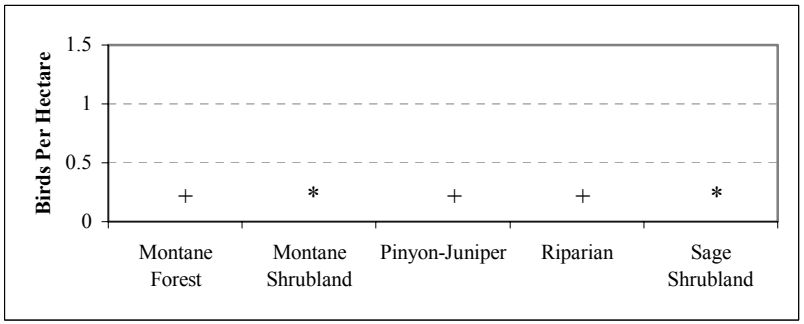
Density of American Robin among habitat types in Curecanti National recreation area. * Detections of American Robin were insufficient (<20) to calculate density in this habitat type. +American Robin was not detected in this habitat type.

Sage Thrasher

Sage Thrasher was detected in low numbers in Montane Shrubland (n = 6) and Sage (n = 1) habitats.



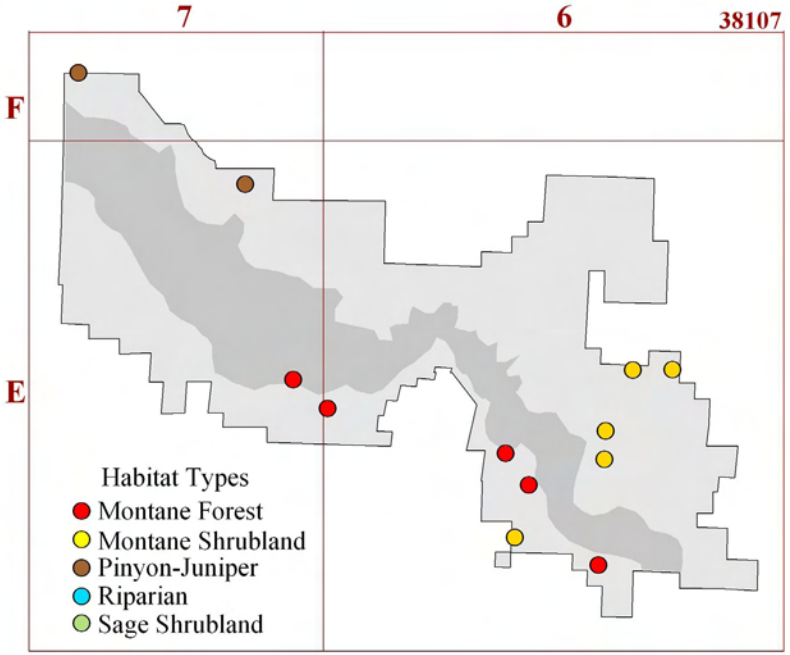
Distribution of Sage Thrasher Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



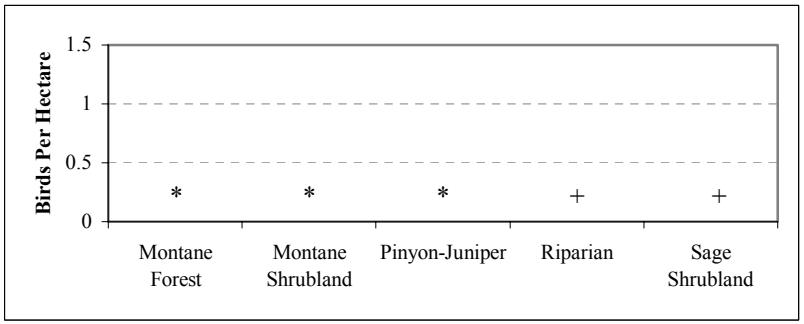
Density of Sage Thrasher among habitat types in Curecanti National recreation area. * Detections of Sage Thrasher were insufficient (<20) to calculate density in this habitat type. +Sage Thrasher was not detected in this habitat type.

Orange-crowned Warbler

Orange-crowned Warbler was detected in low numbers in Montane Forest (n = 5), Montane Shrubland (n = 9), and Pinyon-Juniper (n = 2) habitats.



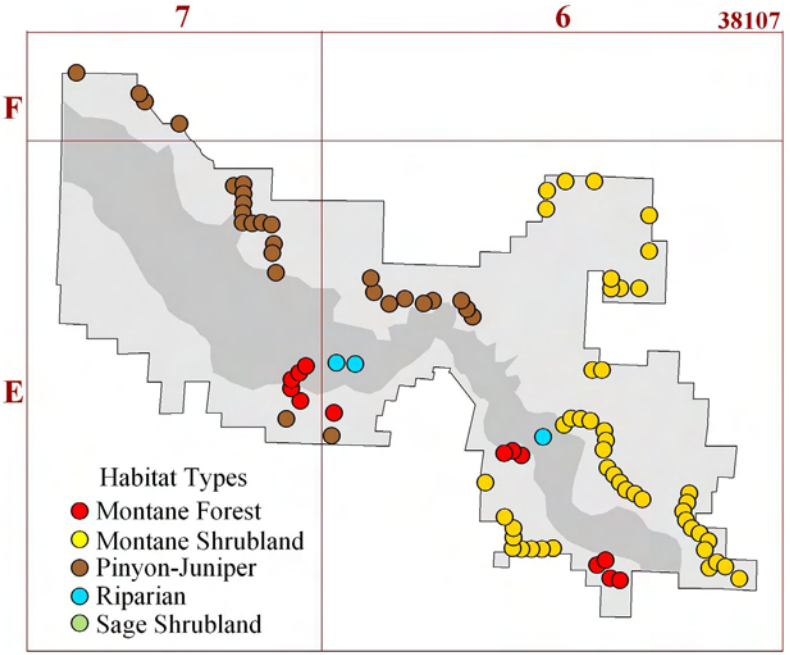
Distribution of Orange-crowned Warbler Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



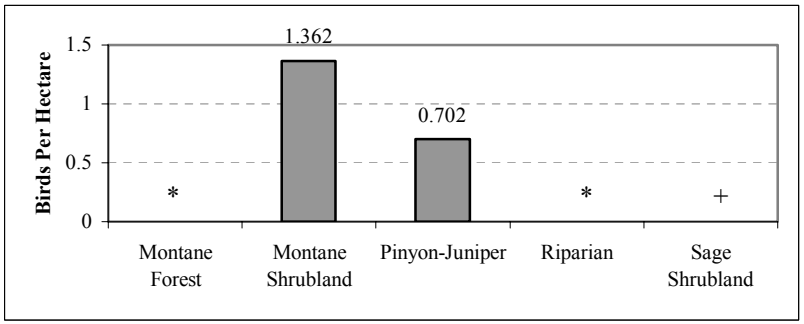
Density of Orange-crowned Warbler among habitat types in Curecanti National recreation area. * Detections of Orange-crowned Warbler were insufficient (<20) to calculate density in this habitat type. +Orange-crowned Warbler was not detected in this habitat type.

Virginia's Warbler

Detections of Virginia's Warbler were sufficient to calculate densities in Montane Shrubland (D = 1.362 birds per hectare) and Pinyon-Juniper (D = 0.702 birds per hectare) habitats. Virginia's Warbler was detected in low numbers in Montane Forest (n = 18) and Riparian (n = 3) habitats.



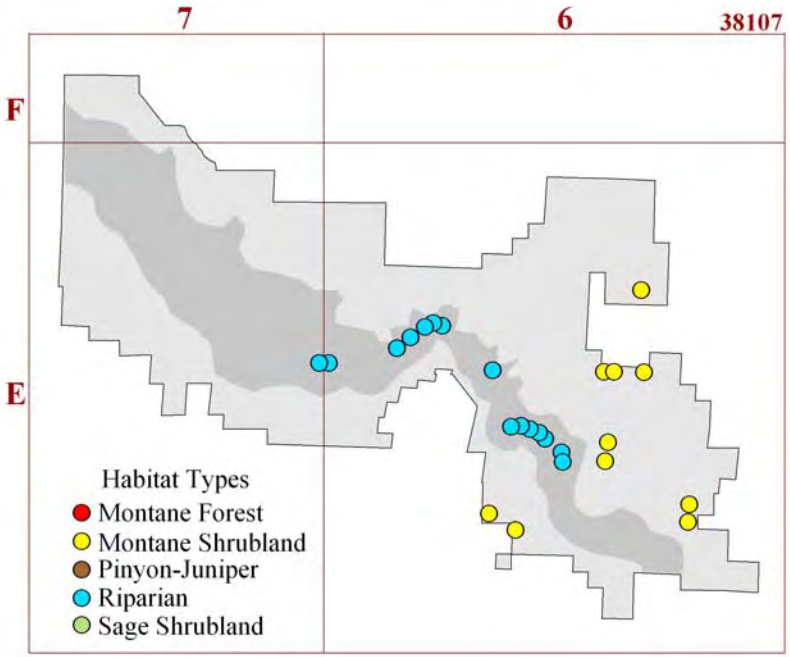
Distribution of Virginia's Warbler Swallow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



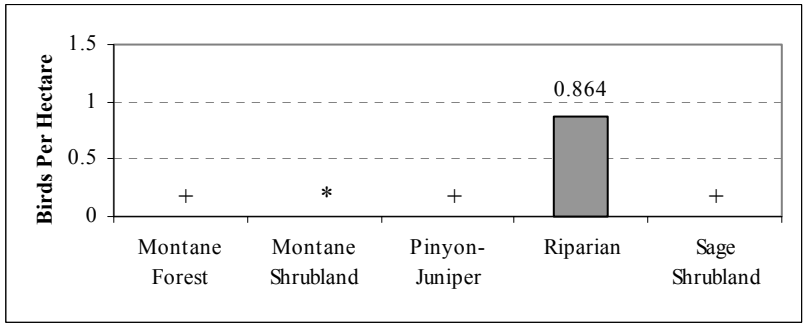
Density of Virginia's Warbler among habitat types in Curecanti National recreation area. * Detections of Virginia's Warbler were insufficient (<20) to calculate density in this habitat type. +Virginia's Warbler was not detected in this habitat type.

Yellow warbler

Detections of Yellow Warbler were sufficient to calculate density in Riparian (D = 0.864 birds per hectare). Yellow Warbler was detected in low numbers in Montane Shrubland (n = 11) habitat.



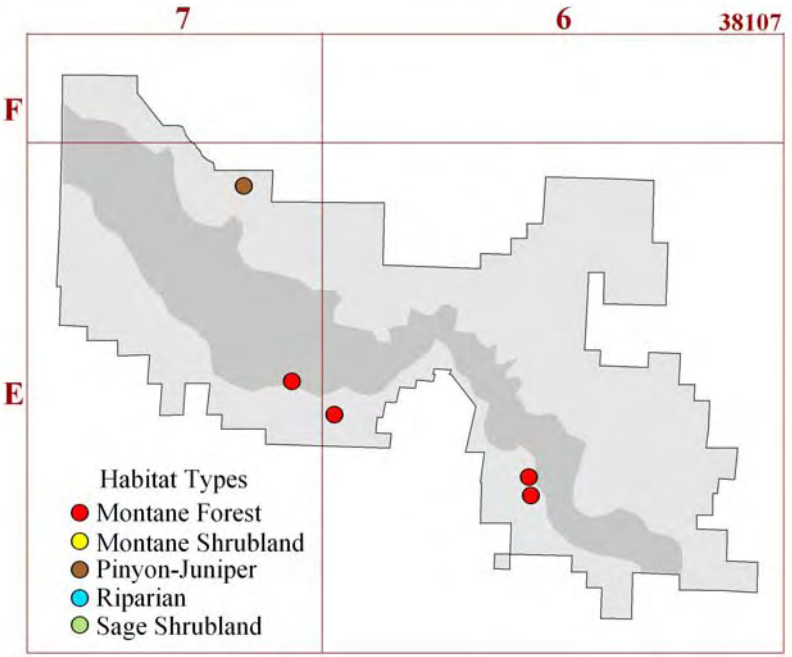
Distribution of Yellow Warbler Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



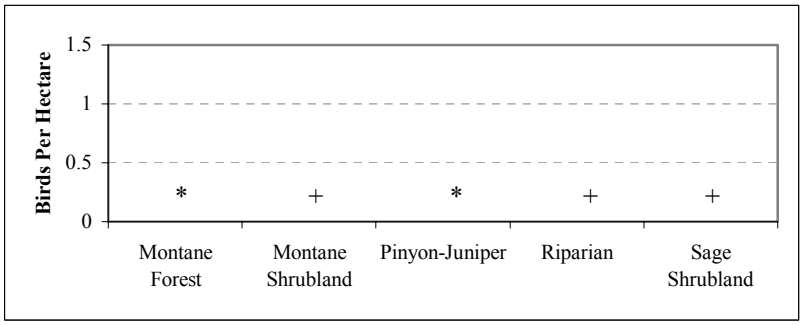
Density of Yellow Warbler among habitat types in Curecanti National recreation area. * Detections of Yellow Warbler were insufficient (<20) to calculate density in this habitat type. +Yellow Warbler was not detected in this habitat type.

Yellow-rumped (Audubon's) Warbler

Audubon's Warbler was detected in low numbers in Montane Forest (n = 4) and Pinyon-Juniper (n = 1) habitats.



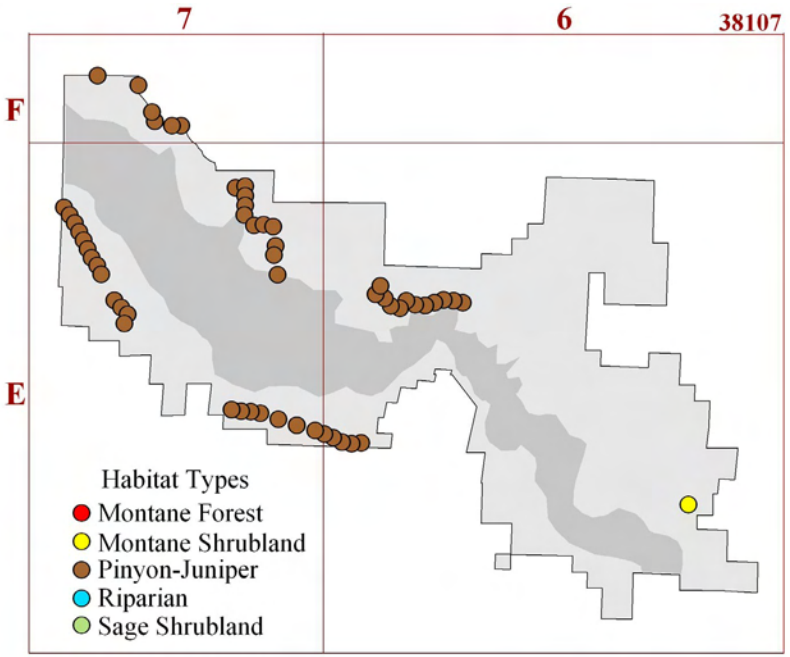
Distribution of Audubon's Warbler Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



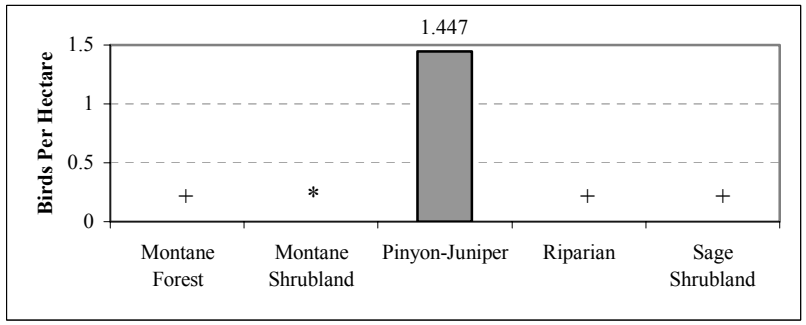
Density of Audubon's Warbler among habitat types in Curecanti National recreation area. * Detections of Audubon's Warbler were insufficient (<20) to calculate density in this habitat type. +Audubon's Warbler was not detected in this habitat type.

Black-throated Gray Warbler

Detections of Black-throated Gray Warbler were sufficient to calculate density in Pinyon-Juniper (D = 1.447 birds per hectare) habitat. Black-throated Gray Warbler was detected in low numbers in Montane Shrubland (n = 1) habitat.



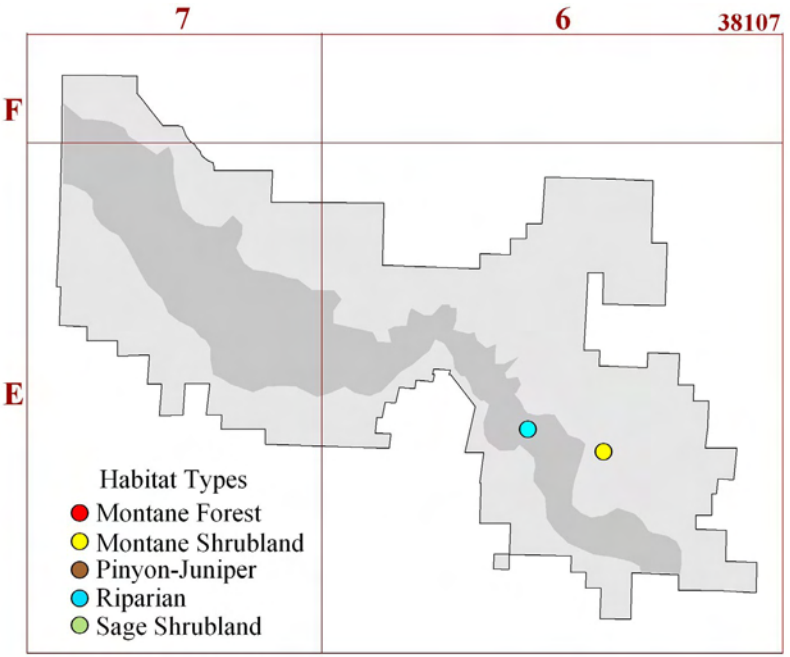
Distribution of Black-throated Gray Warbler Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



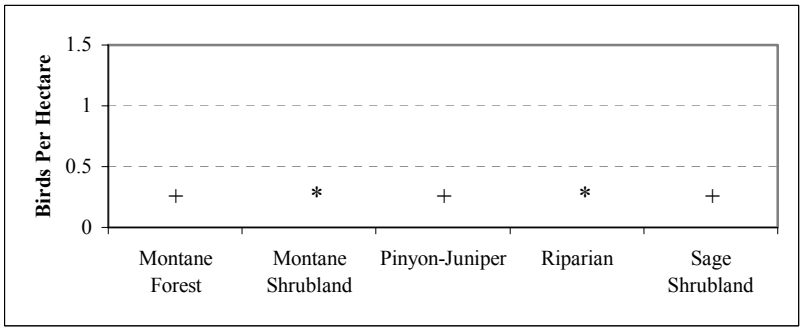
Density of Black-throated Gray Warbler among habitat types in Curecanti National recreation area. * Detections of Black-throated Gray Warbler were insufficient (<20) to calculate density in this habitat type. +Black-throated Gray Warbler was not detected in this habitat type.

MacGillivray's Warbler

MacGillivray's Warbler was detected in low numbers in Montane Shrubland (n = 1) and Riparian (n = 1) habitat.



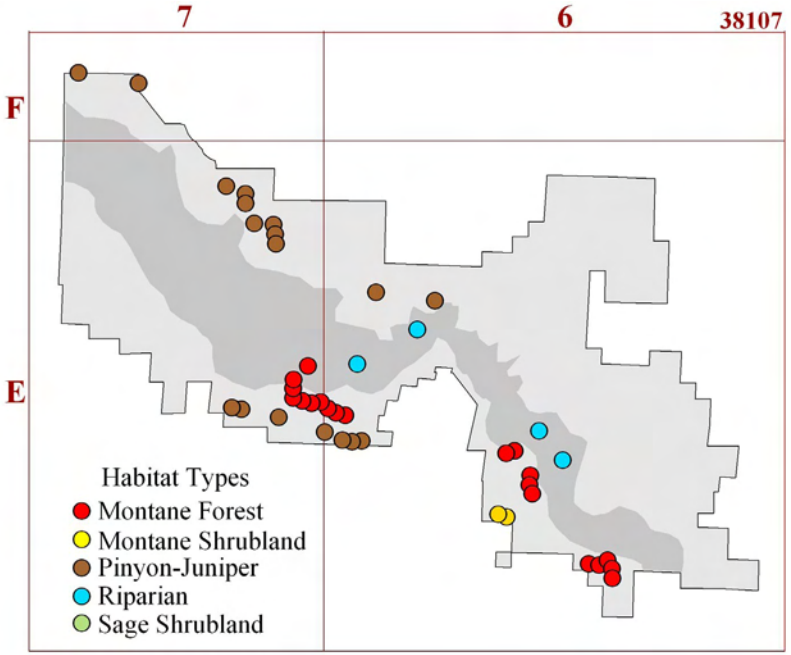
Distribution of Macgillivray's Warbler Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



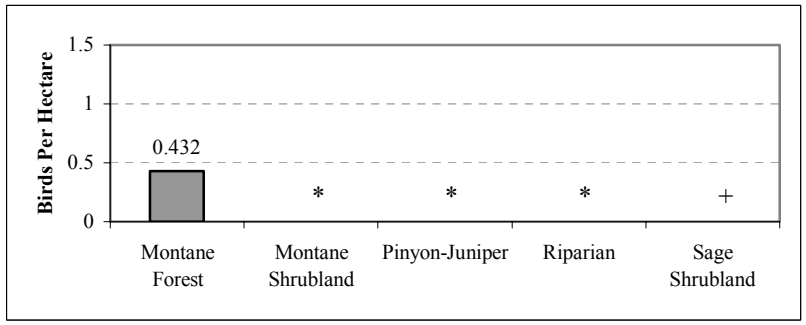
Density of MacGillivray's Warbler among habitat types in Curecanti National recreation area. * Detections of MacGillivray's Warbler were insufficient (<20) to calculate density in this habitat type. +MacGillivray's Warbler was not detected in this habitat type.

Western Tanager

Detections of Western Tanager were sufficient to calculate densities in Montane Forest (D = 0.432 birds per hectare) habitat. Western Tanager was detected in low numbers in Montane Shrubland (n = 2), Pinyon-Juniper (n = 19), and Riparian (n = 4) habitats.



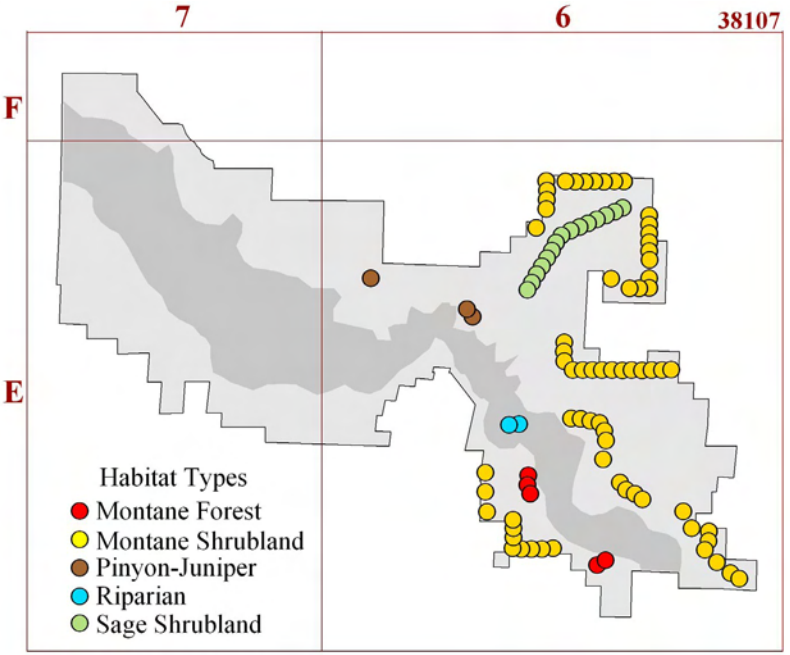
Distribution of Western Tanager Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



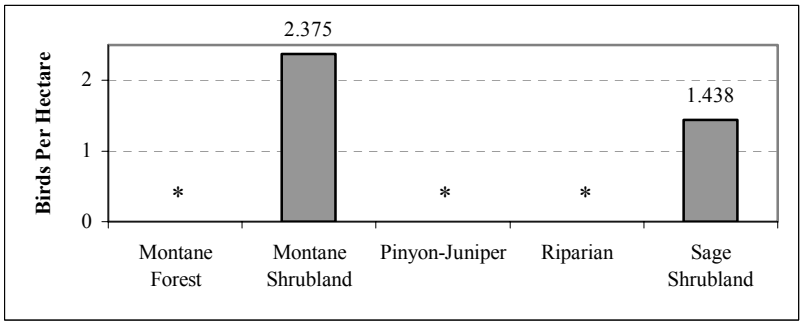
Density of Western Tanager among habitat types in Curecanti National recreation area. * Detections of Western Tanager were insufficient (<20) to calculate density in this habitat type. +Western Tanager was not detected in this habitat type.

Green-tailed Towhee

Detections of Green-tailed Towhee were sufficient to calculate density in Montane Shrubland (D = 2.375 birds per hectare) and Sage Shrubland (D = 1.438 birds per hectare) habitats. Green-tailed Towhee was detected in low numbers in Montane Forest (n = 7), Pinyon-Juniper (n = 5), and Riparian (n = 2) habitats.



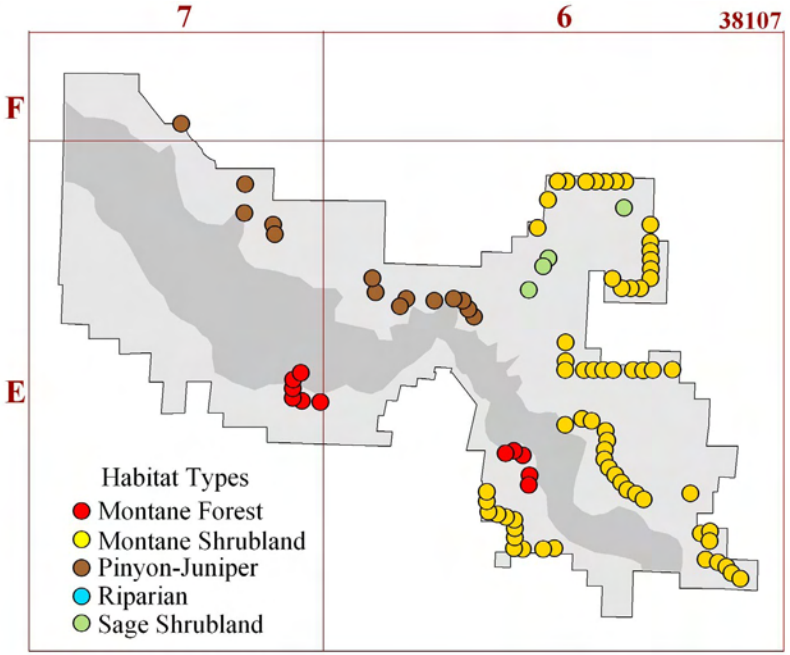
Distribution of Green-tailed Towhee Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



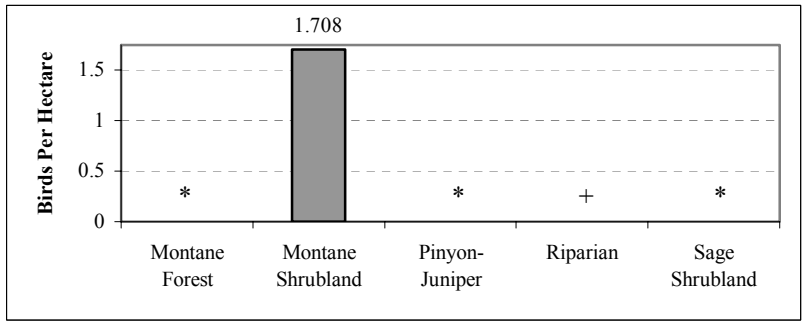
Density of Green-tailed Towhee among habitat types in Curecanti National recreation area. * Detections of Green-tailed Towhee were insufficient (<20) to calculate density in this habitat type. +Green-tailed Towhee was not detected in this habitat type.

Spotted Towhee

Detections of Spotted Towhee were sufficient to calculate densities in Montane Shrubland (D = 1.708 birds per hectare) habitat. Spotted Towhee was detected in low numbers in Montane Forest (n = 13), Pinyon-Juniper (n = 17), and Sage Shrubland (n = 7) habitats.



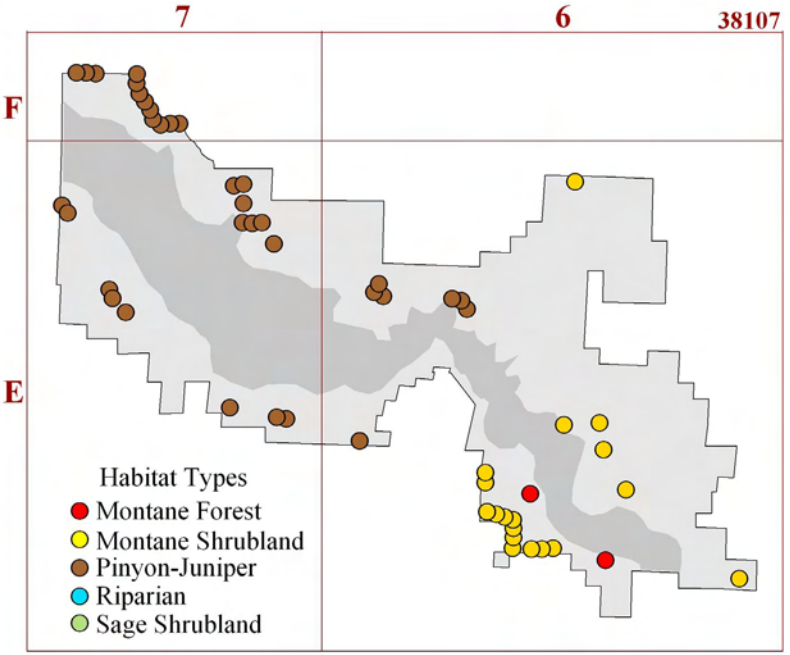
Distribution of Spotted Towhee Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



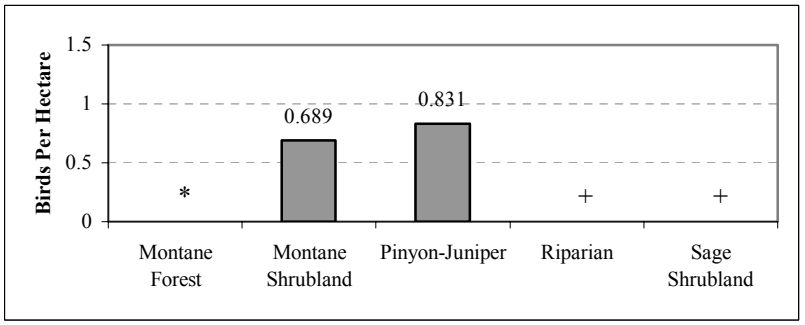
Density of Spotted Towhee among habitat types in Curecanti National recreation area. * Detections of Spotted Towhee were insufficient (<20) to calculate density in this habitat type. +Spotted Towhee was not detected in this habitat type.

Chipping Sparrow

Detections of Chipping Sparrow were sufficient to calculate densities in Montane Shrubland (D = 0.689 birds per hectare) and Pinyon-Juniper (D = 0.831 birds per hecatre) habitats. Chipping Sparrow was detected in low numbers in Montane Forest (n = 2) habitat.



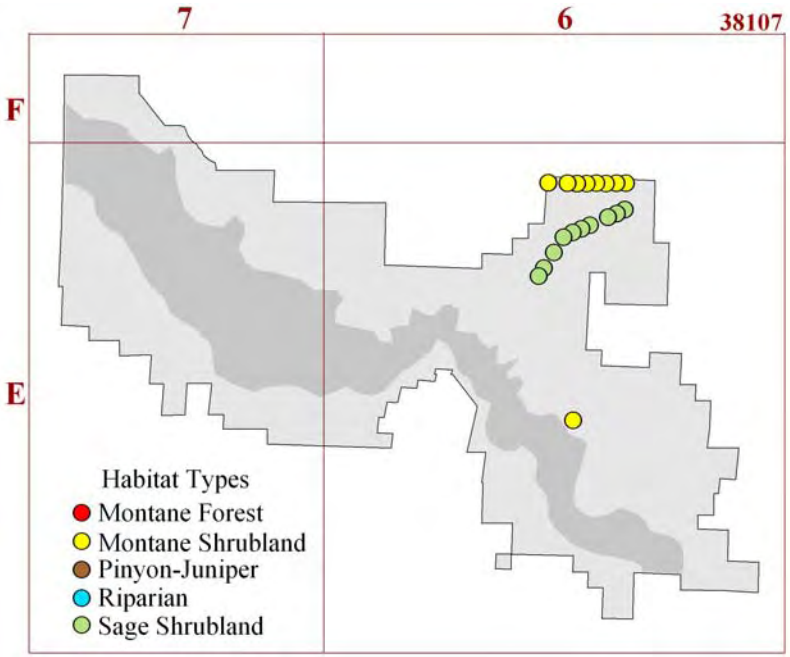
Distribution of Chipping Sparrow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



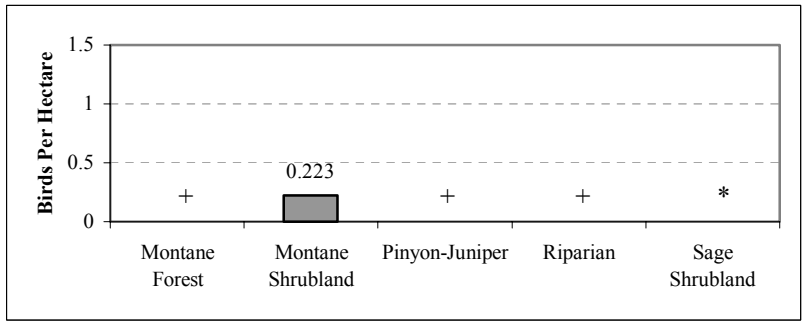
Density of Chipping Sparrow among habitat types in Curecanti National recreation area. * Detections of Chipping Sparrow were insufficient (<20) to calculate density in this habitat type. +Chipping Sparrow was not detected in this habitat type.

Brewer's Sparrow

Detections of Brewer's Sparrow were sufficient to calculate density in Montane Shrubland (D = 0.223 birds per hectare) habitat. Brewer's Sparrow was detected in low numbers in Sage Shrubland (n = 16) habitat.



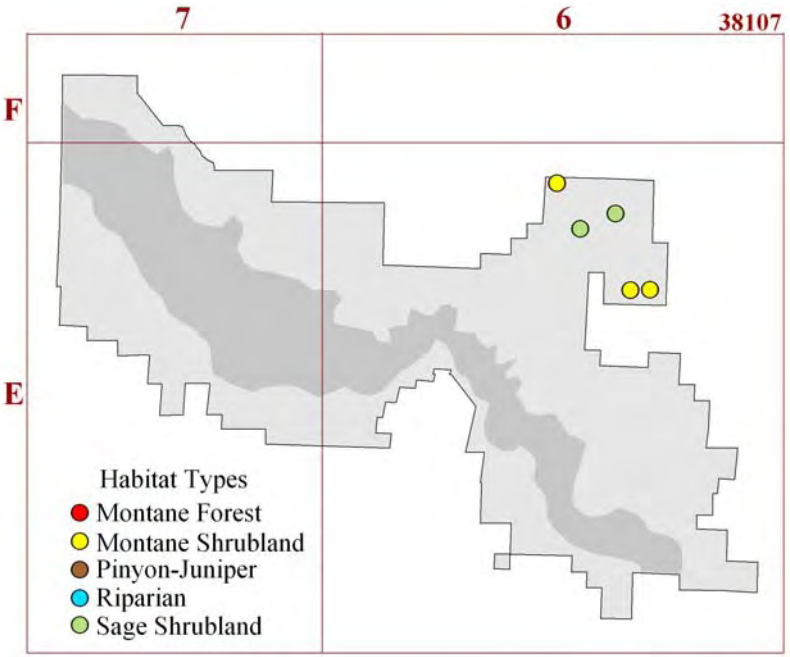
Distribution of Brewer's Sparrow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



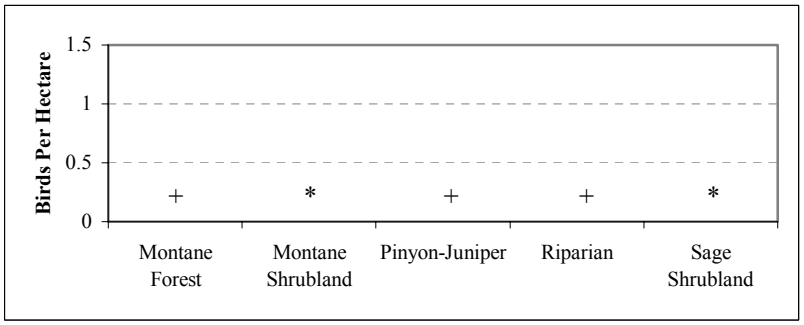
Density of Brewer's Sparrow among habitat types in Curecanti National recreation area. * Detections of Brewer's Sparrow were insufficient (<20) to calculate density in this habitat type. +Brewer's Sparrow was not detected in this habitat type.

Vesper Sparrow

Vesper Sparrow was detected in low numbers in Montane Shrubland (n = 6) and Sage Shrubland (n = 2) habitats.



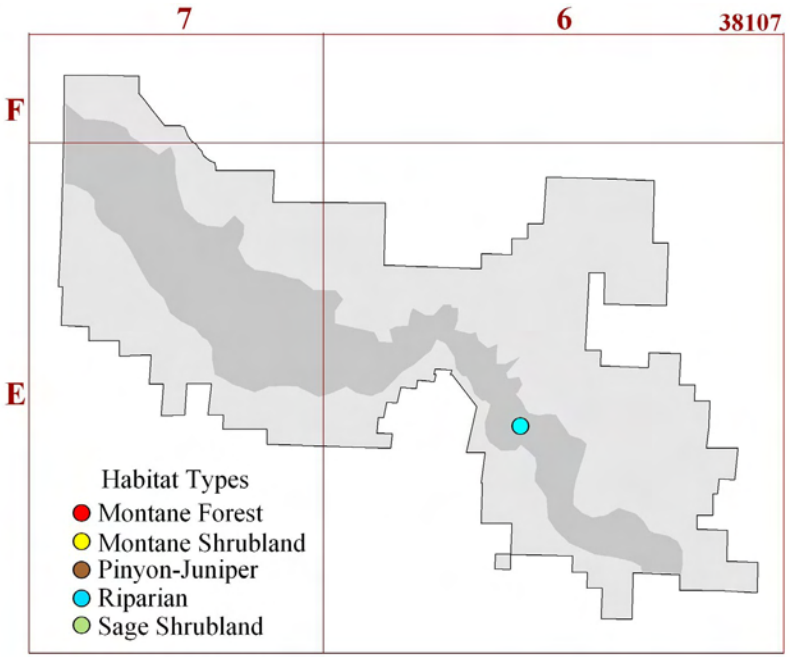
Distribution of Vesper Sparrow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



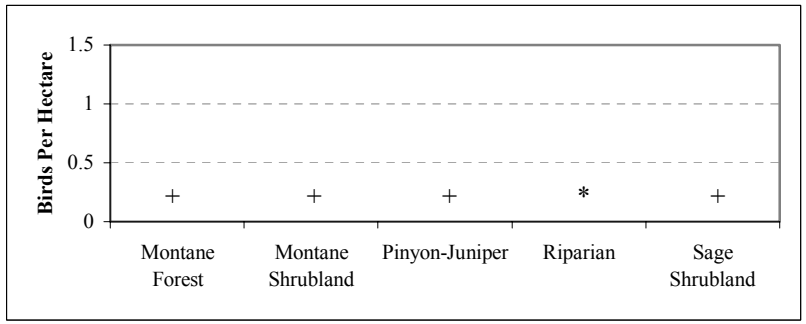
Density of Vesper Sparrow among habitat types in Curecanti National recreation area. * Detections of Vesper Sparrow were insufficient (<20) to calculate density in this habitat type. +Vesper Sparrow was not detected in this habitat type.

Song Sparrow

Song Sparrow was detected in low numbers in Riparian (n = 1) habitat.



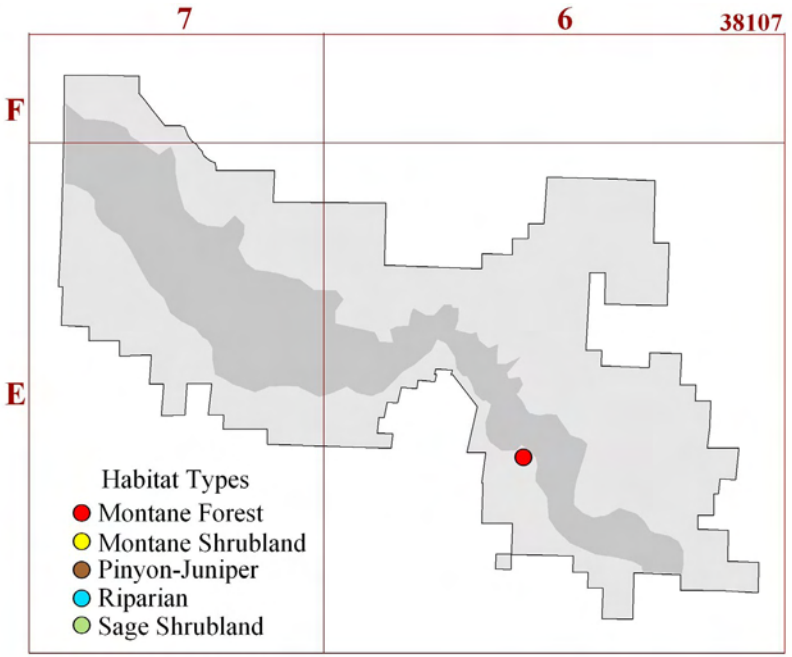
Distribution of Song Sparrow Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



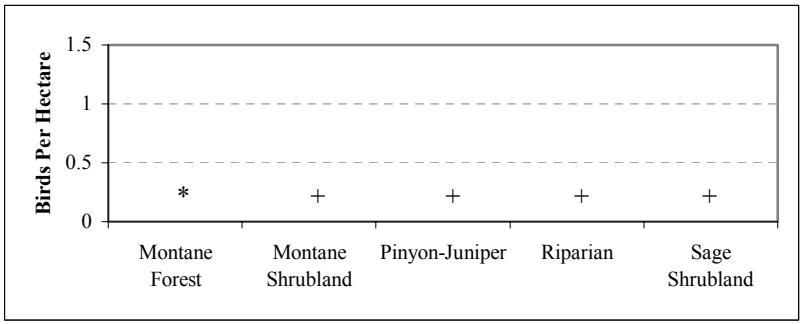
Density of Song Sparrow among habitat types in Curecanti National recreation area. * Detections of Song Sparrow were insufficient (<20) to calculate density in this habitat type. +Song Sparrow was not detected in this habitat type.

Dark-eyed (Gray-headed) Junco

Gray-headed Junco was detected in low numbers in Montane Forest (n = 1) habitat.



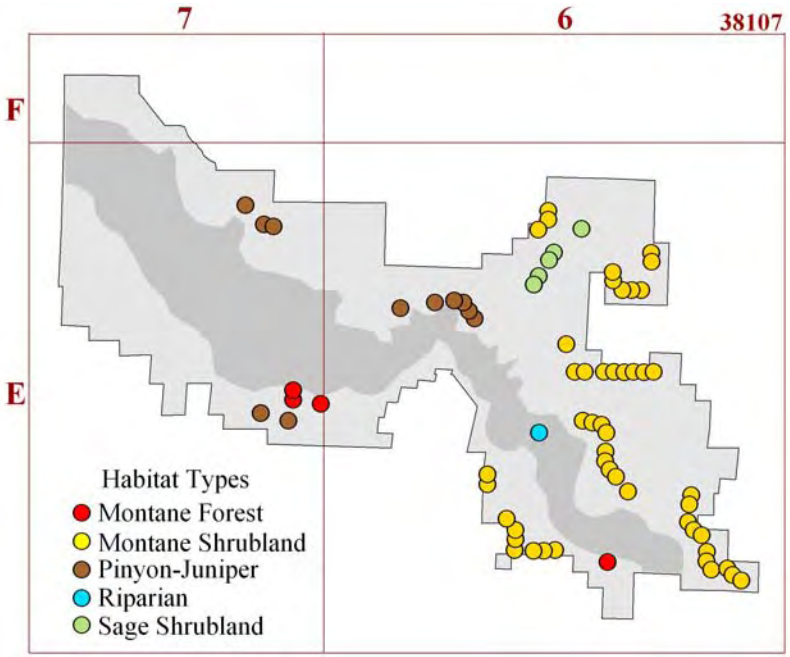
Distribution of Gray-headed Junco Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



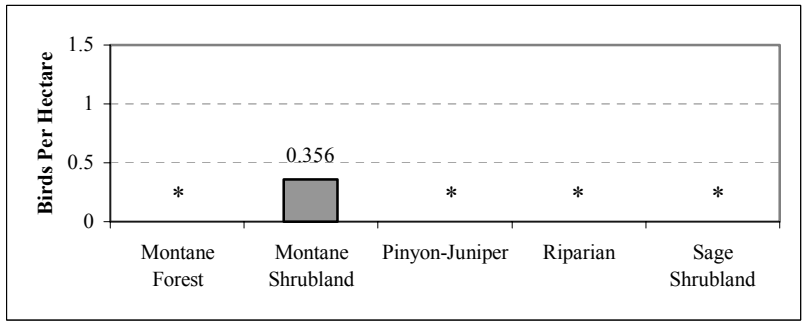
Density of Gray-headed Junco among habitat types in Curecanti National recreation area. * Detections of Gray-headed Junco were insufficient (<20) to calculate density in this habitat type. +Gray-headed Junco was not detected in this habitat type.

Black-headed Grosbeak

Detections of Black-headed Grosbeak were sufficient to calculate densities in Montane Shrubland (D = 0.356 birds per hectare) habitat. Black-headed Grosbeak was detected in low numbers in Montane Forest (n = 4), Pinyon Juniper (n = 13), Riparian (n = 1), and Sage Shrubland (n = 7) habitats.



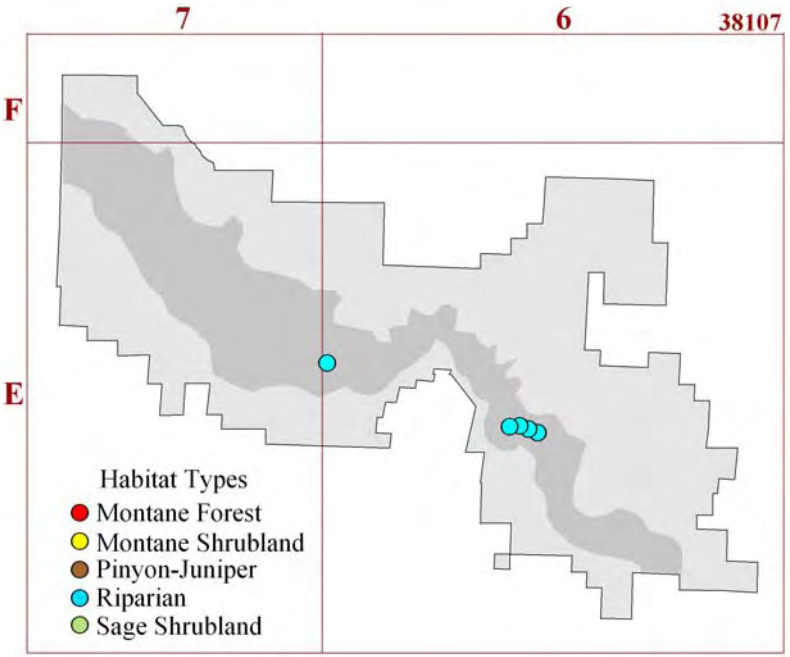
Distribution of Black-headed Grosbeak Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



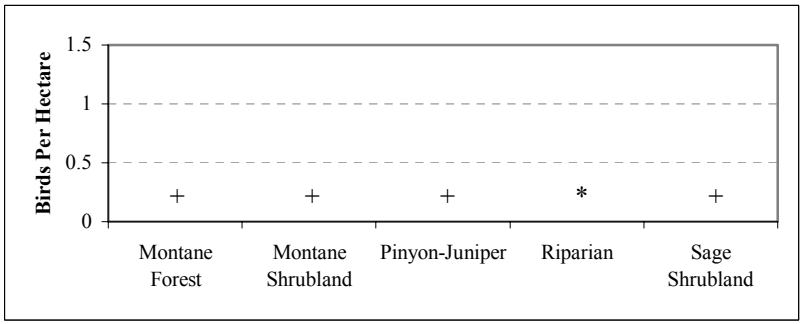
Density of Black-headed Grosbeak among habitat types in Curecanti National recreation area. * Detections of Black-headed Grosbeak were insufficient (<20) to calculate density in this habitat type. +Black-headed Grosbeak was not detected in this habitat type.

Lazuli Bunting

Lazuli Bunting was detected in low numbers in Riparian (n = 7) habitat.



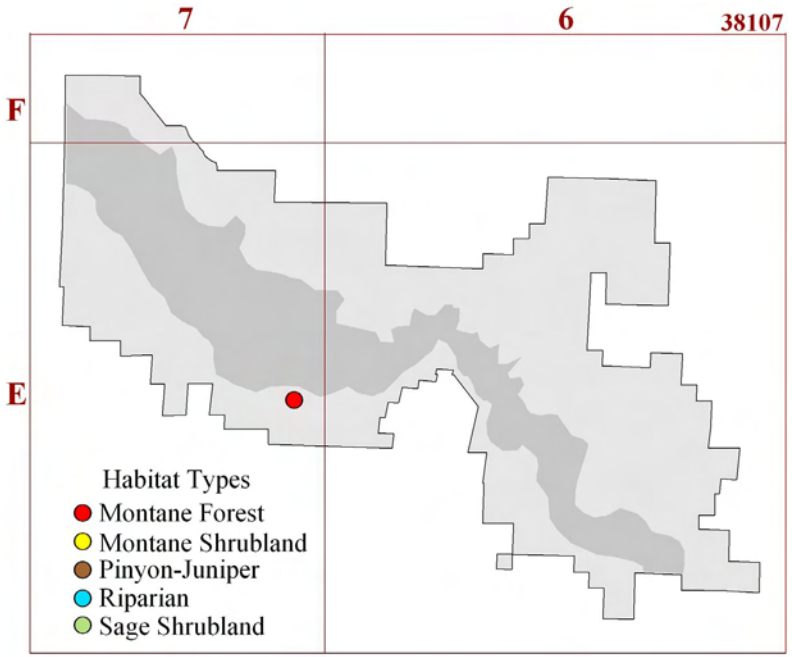
Distribution of Lazuli Bunting Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



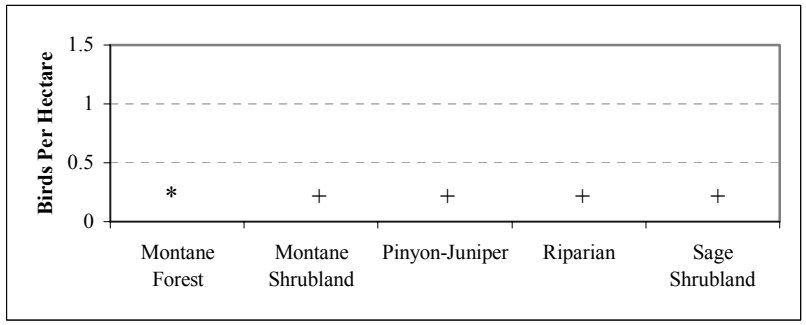
Density of Lazuli Bunting among habitat types in Curecanti National recreation area. * Detections of Lazuli Bunting were insufficient (<20) to calculate density in this habitat type. +Lazuli Bunting was not detected in this habitat type.

Indigo Bunting

Indigo Bunting was detected in low numbers in Montane Forest (n = 1) habitat.



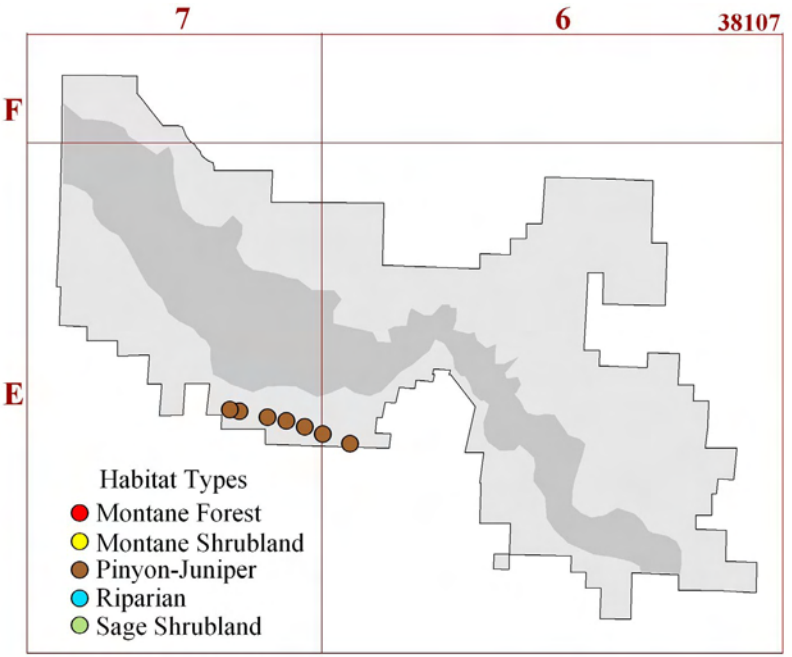
Distribution of Indigo Bunting Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



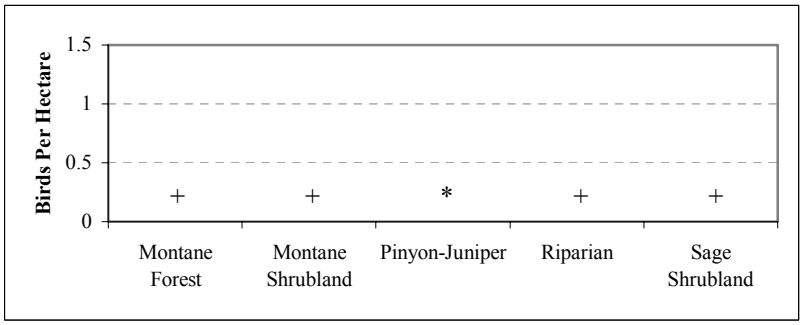
Density of Indigo Bunting among habitat types in Curecanti National recreation area. * Detections of Indigo Bunting were insufficient (<20) to calculate density in this habitat type. +Indigo Bunting was not detected in this habitat type.

Western Meadowlark

Western Meadowlark was detected in low numbers in Pinyon-Juniper (n = 7) habitat.



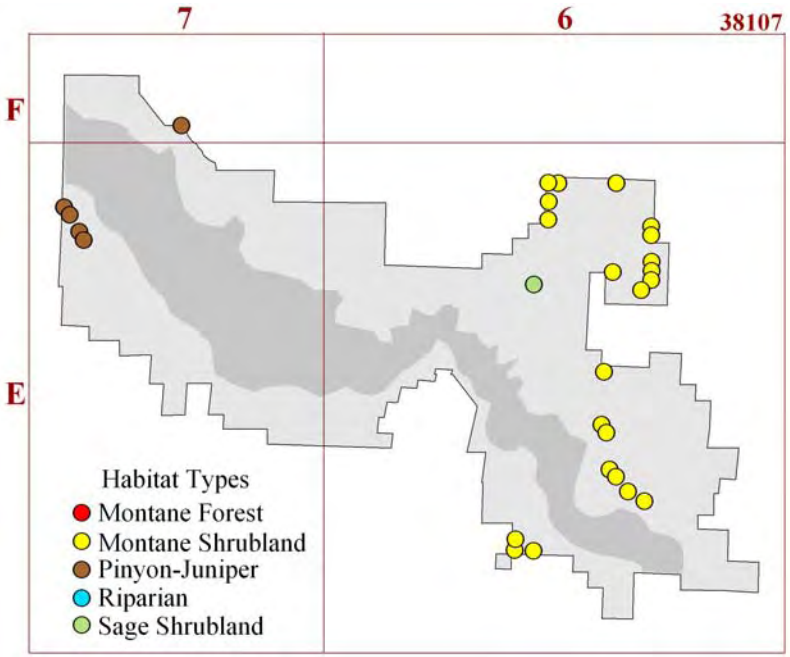
Distribution of Western Meadowlark Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



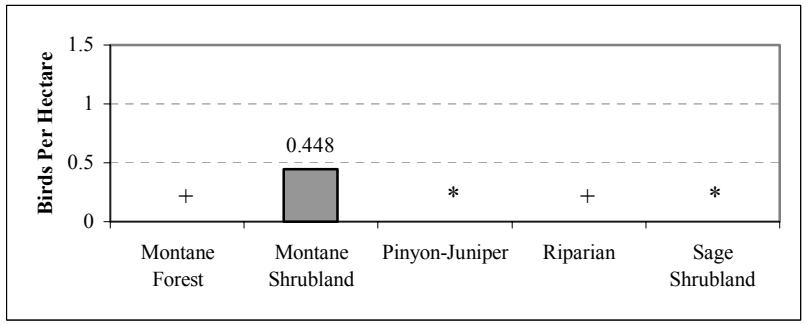
Density of Western Meadowlark among habitat types in Curecanti National recreation area. * Detections of Western Meadowlark were insufficient (<20) to calculate density in this habitat type. +Western Meadowlark was not detected in this habitat type.

Brown-headed Cowbird

Detections of Brown-headed Cowbird were sufficient to calculate density in Montane Shrubland (D = 0.448 birds per hectare) habitat. Brown-headed Cowbird was detected in low numbers in Pinyon-Juniper (n = 6) and Sage Shrubland (n = 1) habitats.



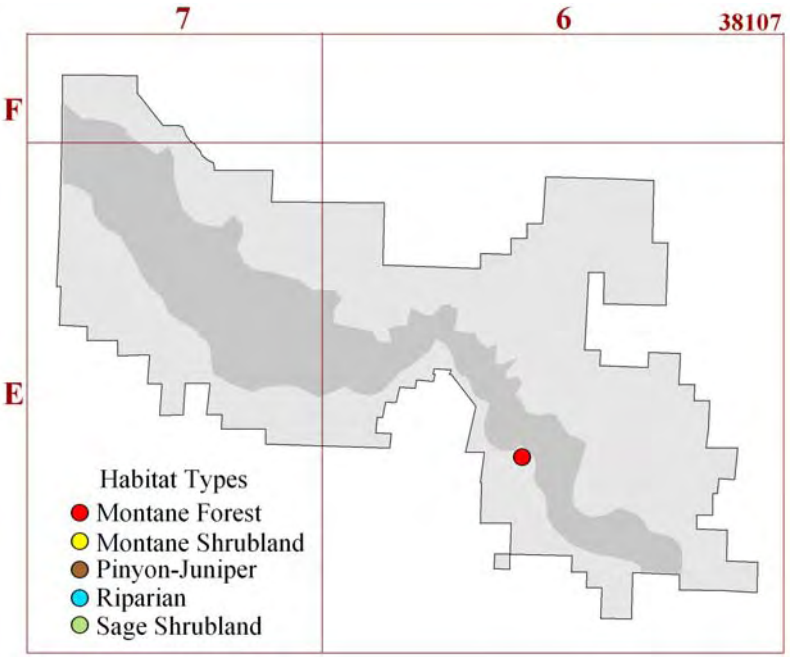
Distribution of Brown-headed Cowbird Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



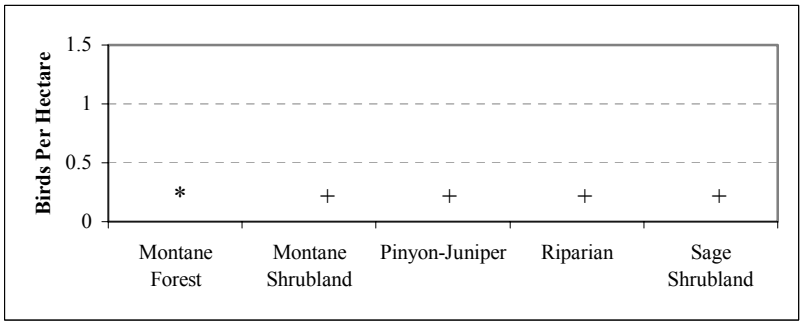
Density of Brown-headed Cowbird among habitat types in Curecanti National recreation area. * Detections of Brown-headed Cowbird were insufficient (<20) to calculate density in this habitat type. +Brown-headed Cowbird was not detected in this habitat type.

Cassin's Finch

Cassin's Finch was detected in low numbers in Montane Forest (n = 1) habitats.



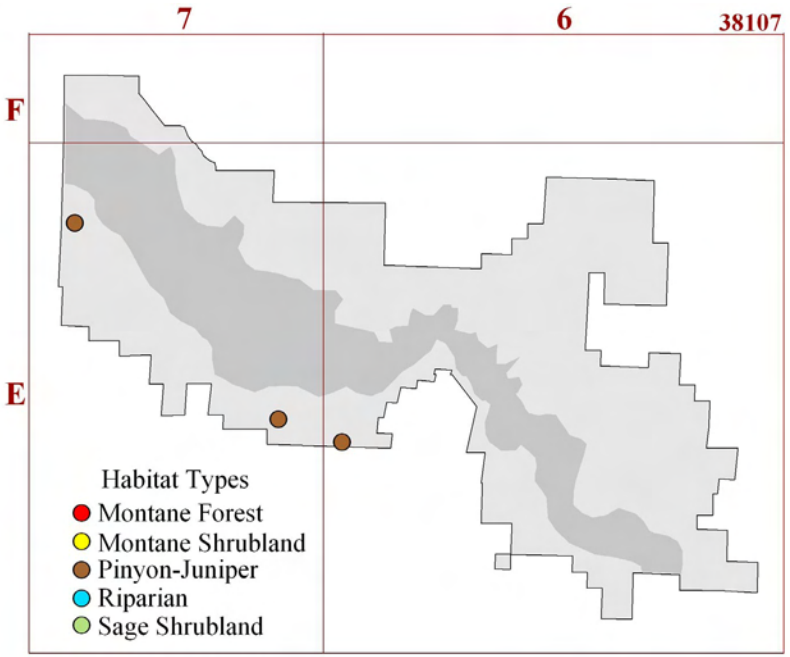
Distribution of Cassin's Finch Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



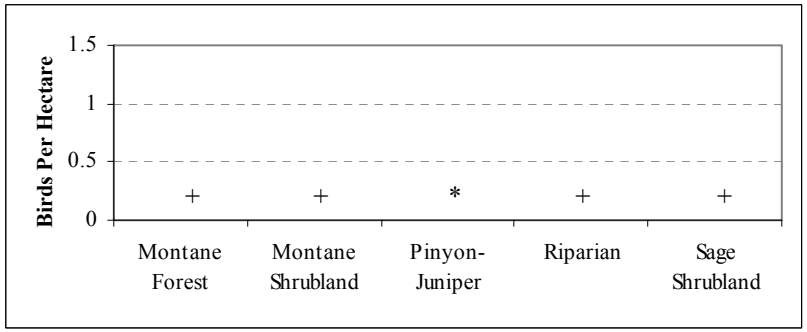
Density of Cassin's Finch among habitat types in Curecanti National recreation area. * Detections of Cassin's Finch were insufficient (<20) to calculate density in this habitat type. +Cassin's Finch was not detected in this habitat type.

House Finch

House Finch was detected in low numbers in Pinyon-Juniper (n = 4) habitat.



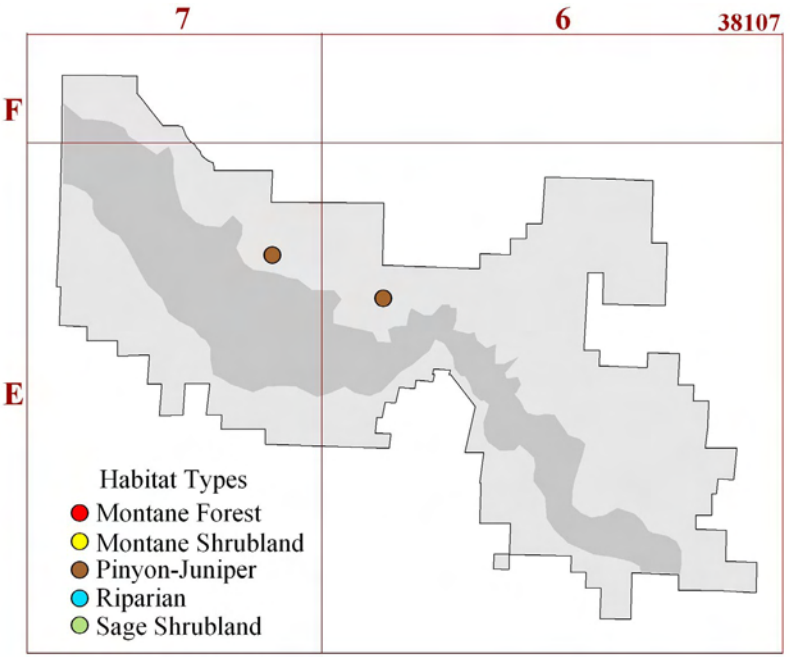
Distribution of House Finch Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



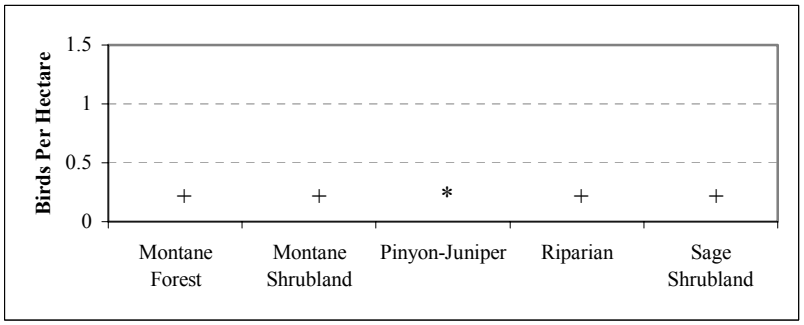
Density of House Finch among habitat types in Curecanti National recreation area. * Detections of House Finch were insufficient (<20) to calculate density in this habitat type. +House Finch was not detected in this habitat type.

Pine Siskin

Pine Siskin was detected in low numbers in Pinyon-Juniper (n = 2) habitat.



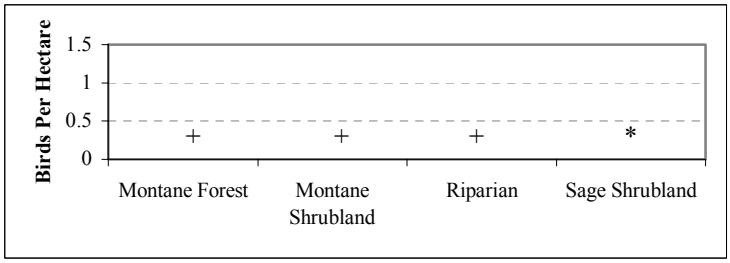
Distribution of Pine Siskin Observations at Black Canyon National Park. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.



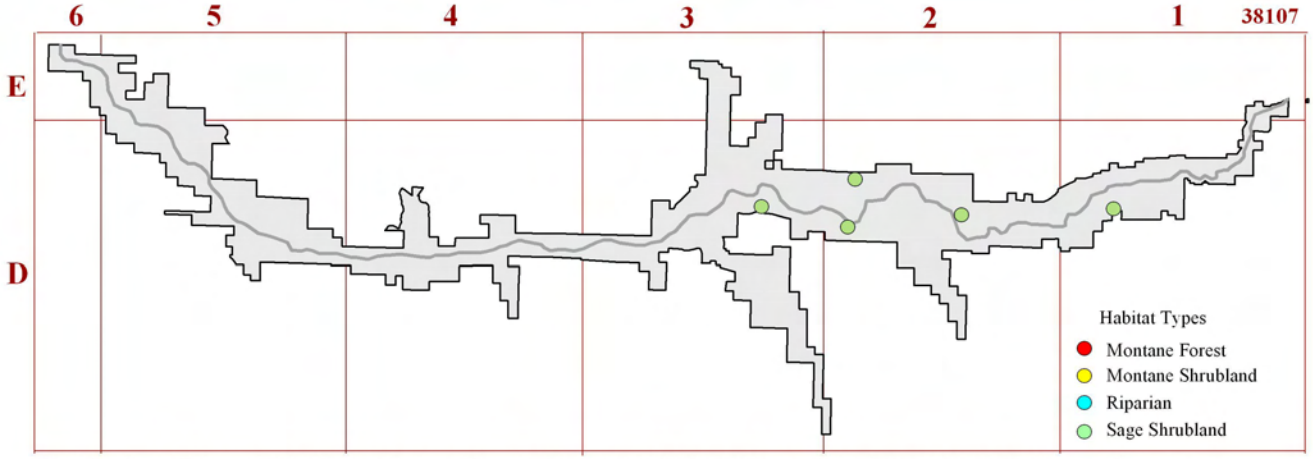
Density of Pine Siskin among habitat types in Curecanti National recreation area. * Detections of Pine Siskin were insufficient (<20) to calculate density in this habitat type. +Pine Siskin was not detected in this habitat type.

Great-Blue Heron

Great-Blue Heron was detected in low numbers in Sage Shrubland (n = 6) habitat.



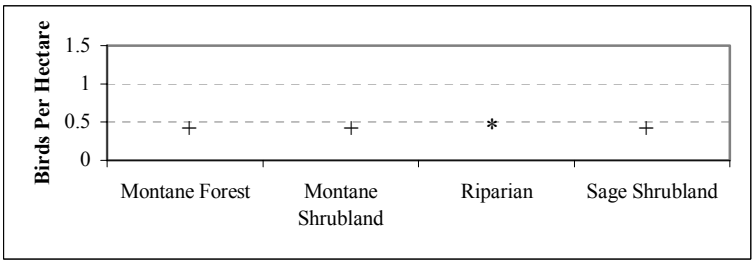
Density of Great-Blue Heron among habitat types in Curecanti National recreation area. * Detections of Great-Blue Heron were insufficient (<20) to calculate density in this habitat type.
+ Great-Blue Heron was not detected in this habitat type.



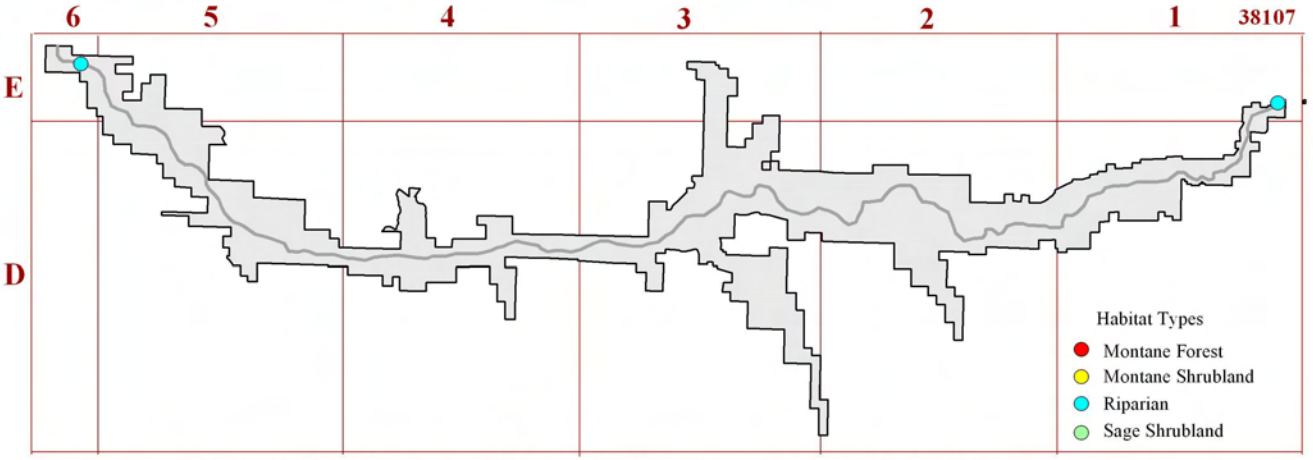
Distribution of Great Blue Heron observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Turkey Vulture

Turkey Vulture was detected in low numbers in Riparian (n = 2) habitat.



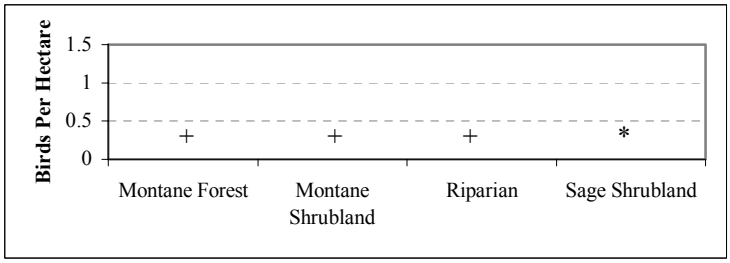
Density of Turkey Vulture among habitat types in Curecanti National recreation area. * Detections of Turkey Vulture were insufficient (<20) to calculate density in this habitat type.
+ Turkey Vulture was not detected in this habitat type.



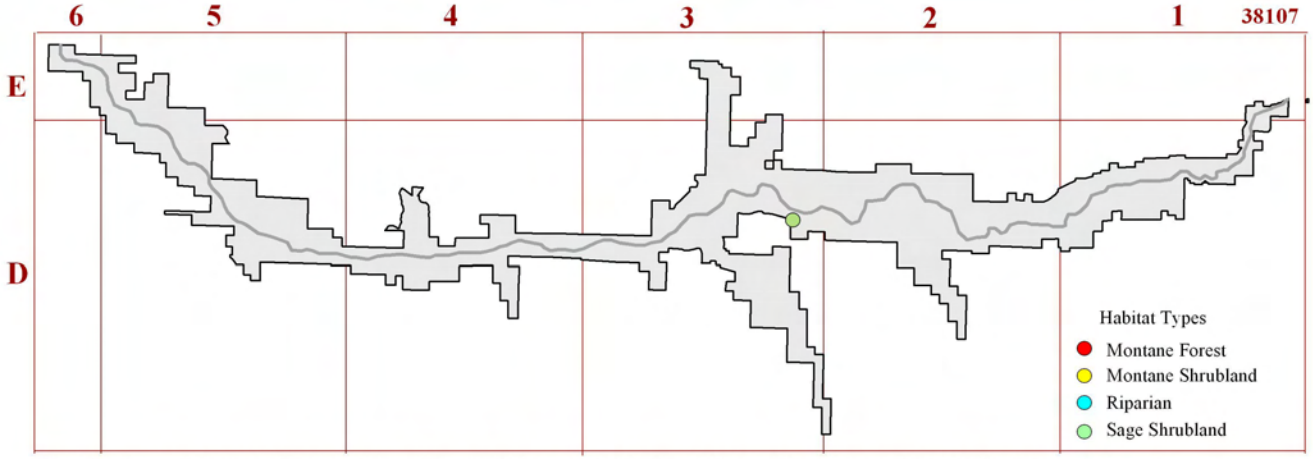
Distribution of Turkey Vulture observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Canada Goose

Canada Goose was detected in low numbers in Sage Shrubland (n = 3) habitat.



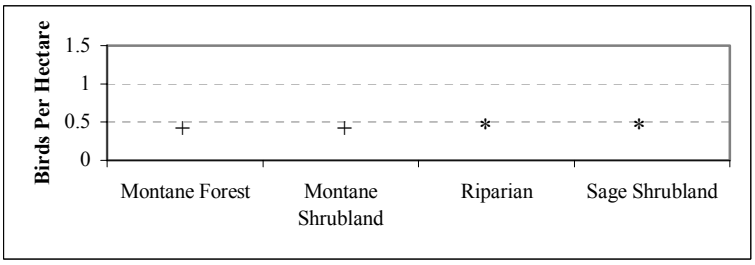
Density of Canada Goose among habitat types in Curecanti National recreation area. * Detections of Canada Goose were insufficient (<20) to calculate density in this habitat type.
+ Canada Goose was not detected in this habitat type.



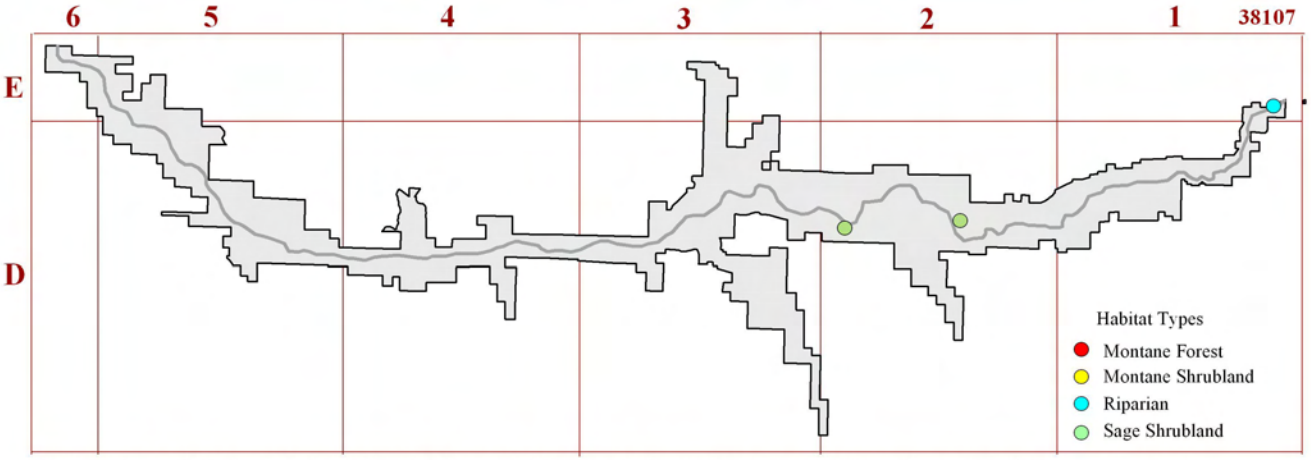
Distribution of Canada Goose observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Mallard

Mallard was detected in low numbers in Riparian (n = 2) and Sage Shrubland (n = 3) habitats.



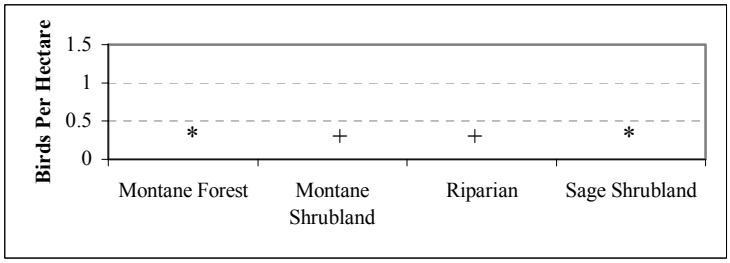
Density of Mallard among habitat types in Curecanti National recreation area. * Detections of Mallard were insufficient (<20) to calculate density in this habitat type.
+ Mallard was not detected in this habitat type.



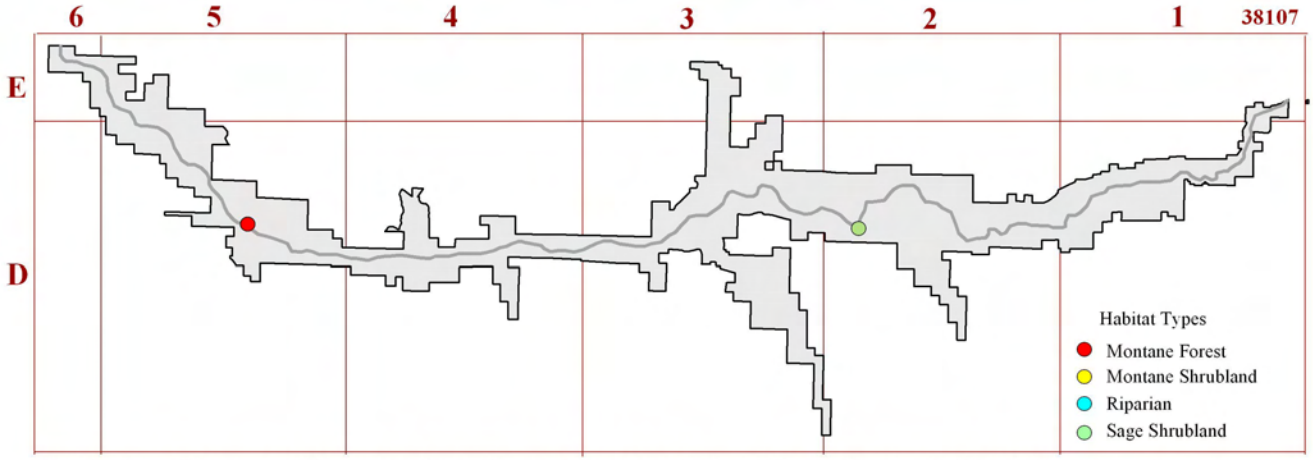
Distribution of Mallard observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Common Merganser

Common Merganser was detected in low numbers in Montane Forest (n = 5) and Sage Shrubland (n = 1) habitats.



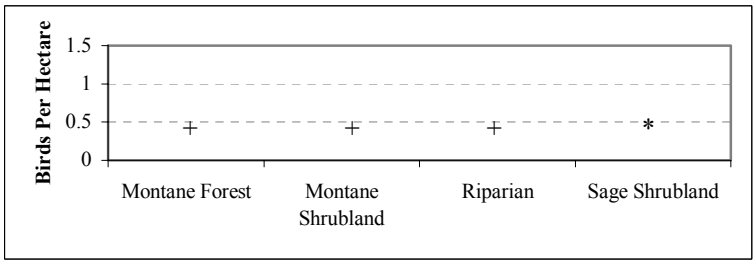
Density of Common Merganser among habitat types in Curecanti National recreation area. * Detections of Common Merganser were insufficient (<20) to calculate density in this habitat type.
+ Common Merganser was not detected in this habitat type.



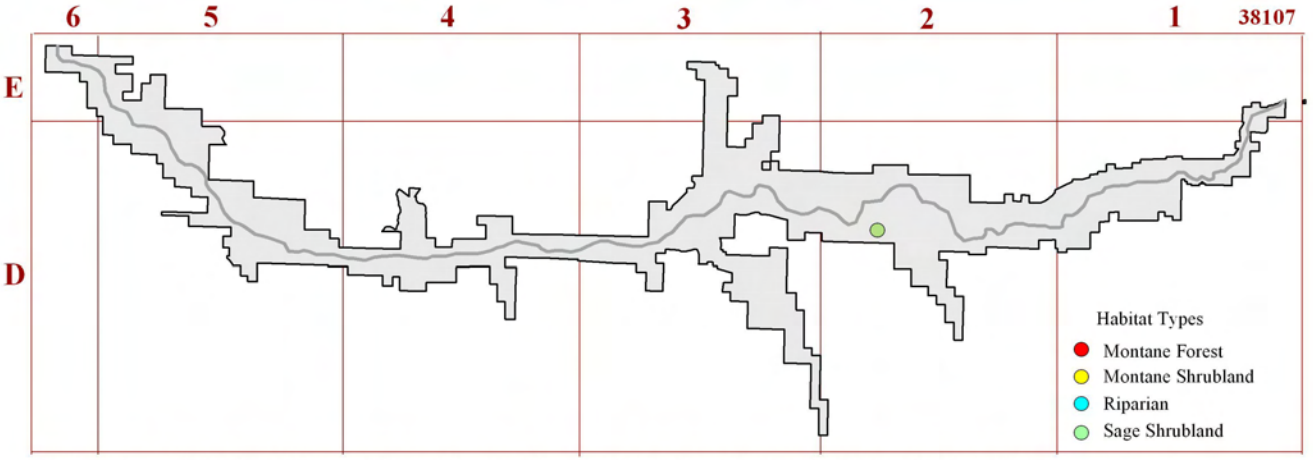
Distribution of Common Merganser observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Northern Harrier

Northern Harrier was detected in low numbers in Sage Shrubland (n = 1) habitat.



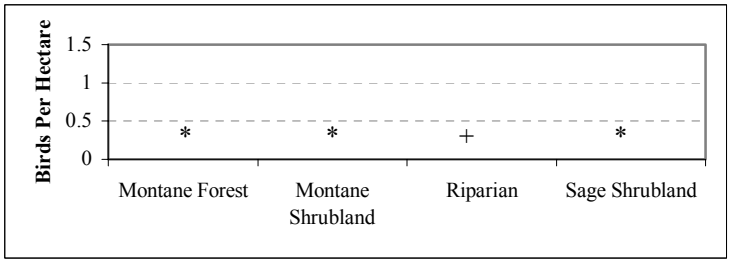
Density of Northern Harrier among habitat types in Curecanti National recreation area. * Detections of Northern Harrier were insufficient (<20) to calculate density in this habitat type.
+ Northern Harrier was not detected in this habitat type.



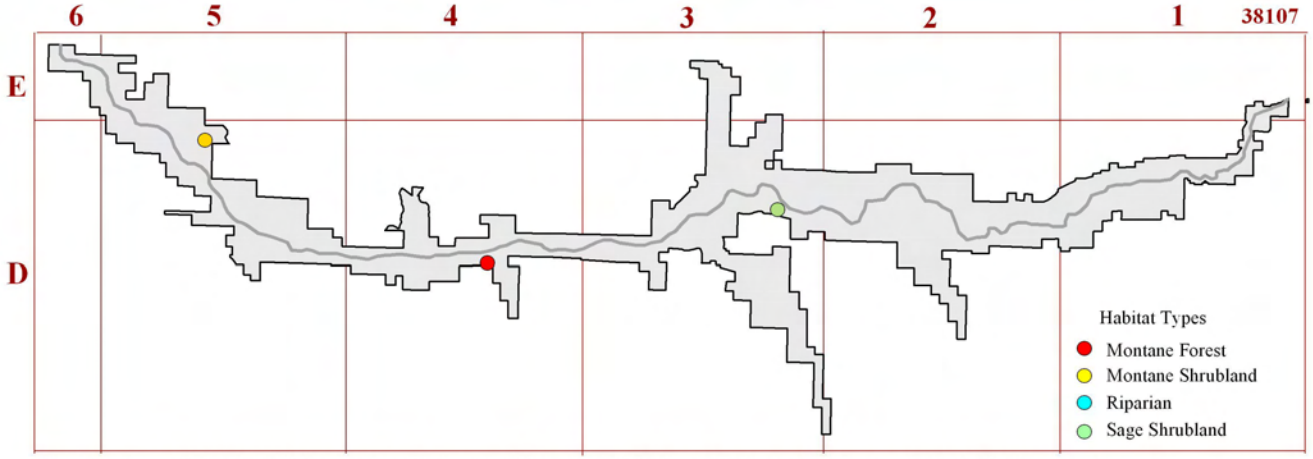
Distribution of Northern Harrier observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Cooper's Hawk

Cooper's Hawk was detected in low numbers Montane Forest (n = 1), Montane Shrubland (n = 1), and Sage Shrubland (n = 1) habitats.



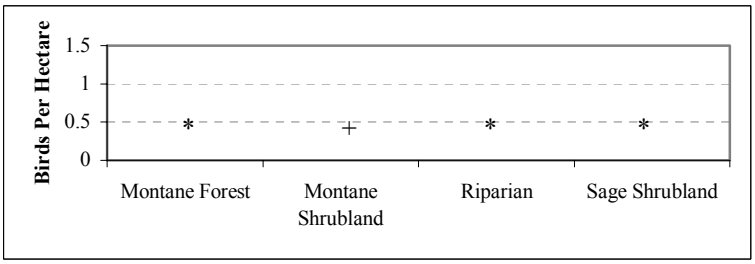
Density of Cooper's Hawk among habitat types in Curecanti National recreation area. * Detections of Cooper's Hawk were insufficient (<20) to calculate density in this habitat type.
+ Cooper's Hawk was not detected in this habitat type.



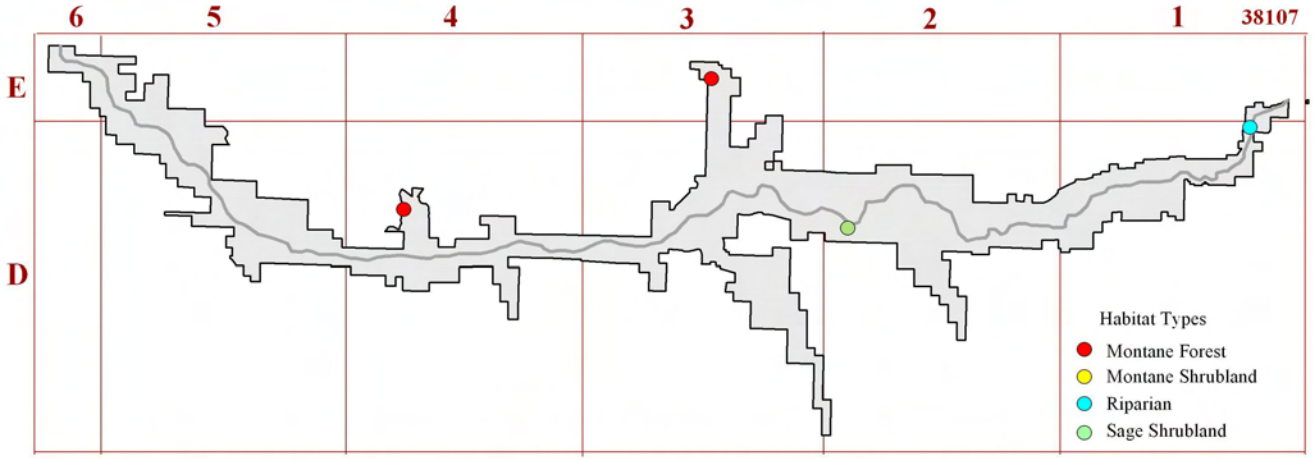
Distribution of Cooper's Hawk observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Red-tailed Hawk

Red-tailed Hawk was detected in low numbers in Montane Forest (n = 2), Riparian (n = 1), and Sage Shrubland (n = 2) habitats.



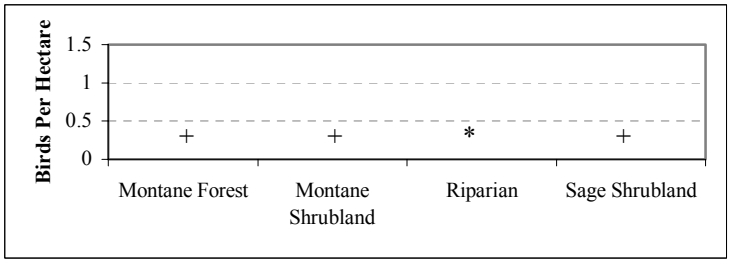
Density of Red-tailed Hawk among habitat types in Curecanti National recreation area. * Detections of Red-tailed Hawk were insufficient (<20) to calculate density in this habitat type.
+ Red-tailed Hawk was not detected in this habitat type.



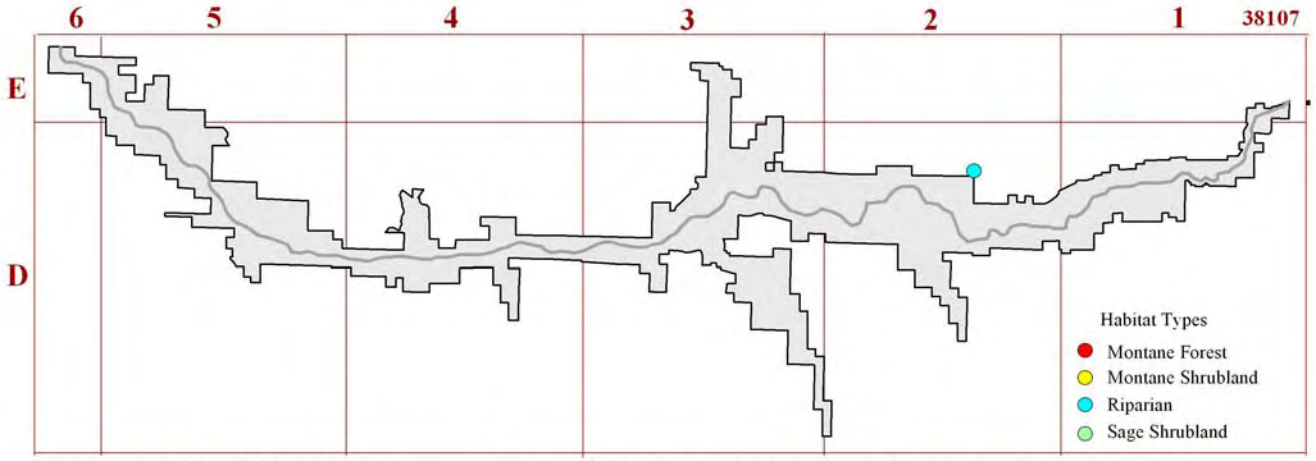
Distribution of Red-tailed Hawk observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Golden Eagle

Golden Eagle was detected in low numbers in Riaprian (n = 1) habitat.



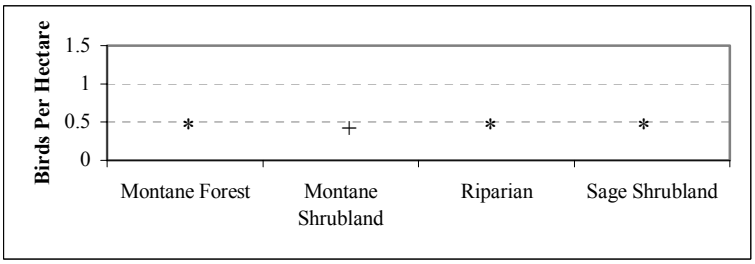
Density of Golden Eagle among habitat types in Curecanti National recreation area. * Detections of Golden Eagle were insufficient (<20) to calculate density in this habitat type.
+ Golden Eagle was not detected in this habitat type.



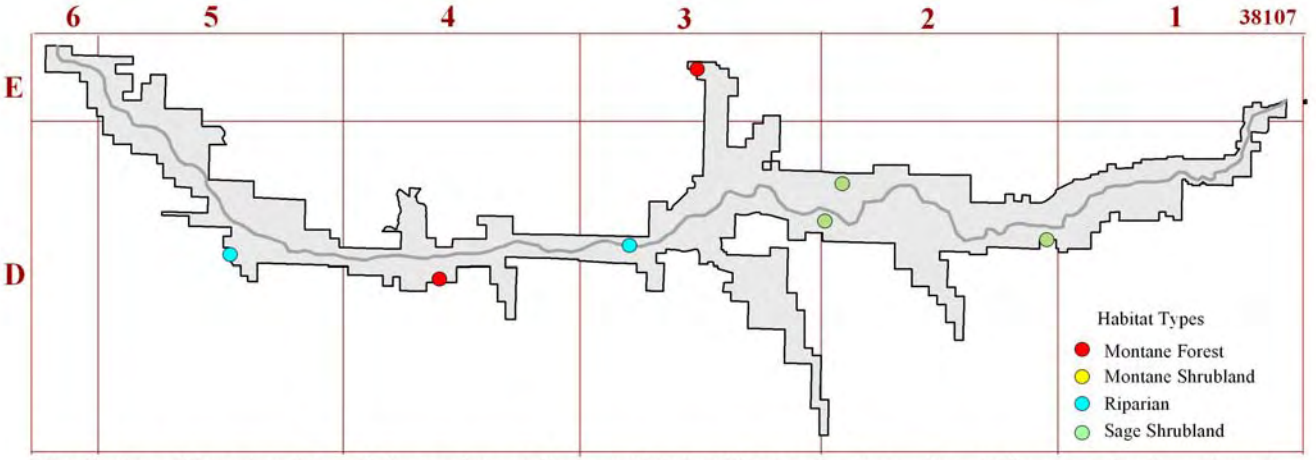
Distribution of Golden Eagle observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

American Kestrel

American Kestrel was detected in low numbers in Montane Forest (n = 3), Riparian (n = 2), and Sage Shrubland (n = 3) habitats.



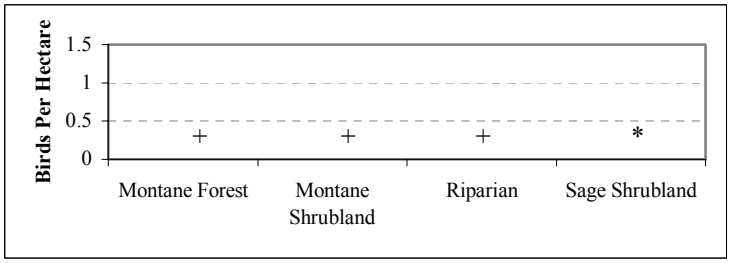
Density of American Kestrel among habitat types in Curecanti National recreation area. * Detections of American Kestrel were insufficient (<20) to calculate density in this habitat type.
+ American Kestrel was not detected in this habitat type.



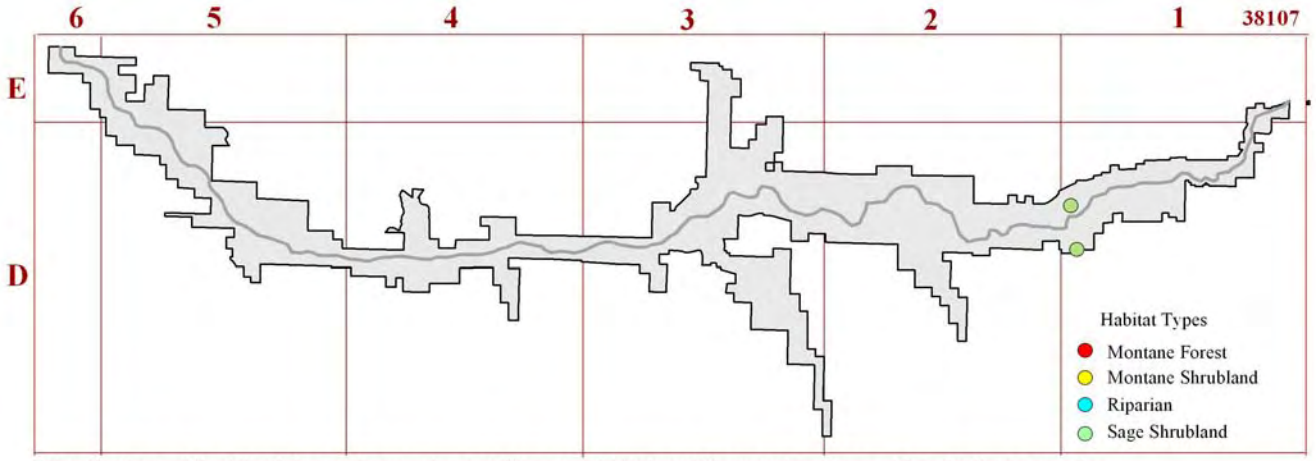
Distribution of American Kestrel observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Prairie Falcon

Prairie Falcon was detected in low numbers in Sage Shrubland (n = 2) habitat.



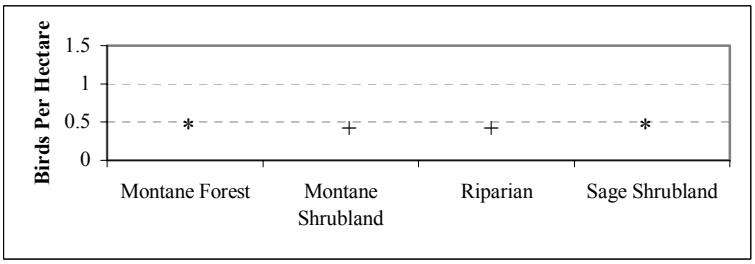
Density of Prairie Falcon among habitat types in Curecanti National recreation area. * Detections of Prairie Falcon were insufficient (<20) to calculate density in this habitat type.
+ Prairie Falcon was not detected in this habitat type.



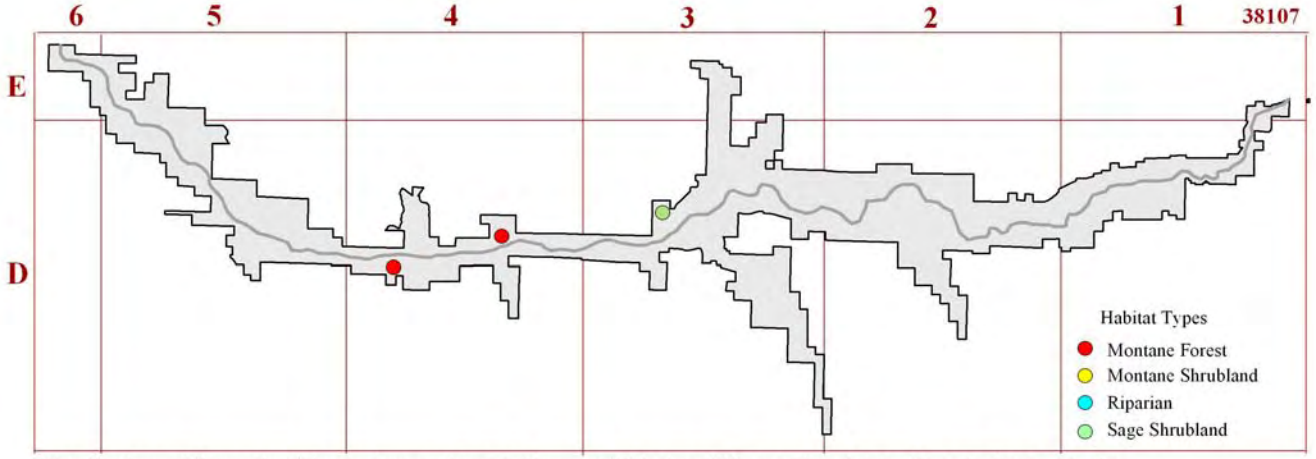
Distribution of Prairie Falcon observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Peregrine Falcon

Peregrine Falcon was detected in low numbers in Montane Forest (n = 2) and Sage Shrubland (n = 1) habitats.



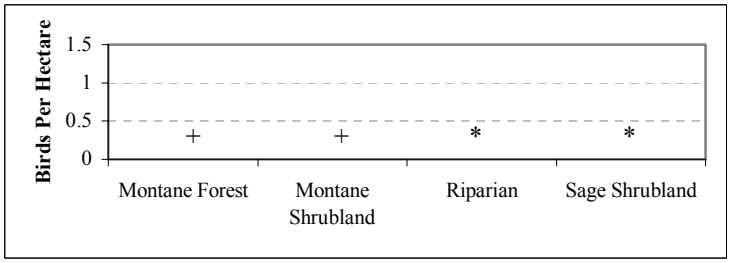
Density of Peregrine Falcon among habitat types in Curecanti National recreation area. * Detections of Peregrine Falcon were insufficient (<20) to calculate density in this habitat type.
+ Peregrine Falcon was not detected in this habitat type.



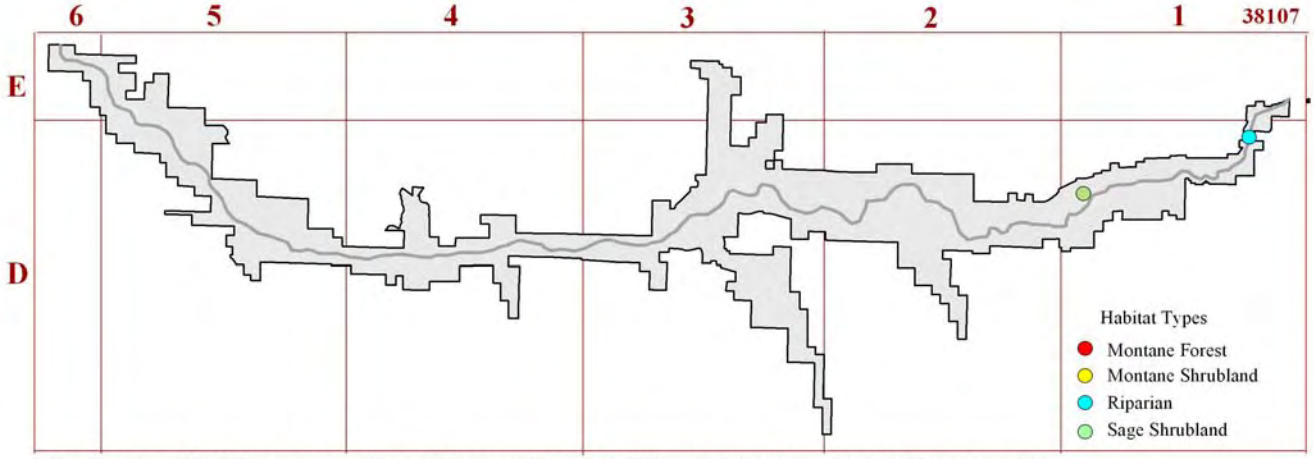
Distribution of Peregrin Falcon observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Killdeer

Killdeer was detected in low numbers in Riaprain (n = 1) and Sage Shrubland (n = 1) habitats.



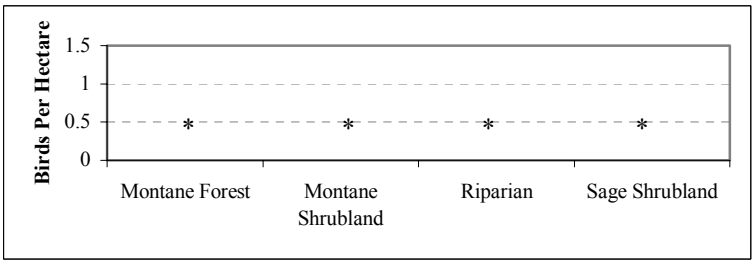
Density of Killdeer among habitat types in Curecanti National recreation area. * Detections of Killdeer were insufficient (<20) to calculate density in this habitat type.
+ Killdeer was not detected in this habitat type.



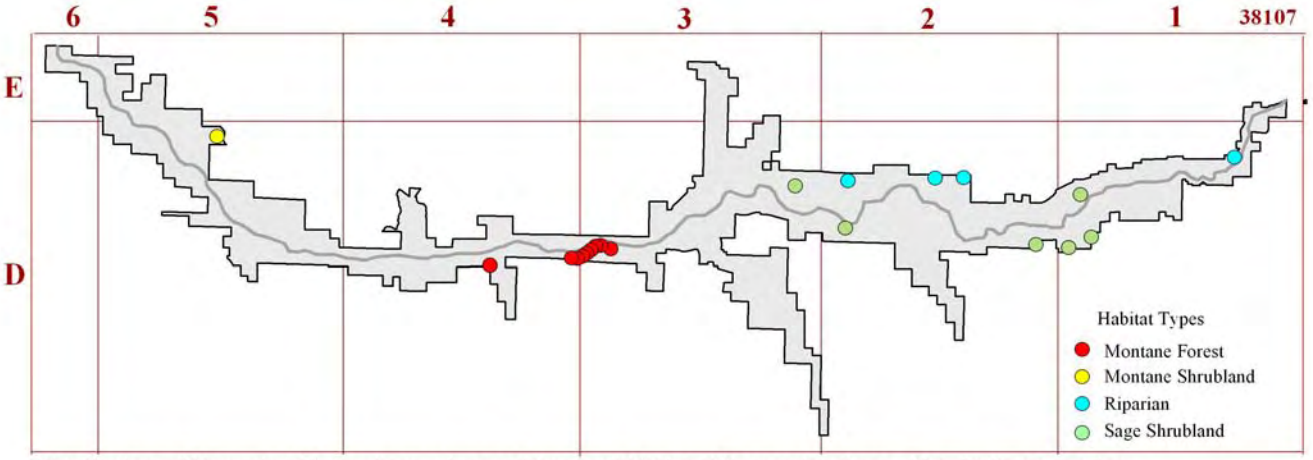
Distribution of Killdeer observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Mourning Dove

Mourning Dove was detected in low numbers in Montane Forest (n = 10), Montane Shrubland (n = 1), Riparian (n = 5), and Sage Shrubland (n = 7) habitats.



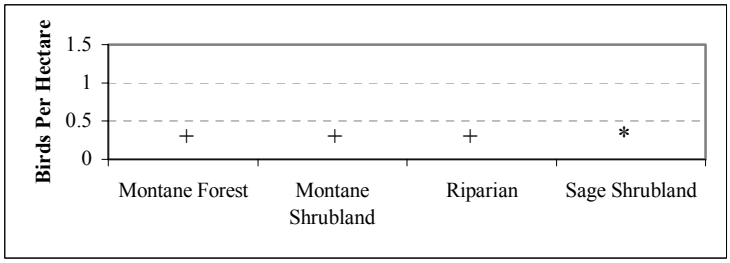
Density of Mourning Dove among habitat types in Curecanti National recreation area. * Detections of Mourning Dove were insufficient (<20) to calculate density in this habitat type.
+ Mourning Dove was not detected in this habitat type.



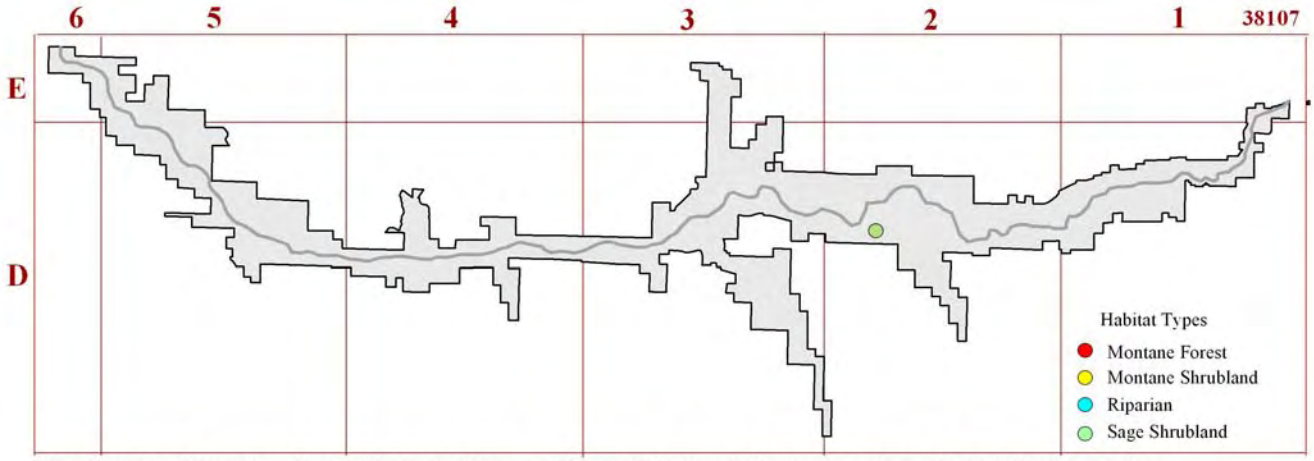
Distribution of Mourning Dove observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Common Poorwill

Common Poorwill was detected in low numbers in Sage Shrubland (n = 2) habitat.



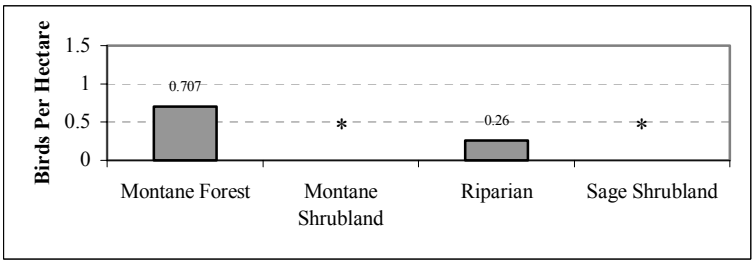
Density of Common Poorwill among habitat types in Curecanti National recreation area. * Detections of Common Poorwill were insufficient (<20) to calculate density in this habitat type.
+ Common Poorwill was not detected in this habitat type.



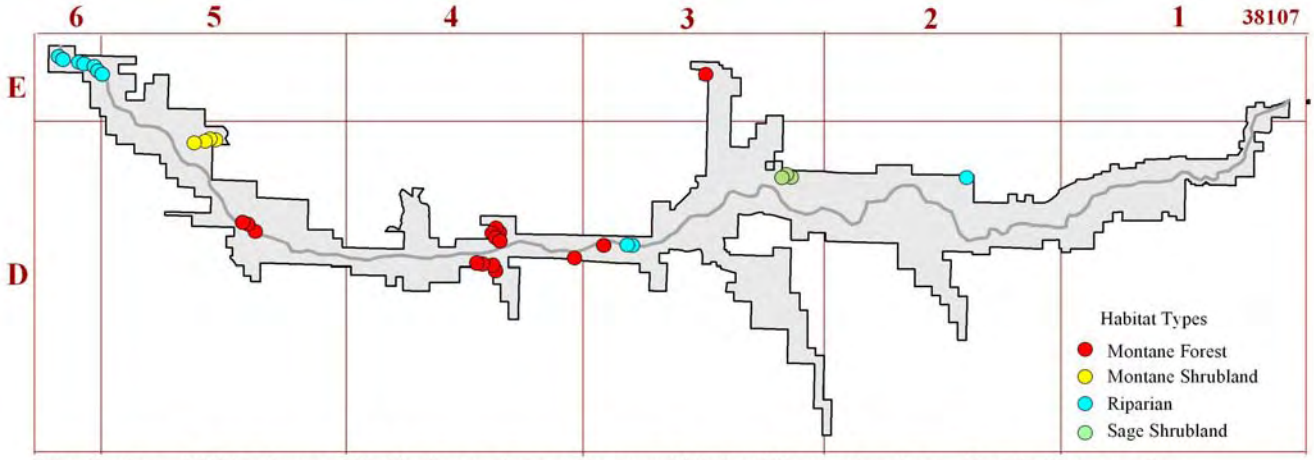
Distribution of Common Poorwill observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

White-throated Swift

Detections of White-throated Swift were sufficient to calculate density in Montane Forest (D = 0.707 birds per hectare) and Riparian (D = 0.260 birds per hectare) habitats. White-throated Swift was detected in low numbers in Montane Shrubland (n = 5) and Sage Shrubland (n = 7) habitats.



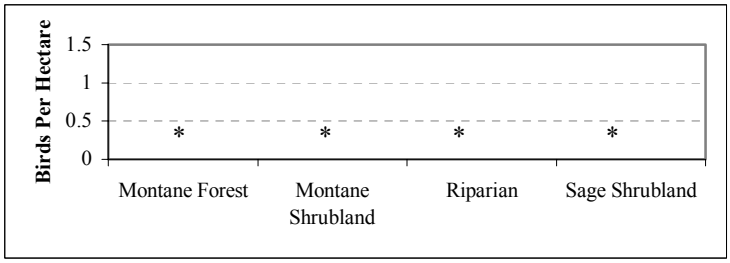
Density of White-throated Swift among habitat types in Curecanti National recreation area. * Detections of White-throated Swift were insufficient (<20) to calculate density in this habitat type.
+ White-throated Swift was not detected in this habitat type.



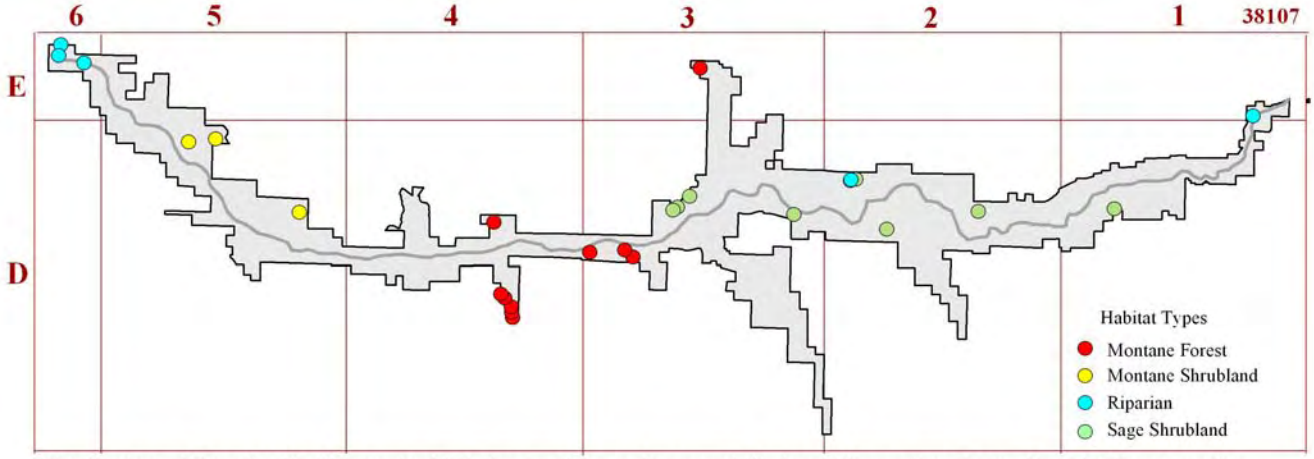
Distribution of White-throated Swift observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Broad-tailed Hummingbird

Broad-tailed Hummingbird was detected in low numbers in Montane Forest (n = 11), Montane Shrubland (n = 3), Riparian (n = 5), and Sage Shrubland (n = 9) habitats.



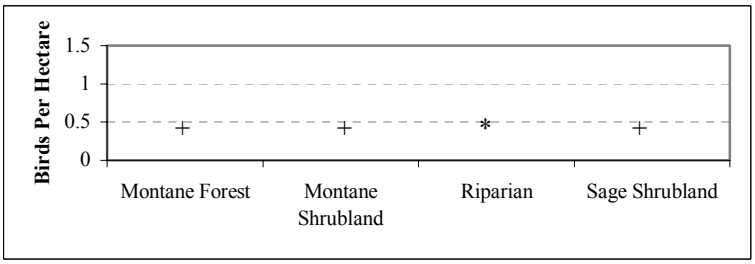
Density of Broad-tailed Hummingbird among habitat types in Curecanti National recreation area. * Detections of Broad-tailed Hummingbird were insufficient (<20) to calculate density in this habitat type.
+ Broad-tailed Hummingbird was not detected in this habitat type.



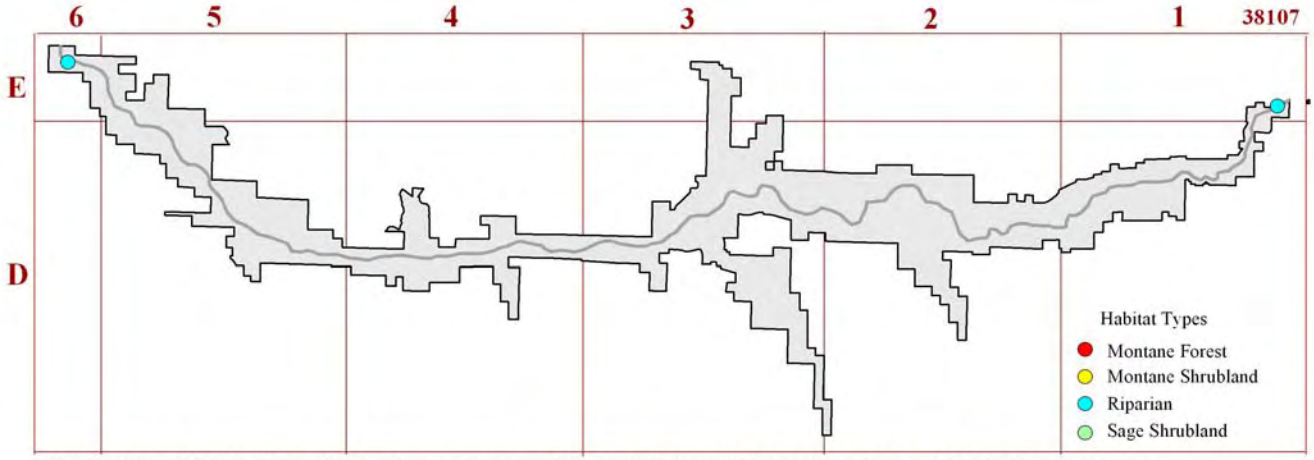
Distribution of Broad-tailed Hummingbird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Belted Kingfisher

Belted Kingfisher was detected in low numbers in Riparian (n = 2) habitat.



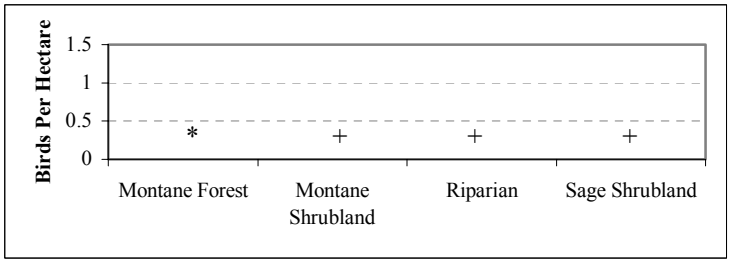
Density of Belted Kingfisher among habitat types in Curecanti National recreation area. * Detections of Belted KIngfisher were insufficient (<20) to calculate density in this habitat type.
+ Belted Kingfisher was not detected in this habitat type.



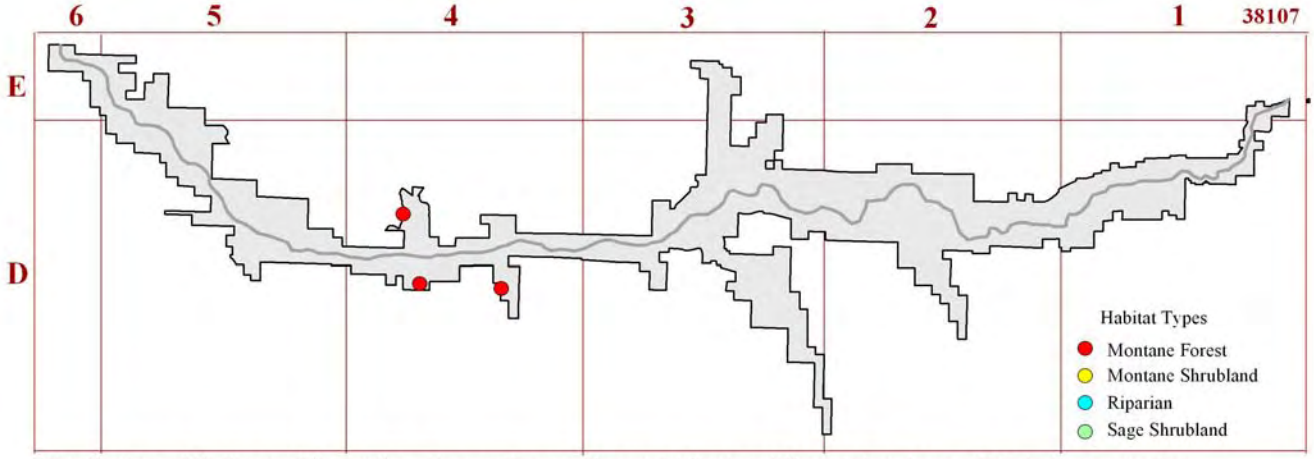
Distribution of Belted Kingfisher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Red-naped Sapsucker

Red-naped Sapsucker was detected in low numbers in Montane Forest (n = 3) habitat.



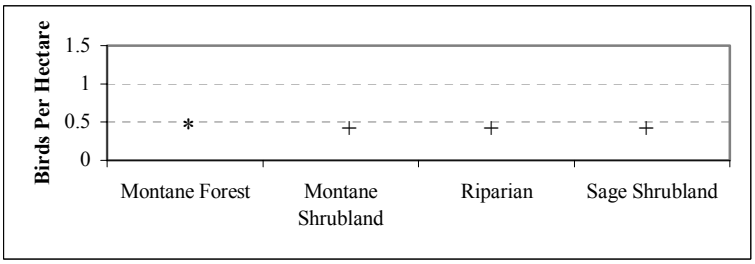
Density of Red-naped Sapsucker among habitat types in Curecanti National recreation area. * Detections of Red-naped Sapsucker were insufficient (<20) to calculate density in this habitat type.
+ Red-naped Sapsucker was not detected in this habitat type.



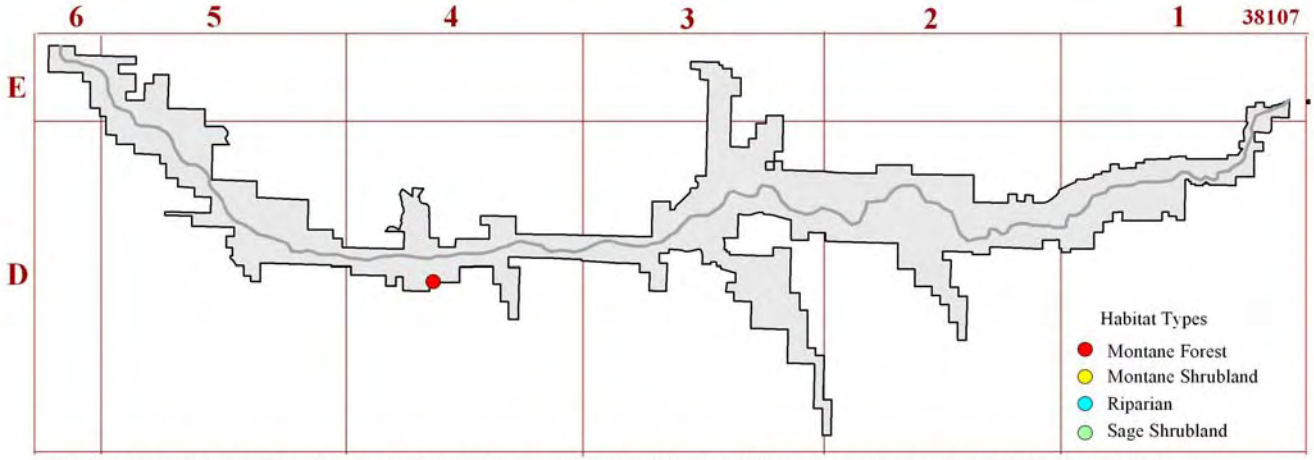
Distribution of Red-naped Sapsucker observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Hairy Woodpecker

Hairy Woodpecker was detected in low numbers in Montane Forest (n = 1) habitat.



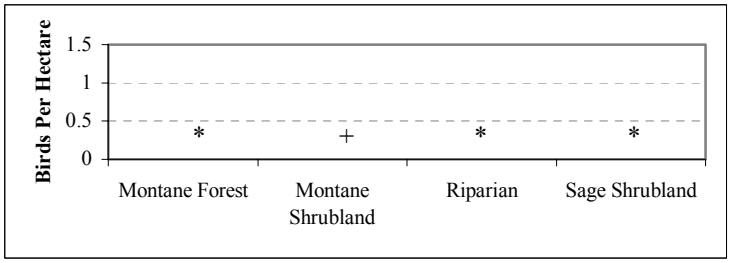
Density of Hairy Woodpecker among habitat types in Curecanti National recreation area. * Detections of Hairy Woodpecker were insufficient (<20) to calculate density in this habitat type.
+ Hairy Woodpecker was not detected in this habitat type.



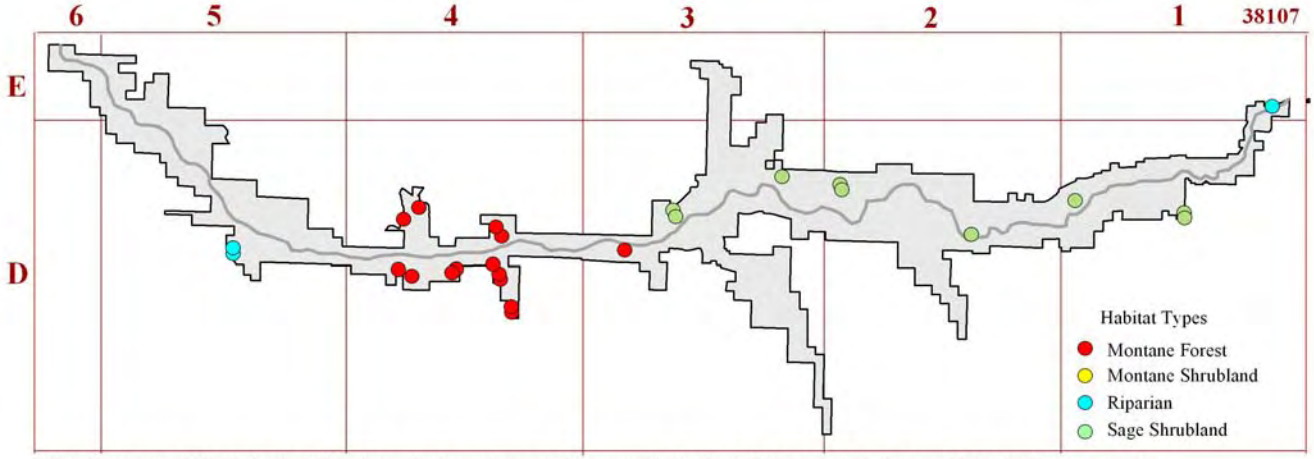
Distribution of Hairy Woodpecker observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Red-shafted Flicker

Red-shafted Flicker was detected in low numbers in Montane Forest (n = 14), Riparian (n = 4), and Sage Shrubland (n = 10) habitats.



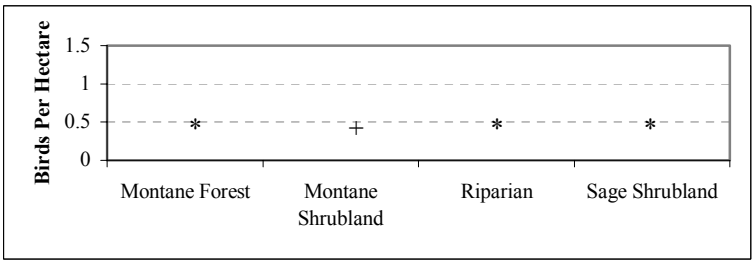
Density of Red-shafted Flicker among habitat types in Curecanti National recreation area. * Detections of Red-shafted Flicker were insufficient (<20) to calculate density in this habitat type.
+ Red-shafted Flicker was not detected in this habitat type.



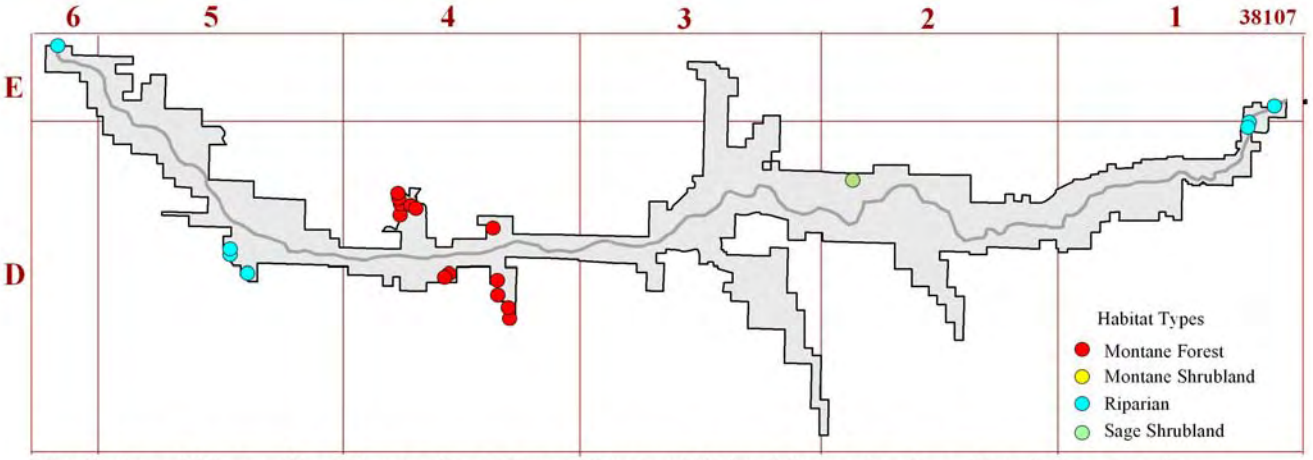
Distribution of Red-shafted Flicker observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Western Wood-Pewee

Western Wood-Pewee was detected in low numbers in Montane Forest (n = 16), Riparian (n = 9), and Sage Shrubland (n = 1) habitats.



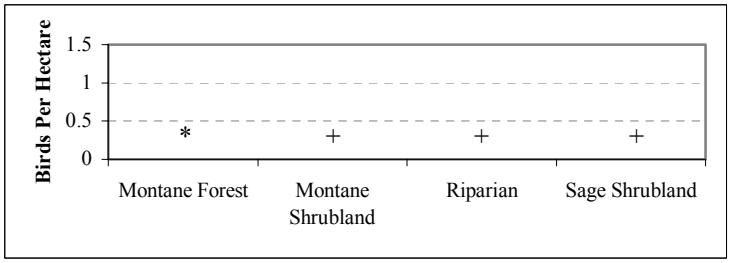
Density of Western Wood-Pewee among habitat types in Curecanti National recreation area. * Detections of Western Wood-Pewee were insufficient (<20) to calculate density in this habitat type.
+ Western Wood-Pewee was not detected in this habitat type.



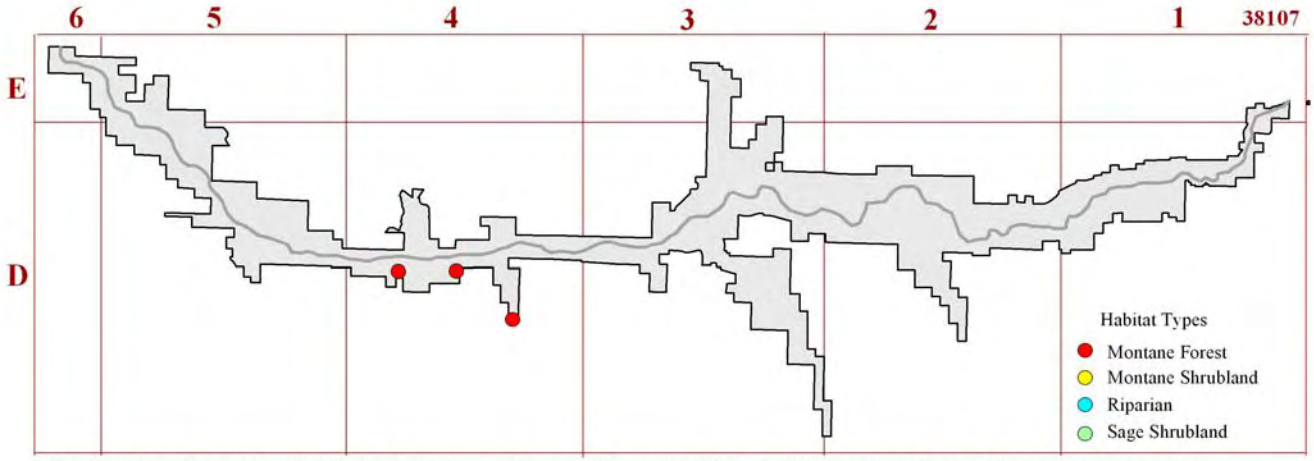
Distribution of Western Wood-Pewee observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Hammond's Flycatcher

Hammond's Flycatcher was detected in low numbers in Montane Forest (n = 4) habitat.



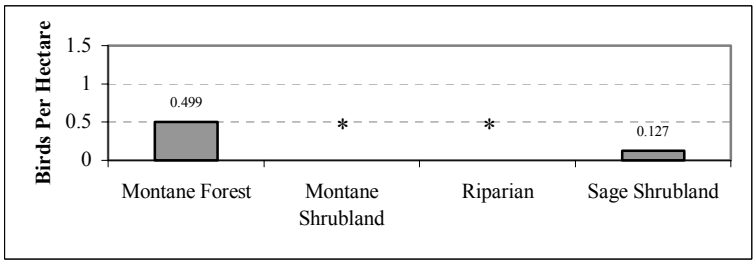
Density of Hammond's Flycatcher among habitat types in Curecanti National recreation area. * Detections of Hammond's Flycatcher were insufficient (<20) to calculate density in this habitat type.
+ Hammond's Flycatcher was not detected in this habitat type.



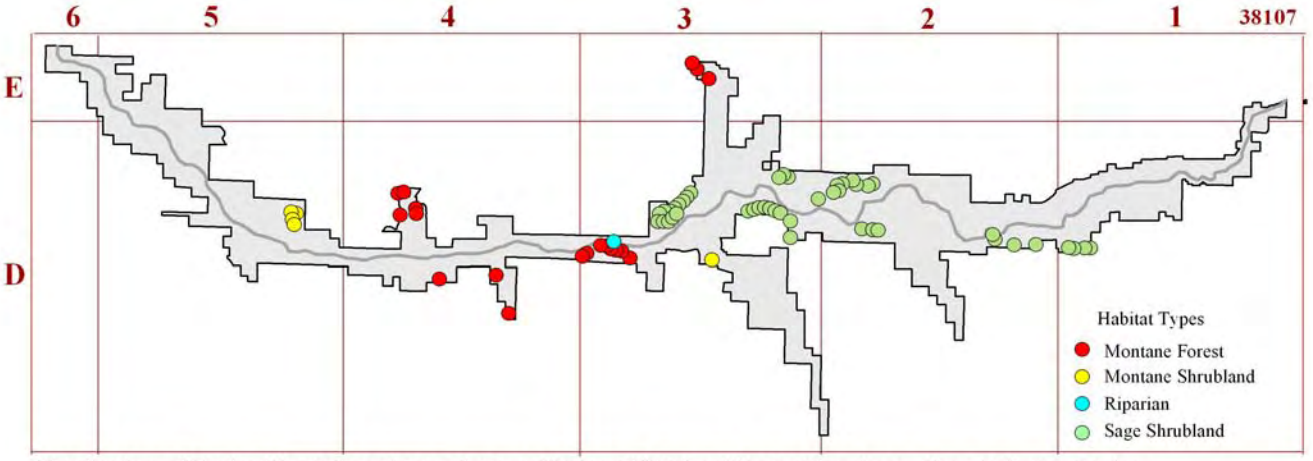
Distribution of Hammond's Flycatcher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Dusky Flycatcher

Detections of Dusky Flycatcher were sufficient to calculate density in Montane Forest (D = 0.499 birds per hectare) and Sage Shrubland (D = 0.127 birds per hectare) habitats. Dusky Flycatcher was detected in low numbers in Montane Shrubland (n = 5) and Riparian (n = 1) habitats.



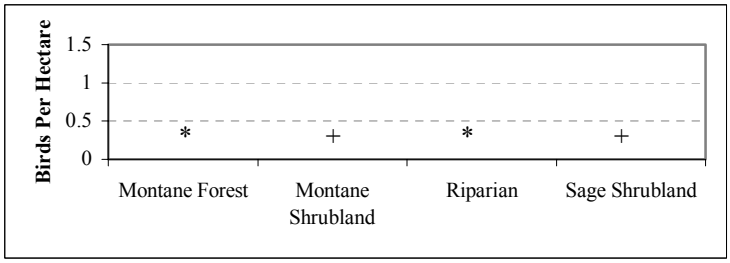
Density of Dusky Flycatcher among habitat types in Curecanti National recreation area. * Detections of Dusky Flycatcher were insufficient (<20) to calculate density in this habitat type.
+ Dusky Flycatcher was not detected in this habitat type.



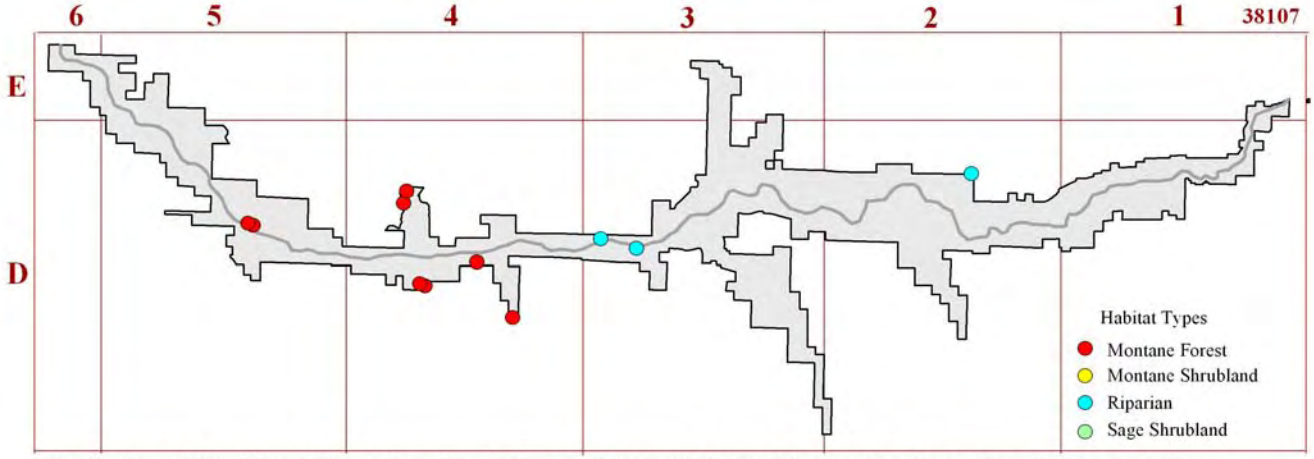
Distribution of Dusky Flycatcher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Cordilleran Flycatcher

Cordilleran Flycatcher was detected in low numbers in Montane Forest (n = 8) and Riparian (n = 3) habitats.



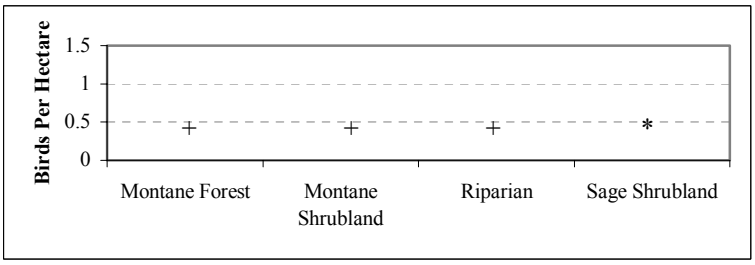
Density of Cordilleran Flycatcher among habitat types in Curecanti National recreation area. * Detections of Cordilleran Flycatcher were insufficient (<20) to calculate density in this habitat type.
+ Cordilleran Flycatcher was not detected in this habitat type.



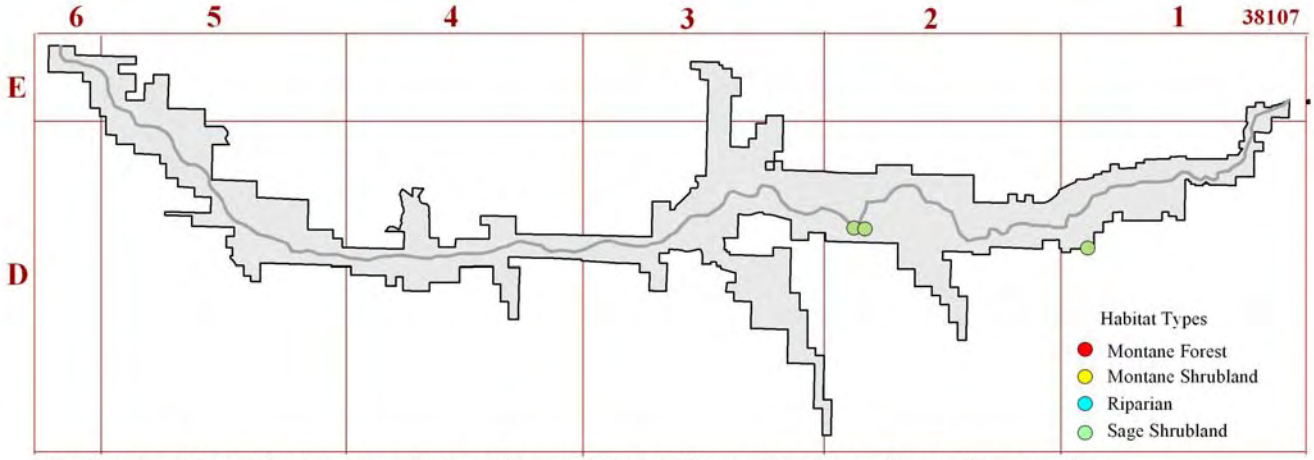
Distribution of Cordilleran Flycatcher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Say's Phoebe

Say's Phoebe was detected in low numbers in Sage Shrubland (n = 3) habitat.



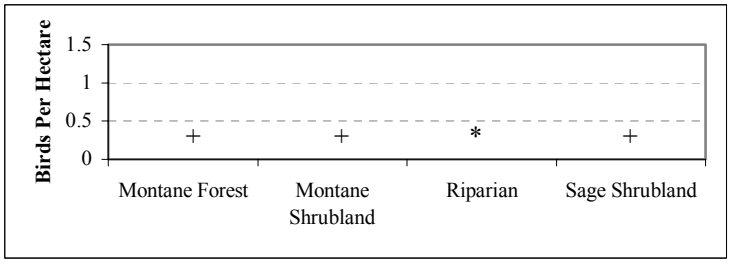
Density of Say's Phoebe among habitat types in Curecanti National recreation area. * Detections of Say's Phoebe were insufficient (<20) to calculate density in this habitat type.
+ Say's Phoebe was not detected in this habitat type.



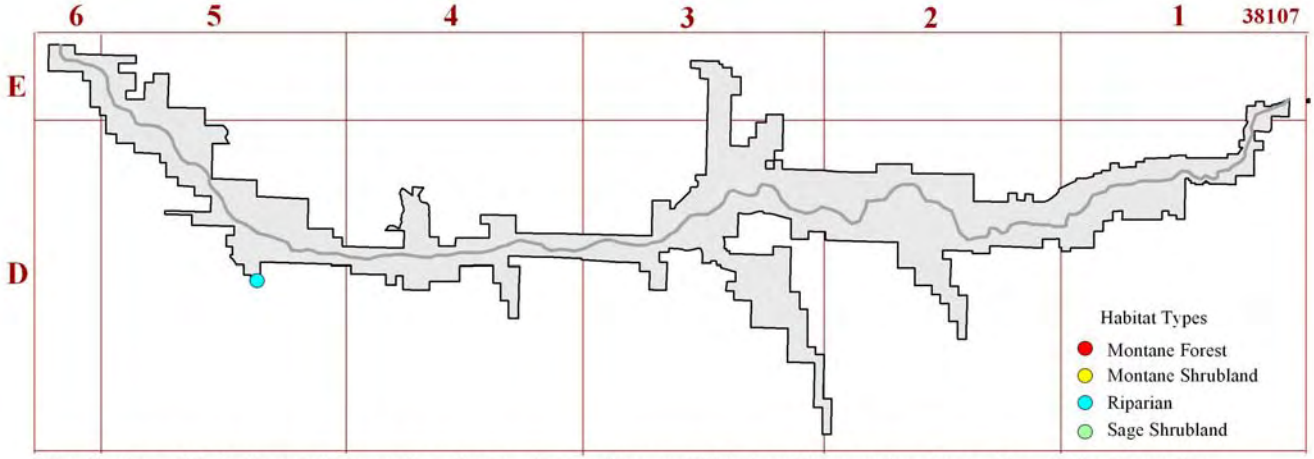
Distribution of Say's Phoebe observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Ash-throated Flycatcher

Ash-throated Flycatcher was detected in low numbers in Riparian (n = 1) habitat.



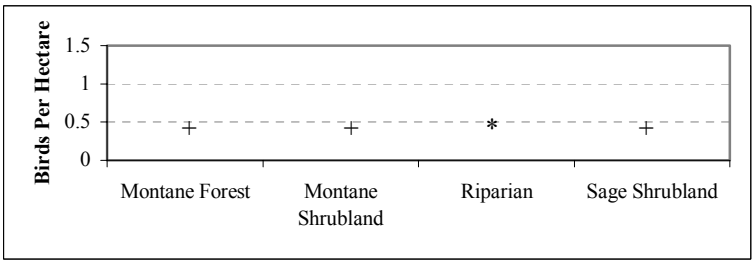
Density of Ash-throated Flycatcher among habitat types in Curecanti National recreation area. * Detections of Ash-throated Flycatcher were insufficient (<20) to calculate density in this habitat type.
+ Ash-throated Flycatcher was not detected in this habitat type.



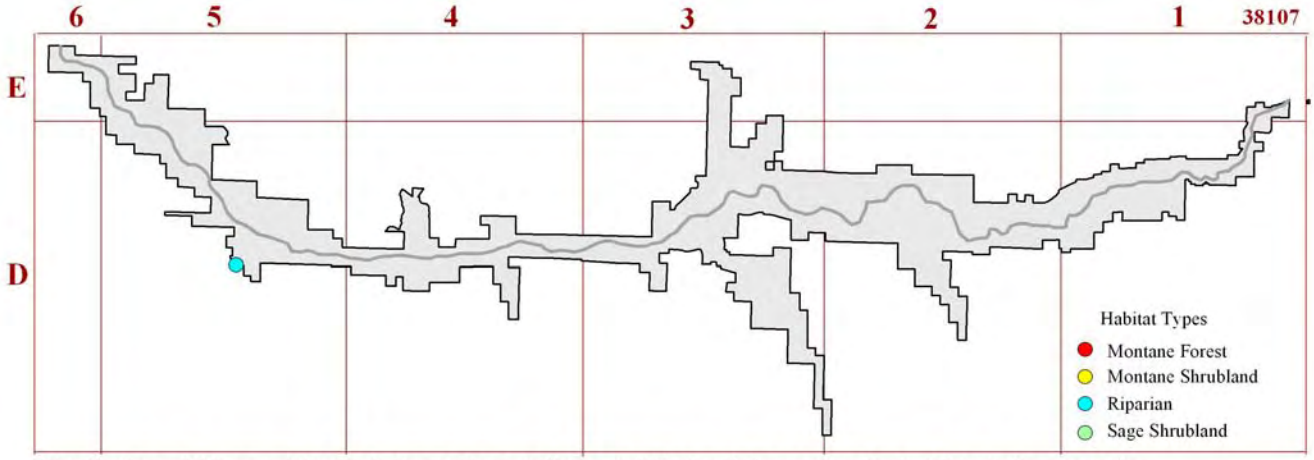
Distribution of Ash-throated Flycatcher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Western Kingbird

Western Kingbird was detected in low numbers in Riparian (n = 1) habitat.



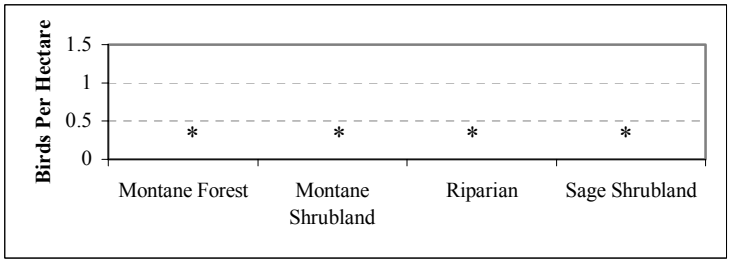
Density of Western Kingbird among habitat types in Curecanti National recreation area. * Detections of Western Kingbird were insufficient (<20) to calculate density in this habitat type.
+ Western Kingbird was not detected in this habitat type.



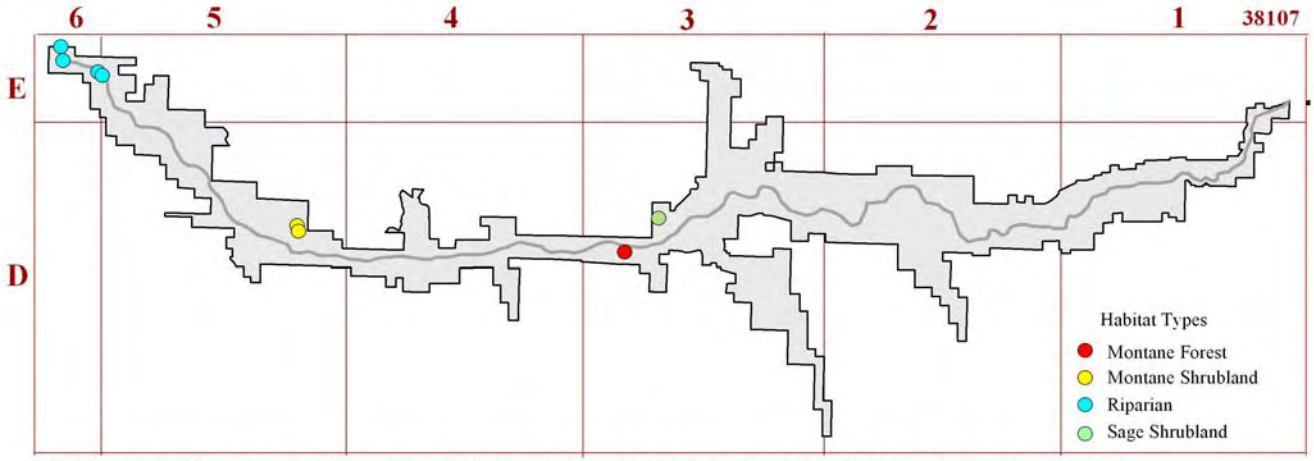
Distribution of Western Kingbird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Plumbeous Vireo

Plumbeous Vireo was detected in low numbers in Montane Forest (n = 1), Montane Shrubland (n = 2), Riparian (n = 4), and Sage Shrubland (n = 1) habitats.



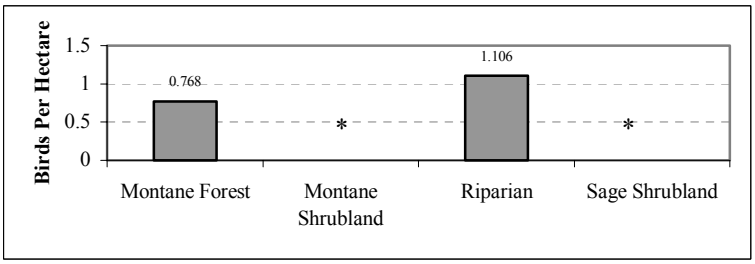
Density of Plumbeous Vireo among habitat types in Curecanti National recreation area. * Detections of Plumbeous Vireo were insufficient (<20) to calculate density in this habitat type.
+ Plumbeous Vireo was not detected in this habitat type.



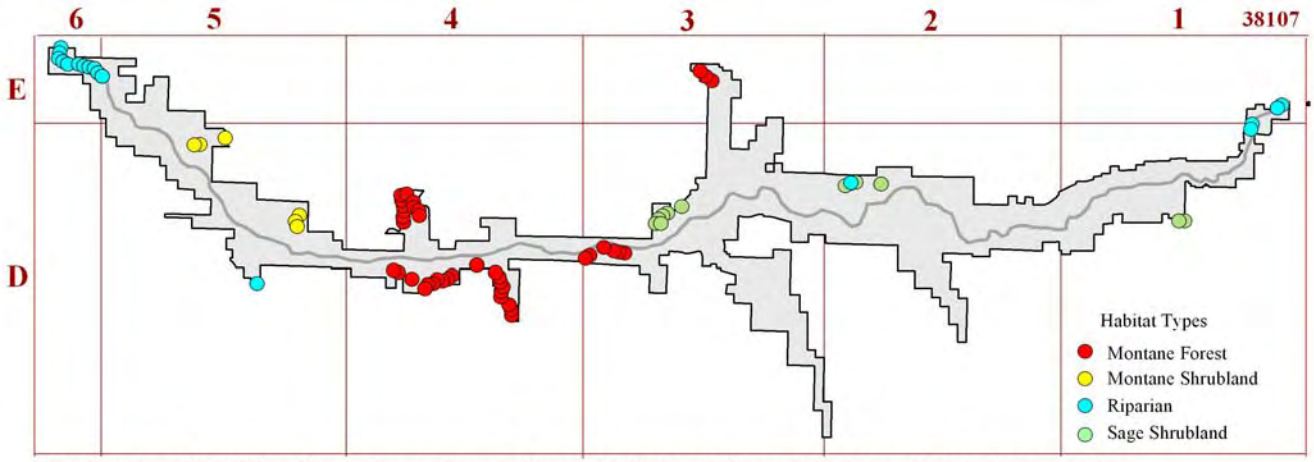
Distribution of Plumbeous Vireo observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Warbling Vireo

Detections of Warbling Vireo were sufficient to calculate density in Montane Forest (D = 0.768 birds per hectare), and Riparian (D = 1.106 birds per hectare) habitats. Warbling Vireo was detected in low numbers in Montane Shrubland (n = 8), and Sage Shrubland (n = 16) habitats.



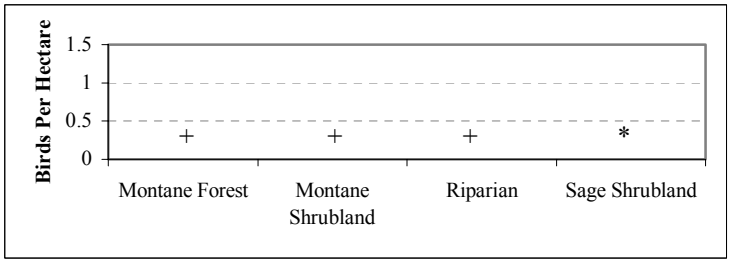
Density of Warbling Vireo among habitat types in Curecanti National recreation area. * Detections of Warbling Vireo were insufficient (<20) to calculate density in this habitat type.
+ Warbling Vireo was not detected in this habitat type.



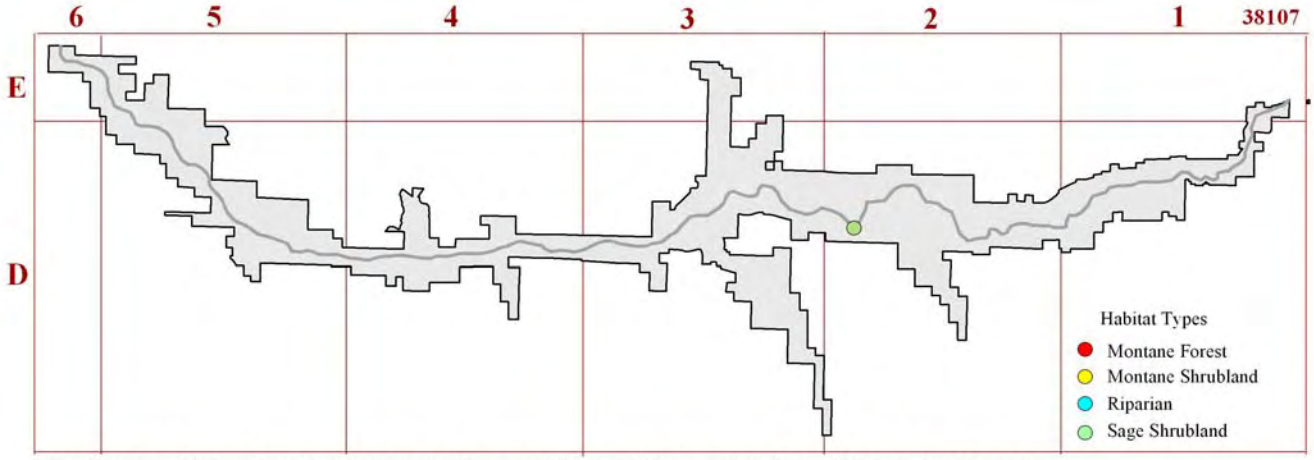
Distribution of Warbling Vireo observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Gray Jay

Gray Jay was detected in low numbers in Sage Shrubland (n = 1) habitat.



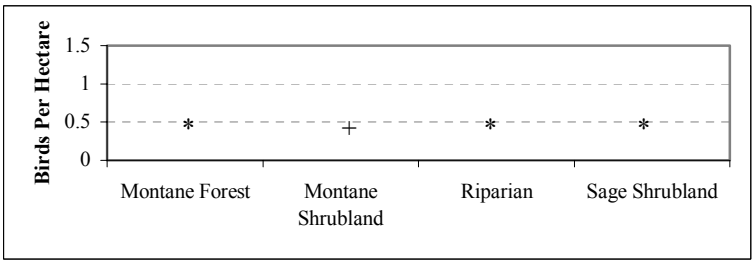
Density of Gray Jay among habitat types in Curecanti National recreation area. * Detections of Gray Jay were insufficient (<20) to calculate density in this habitat type.
+ Gray Jay was not detected in this habitat type.



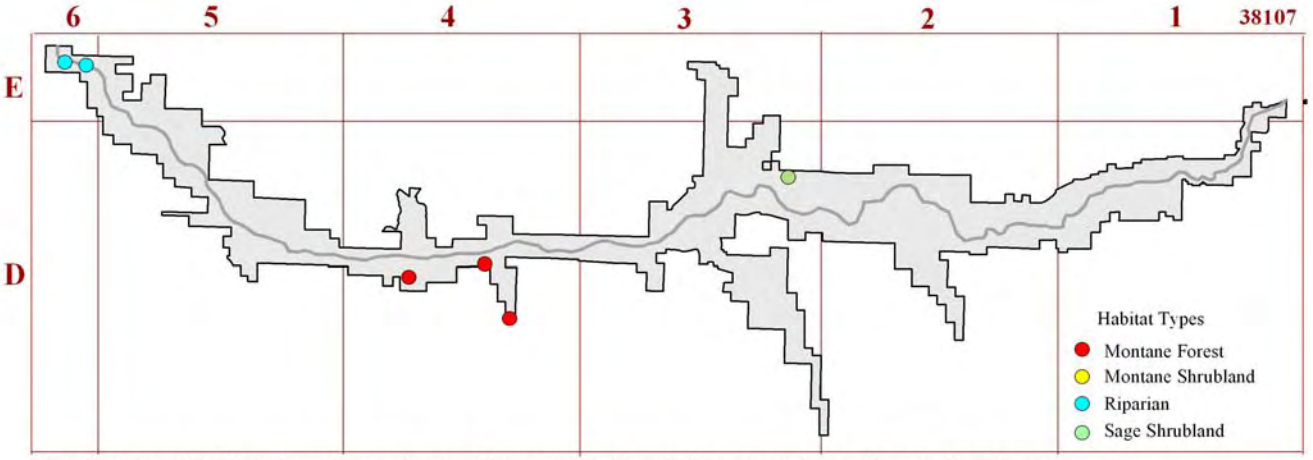
Distribution of Gray Jay observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Steller's Jay

Steller's Jay was detected in low numbers in Montane Forest (n = 3), Riparian (n = 2), and Sage Shrubland (n = 1) habitats.



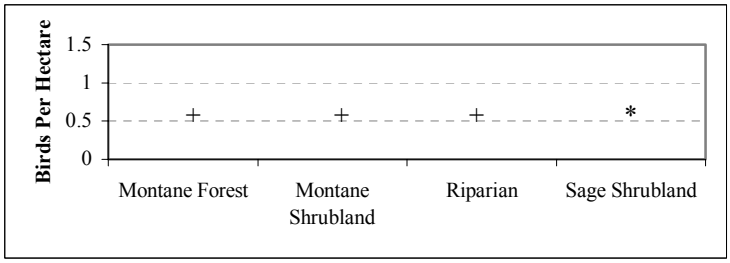
Density of Steller's Jay among habitat types in Curecanti National recreation area. * Detections of Steller's Jay were insufficient (<20) to calculate density in this habitat type.
+ Steller's Jay was not detected in this habitat type.



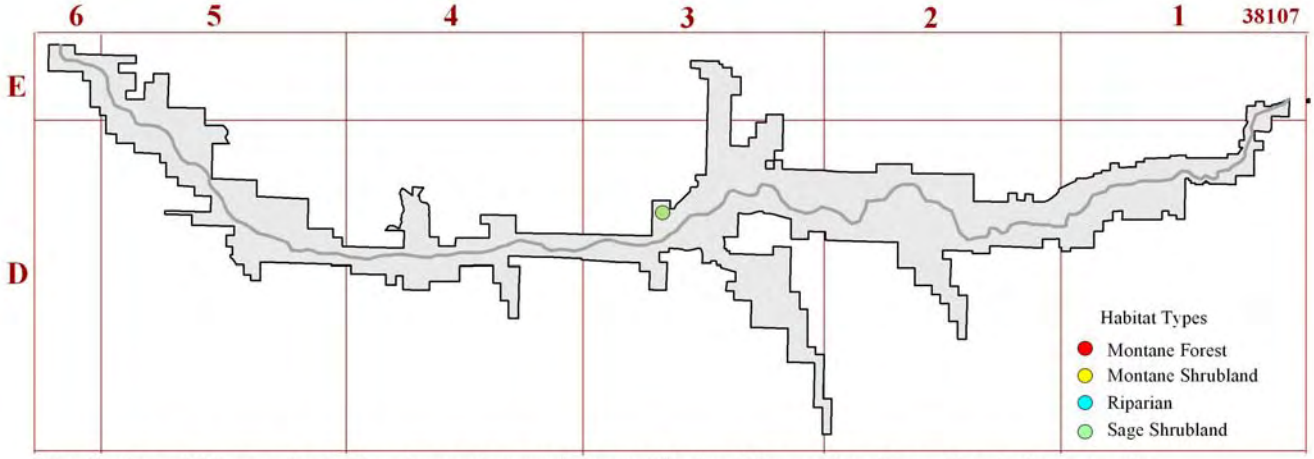
Distribution of Steller's Jay observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Western Scrub-Jay

Western Scrub-Jay was detected in low numbers in Sage Shrubland (n = 1) habitat.



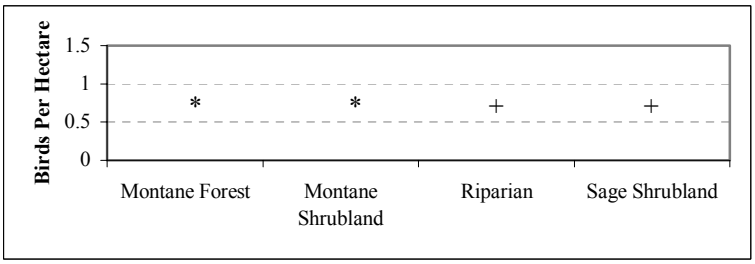
Density of Western Scrub-Jay among habitat types in Curecanti National recreation area. * Detections of Western Scrub-Jay were insufficient (<20) to calculate density in this habitat type.
+ Western Scrub-Jay was not detected in this habitat type.



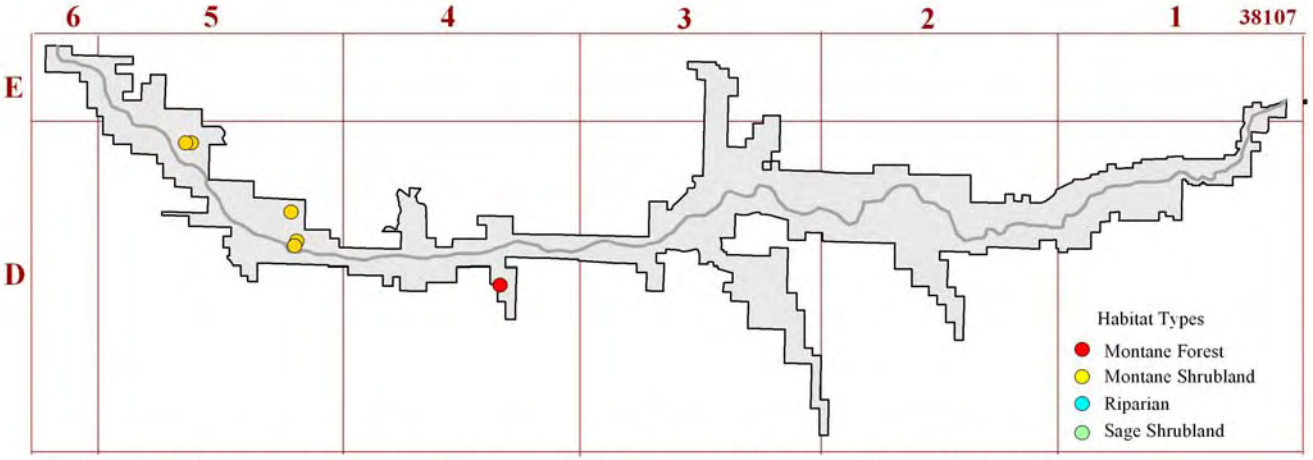
Distribution of Western Scrub-Jay observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Clark's Nutcracker

Clark's Nutcracker was detected in low numbers in Montane Forest (n = 1) and Montane Shrubland (n = 8) habitats.



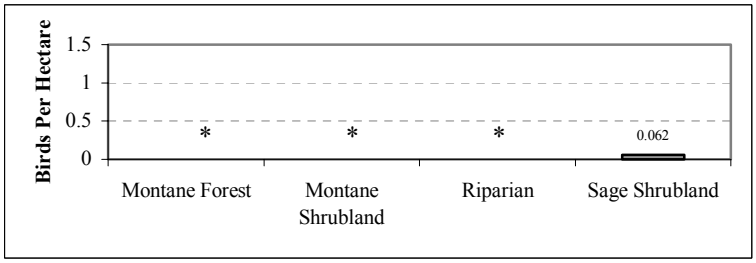
Density of Clark's Nutcracker among habitat types in Curecanti National recreation area. * Detections of Clark's Nutcracker were insufficient (<20) to calculate density in this habitat type.
+ Clark's Nutcracker was not detected in this habitat type.



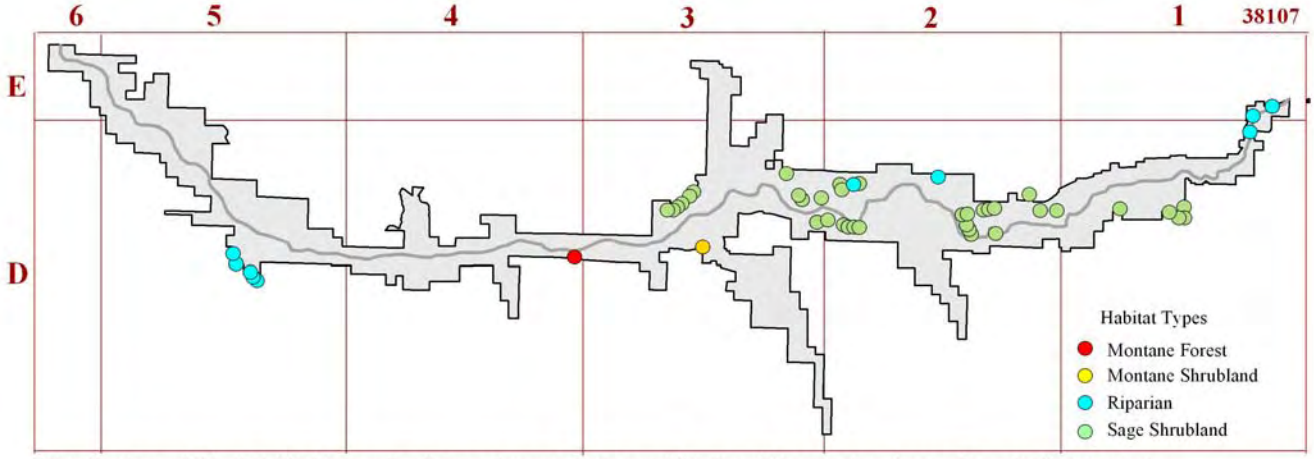
Distribution of Clark's Nutcracker observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Black-billed Magpie

Detections of Black-billed Magpie were sufficient to calculate density in Sage Shrubland (D = 0.062 birds per hectare) habitat. Black-billed Magpie was detected in low numbers in Montane Forest (n = 1), Montane Shrubland (n = 1), and Riparian (n = 15) habitats.



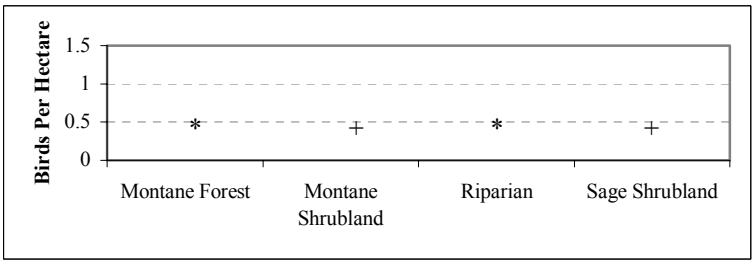
Density of Black-billed Magpie among habitat types in Curecanti National recreation area. * Detections of Black-billed Magpie were insufficient (<20) to calculate density in this habitat type.
+ Black-billed Magpie was not detected in this habitat type.



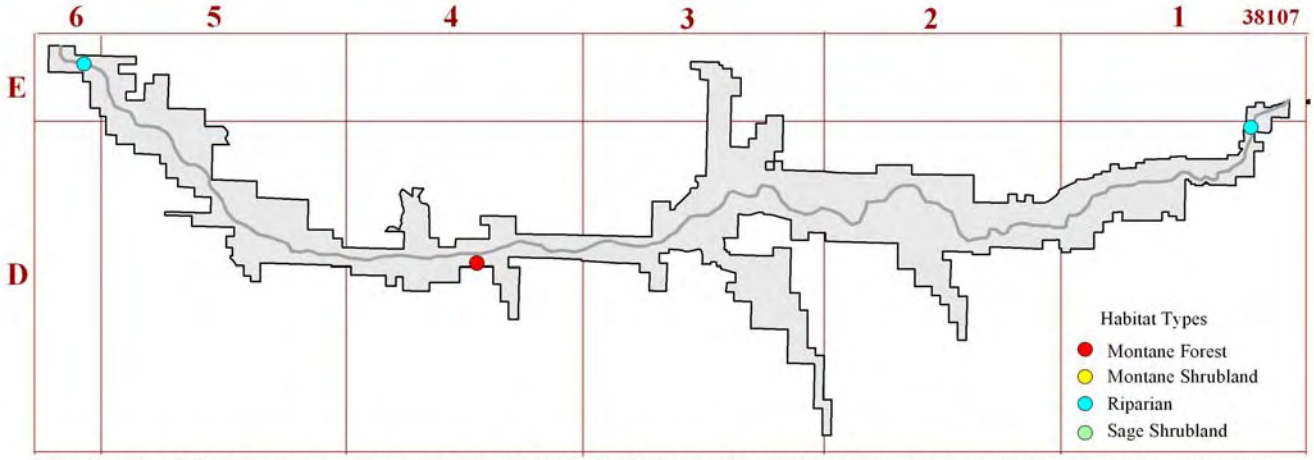
Distribution of Black-billed Magpie observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

American Crow

American Crow was detected in low numbers in Montane Forest (n = 1) and Riparian (n = 2) habitats.



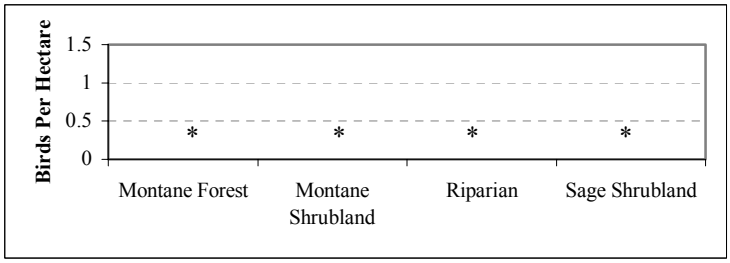
Density of American Crow among habitat types in Curecanti National recreation area. * Detections of American Crow were insufficient (<20) to calculate density in this habitat type.
+ American Crow was not detected in this habitat type.



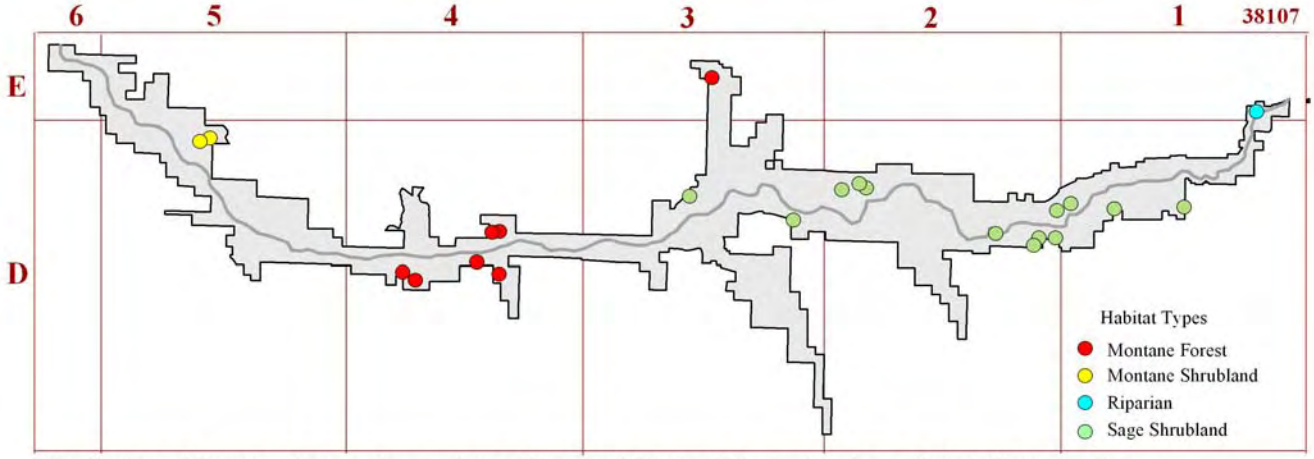
Distribution of American Crow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Common Raven

Common Raven was detected in low numbers in Montane Forest (n = 8), Montane Shrubland (n = 2), Riparain (n = 3), and Sage Shrubland (n = 14) habitats.



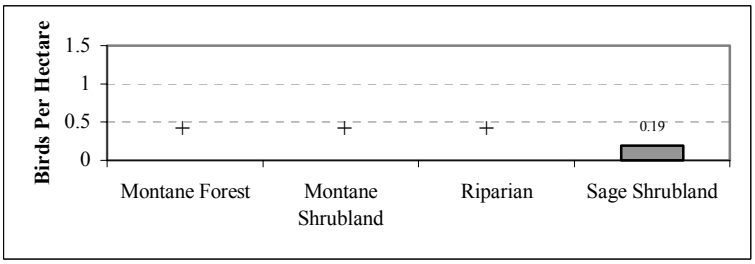
Density of Common Raven among habitat types in Curecanti National recreation area. * Detections of Common Raven were insufficient (<20) to calculate density in this habitat type.
+ Common Raven was not detected in this habitat type.



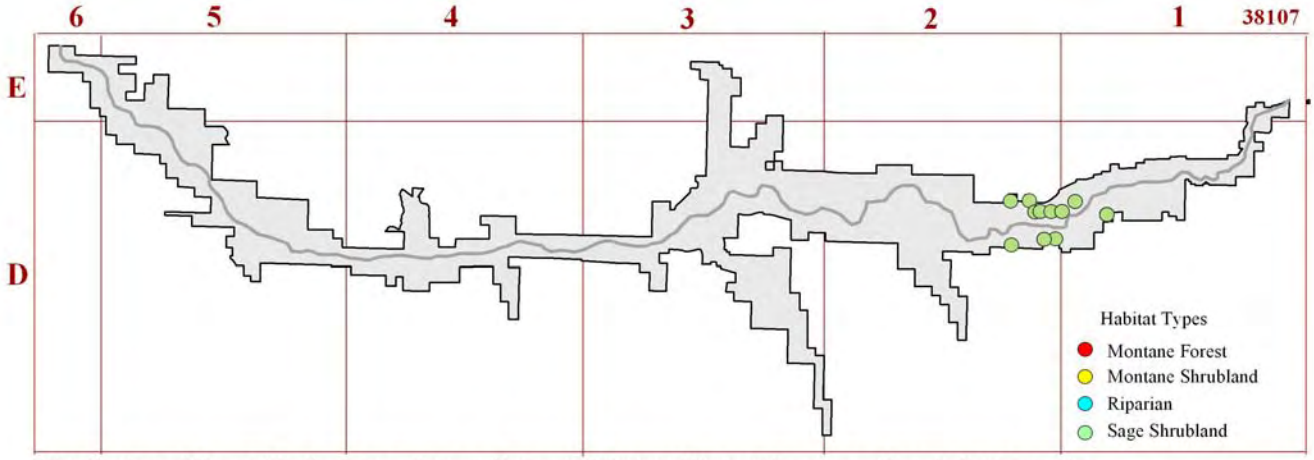
Distribution of Common Raven observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Horned Lark

Detections of Horned Lark were sufficient to calculate density in Sage Shrubland (D = 0.190 birds per hectare) habitat.



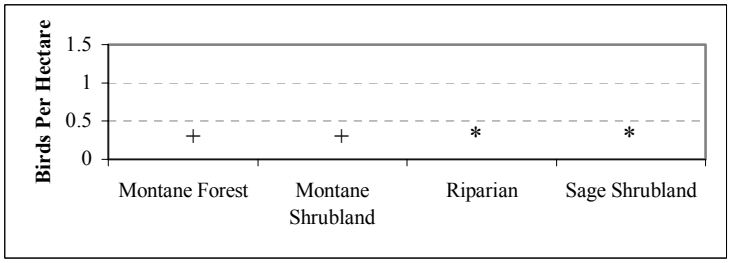
Density of Horned Lark among habitat types in Curecanti National recreation area. * Detections of Horned Lark were insufficient (<20) to calculate density in this habitat type.
+ Horned Lark was not detected in this habitat type.



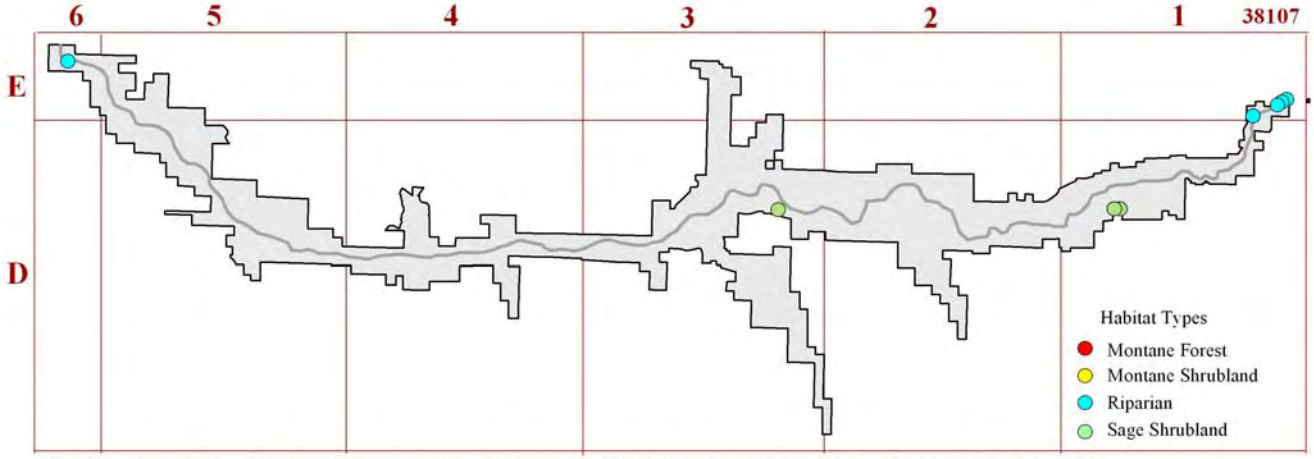
Distribution of Horned Lark observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Tree Swallow

Tree Swallow was detected in low numbers in Riparian (n = 10) and Sage Shrubland (n = 12) habitats.



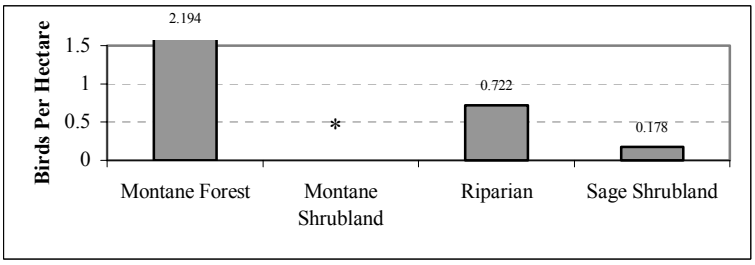
Density of Tree Swallow among habitat types in Curecanti National recreation area. * Detections of Tree Swallow were insufficient (<20) to calculate density in this habitat type.
+ Tree Swallow was not detected in this habitat type.



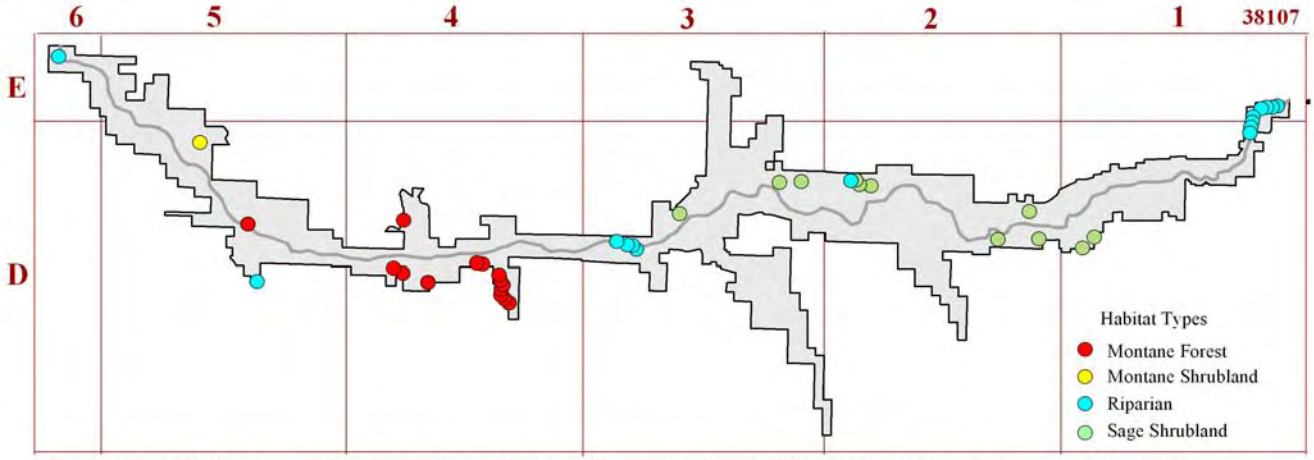
Distribution of Tree Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Violet-green Swallow

Detections of Violet-green Swallow were sufficient to calculate density in Montane Forest (D = 2.194 birds per hectare), Riparian (D = 0.722 birds per hectare), and Sage Shrubland (D = 0.178 birds per hectare) habitats. Violet-green Swallow was detected in low numbers in Montane Shrubland (n = 2) habitat.



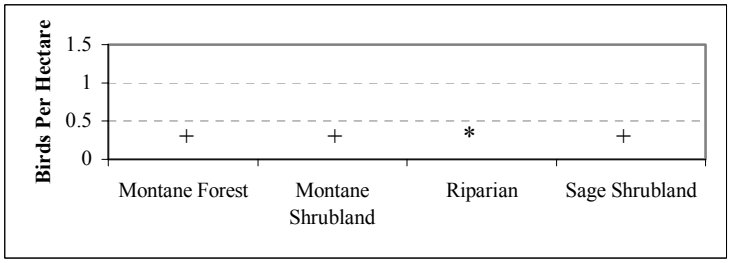
Density of Violet-green Swallow among habitat types in Curecanti National recreation area. * Detections of Violet-green Swallow were insufficient (<20) to calculate density in this habitat type.
+ Violet-green Swallow Towhee was not detected in this habitat type.



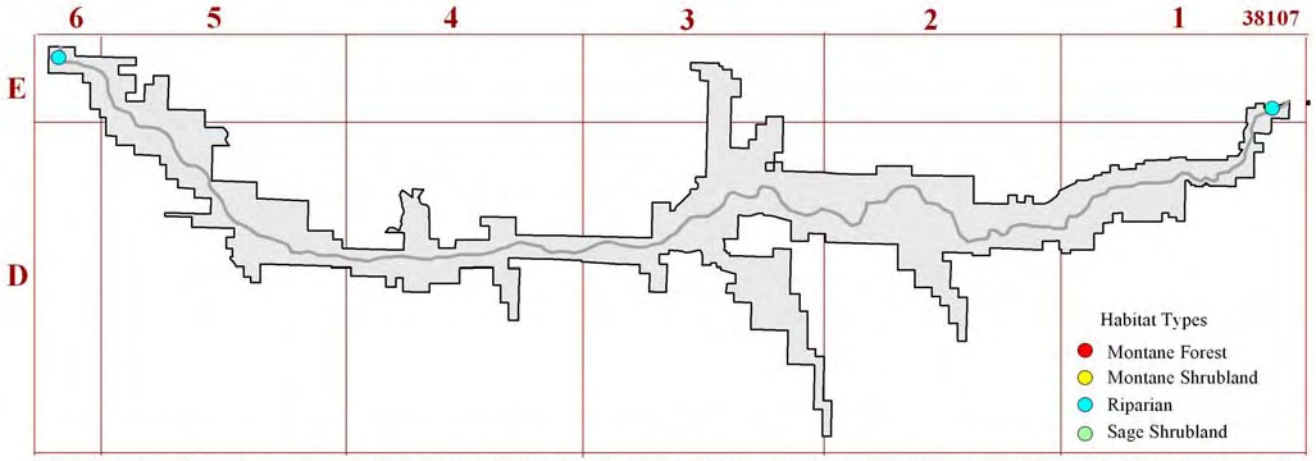
Distribution of Violet-green Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Northern Rough-winged Swallow

Northern Rough-winged Swallow was detected in low numbers in Riparian (n = 3) habitat.



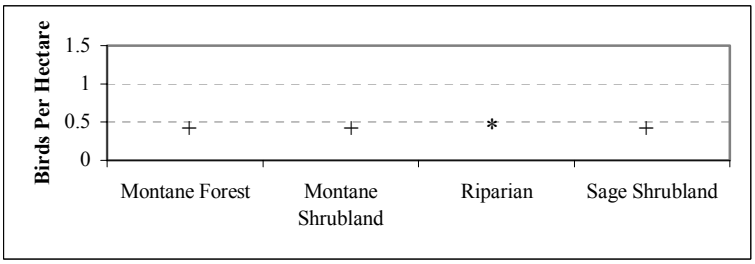
Density of Northern Rough-winged Swallow among habitat types in Curecanti National recreation area. * Detections of Northern Rough-winged Swallow were insufficient (<20) to calculate density in this habitat type.
+ Northern Rough-winged Swallow was not detected in this habitat type.



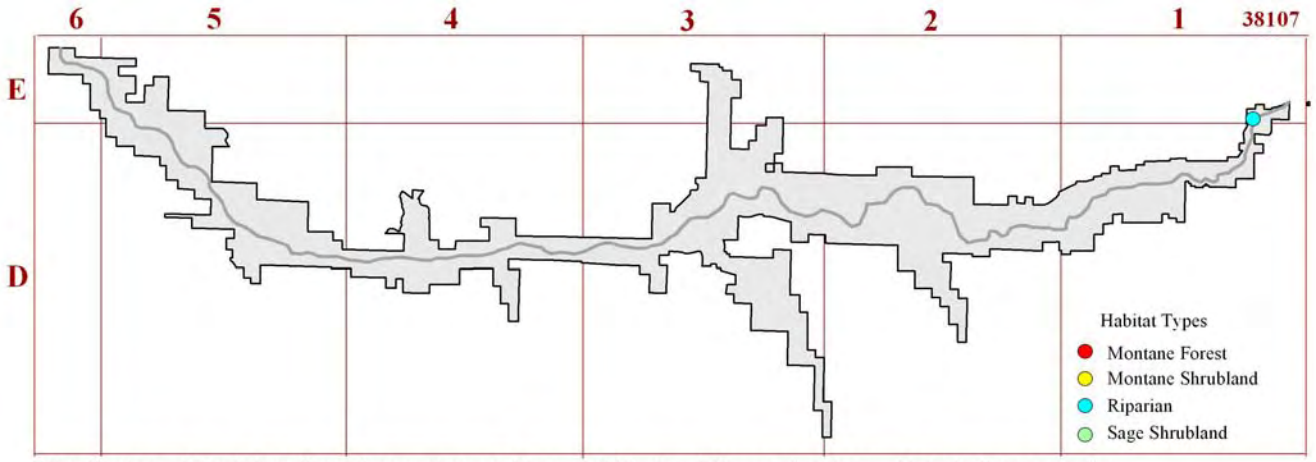
Distribution of Northern Rough-winged Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Bank Swallow

Bank Swallow was detected in low numbers in Riparian (n = 1) habitat.



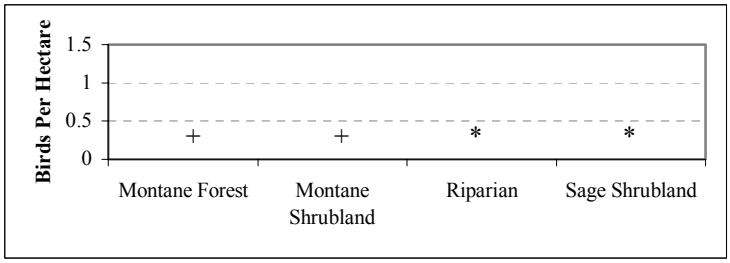
Density of Bank Swallow among habitat types in Curecanti National recreation area. * Detections of Bank Swallow were insufficient (<20) to calculate density in this habitat type.
+ Bank Swallow was not detected in this habitat type.



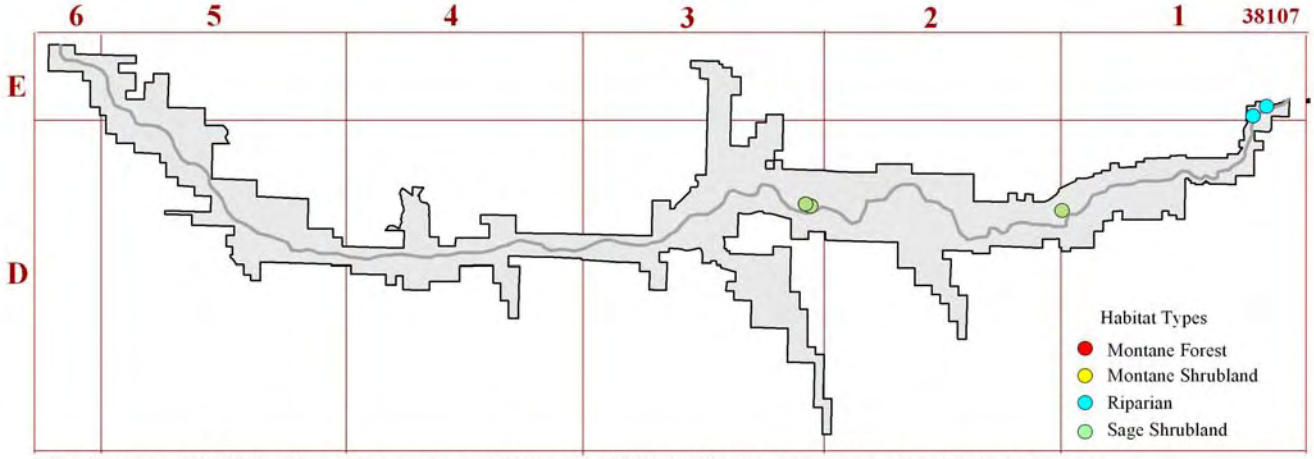
Distribution of Bank Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Cliff Swallow

Cliff Swallow was detected in low numbers in Riparian (n = 11) and Sage Shrubland (n = 12) habitats.



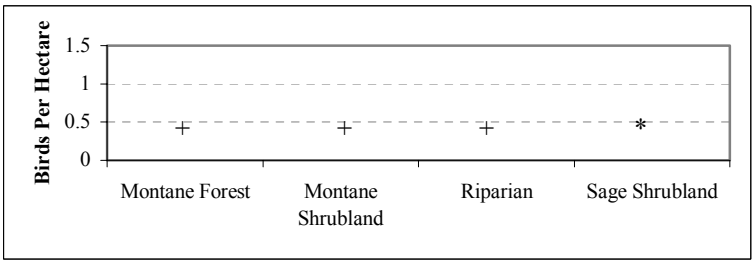
Density of Cliff Swallow among habitat types in Curecanti National recreation area. * Detections of Cliff Swallow were insufficient (<20) to calculate density in this habitat type.
+ Cliff Swallow was not detected in this habitat type.



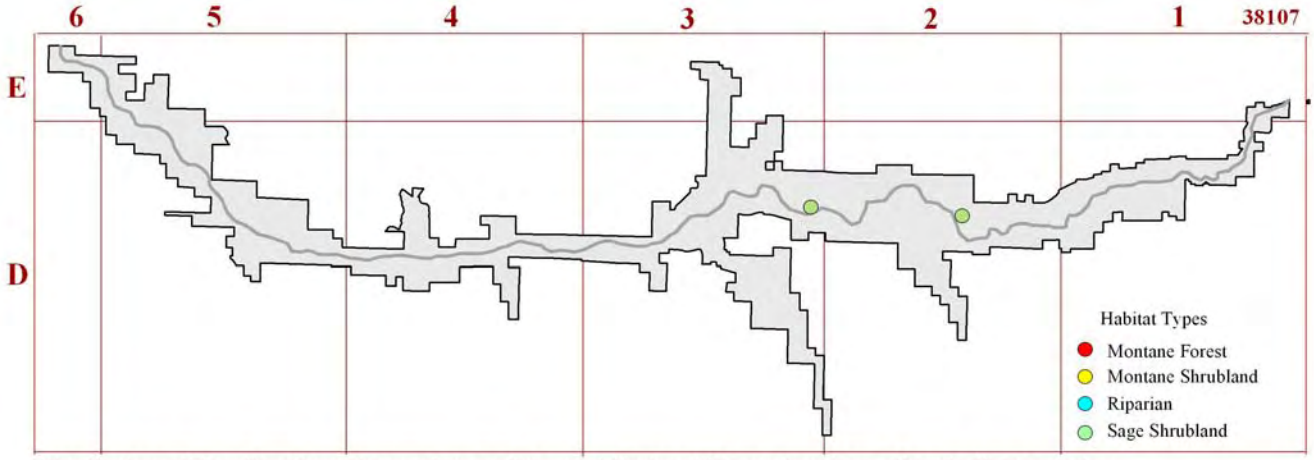
Distribution of Cliff Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Barn Swallow

Barn Swallow was detected in low numbers in Sage Shrubland (n = 3) habitat.



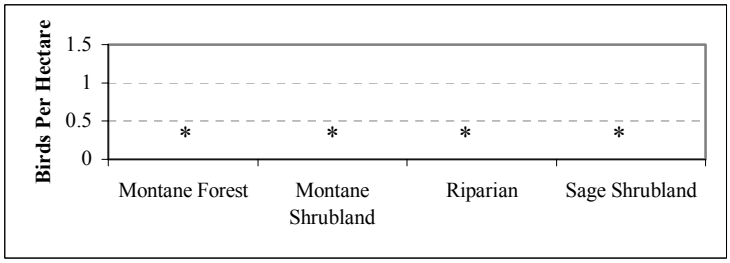
Density of Barn Swallow among habitat types in Curecanti National recreation area. * Detections of Barn Swallow were insufficient (<20) to calculate density in this habitat type.
+ Barn Swallow was not detected in this habitat type.



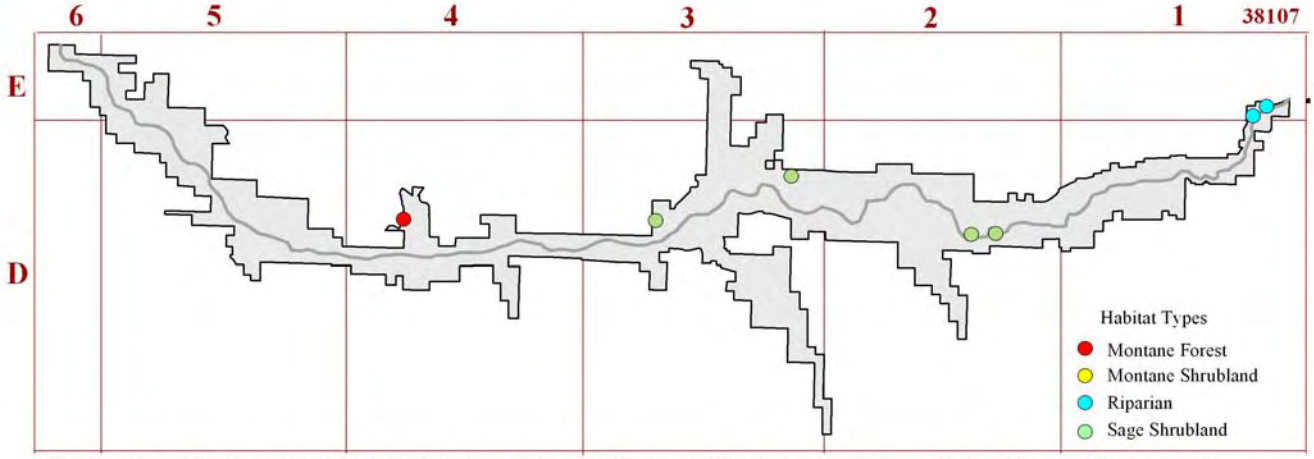
Distribution of Barn Swallow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Black-capped Chickadee

Black-capped Chickadee was detected in low numbers in Montane Forest (n = 1), Montane Shrubland (n = 1), Riparian (n = 2), and Sage Shrubland (n = 4) habitats.



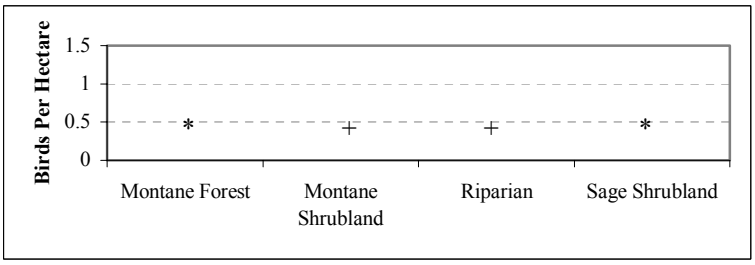
Density of Black-capped Chickadee among habitat types in Curecanti National recreation area. * Detections of Black-capped Chickadee were insufficient (<20) to calculate density in this habitat type.
+ Black-capped Chickadee was not detected in this habitat type.



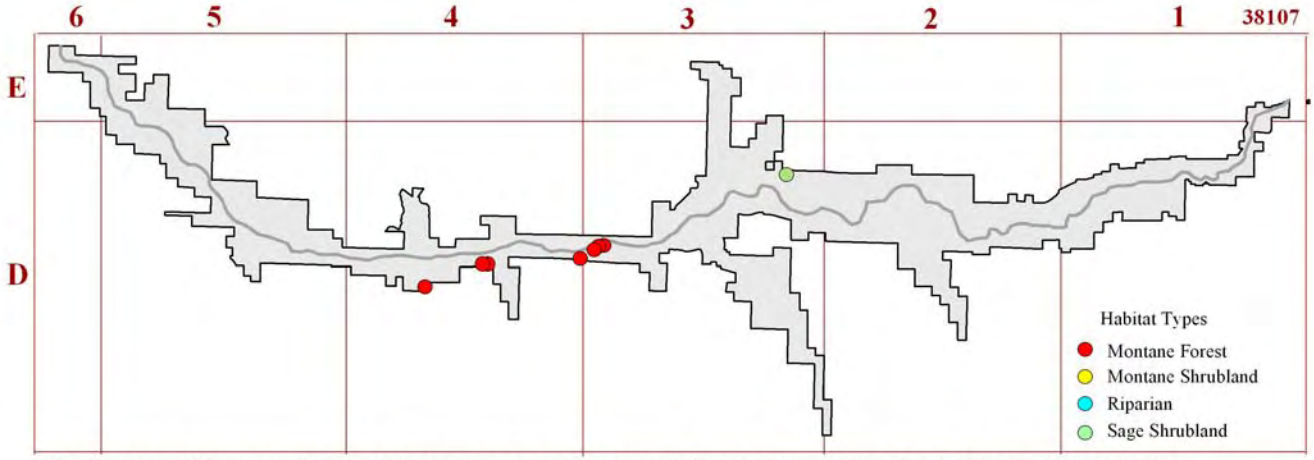
Distribution of Black-capped Chickadee observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Mountain Chickadee

Mountain Chickadee was detected in low numbers in Montane Forest (n = 7) and Sage Shrubland (n = 1) habitats.



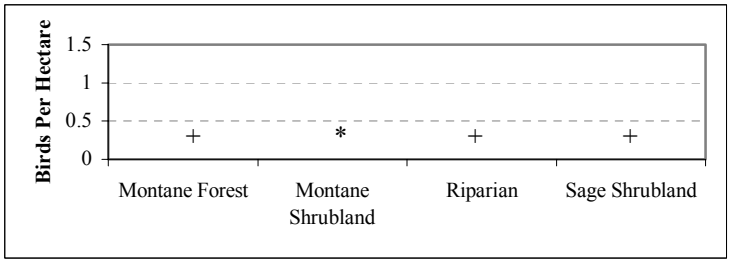
Density of Mountain Chickadee among habitat types in Curecanti National recreation area. * Detections of Mountian Chickadee were insufficient (<20) to calculate density in this habitat type.
+ Mountain Chickadee was not detected in this habitat type.



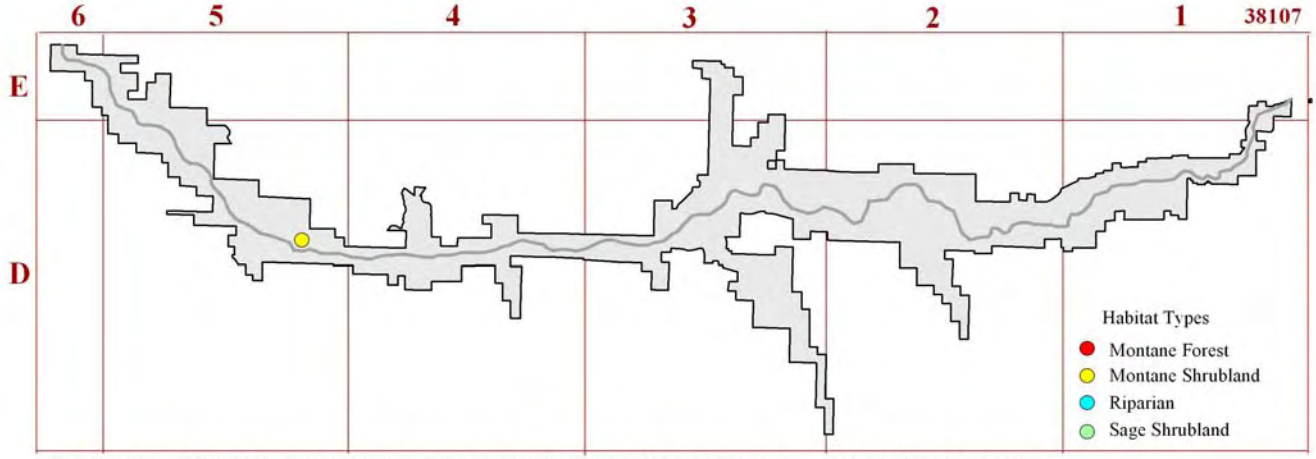
Distribution of Mountain Chickadee observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Bushtit

Bushtit was detected in low numbers in Montane Shrubland (n = 1) habitat.



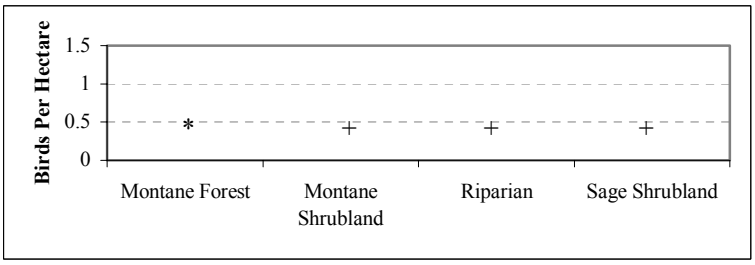
Density of Bushtit among habitat types in Curecanti National recreation area. * Detections of Bushtit were insufficient (<20) to calculate density in this habitat type.
+ Bushtit was not detected in this habitat type.



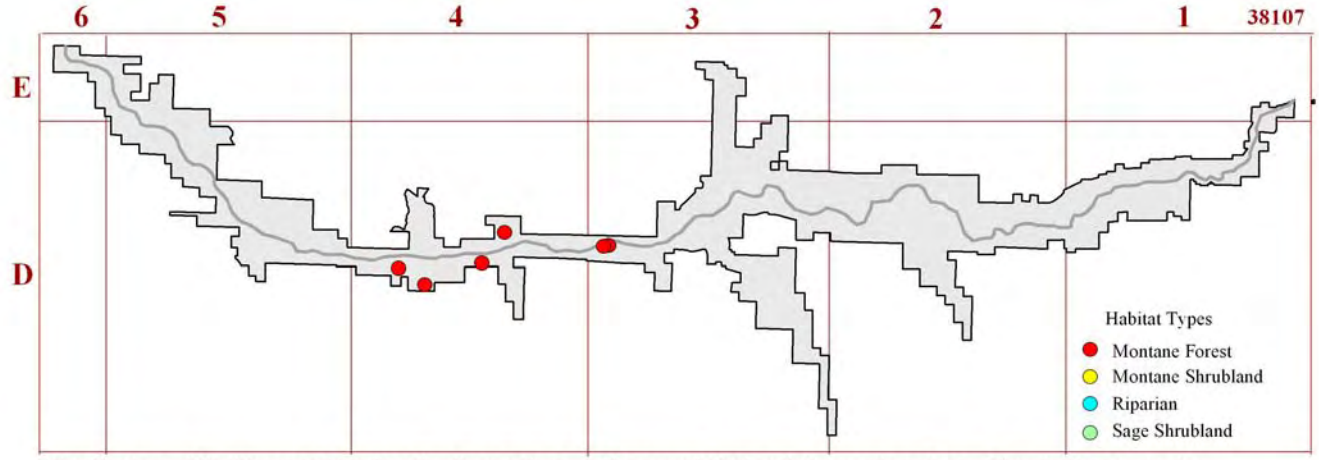
Distribution of Bushtit observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Red-breasted Nuthatch

Red-breasted Nuthatch was detected in low numbers in Montane Forest (n = 6) habitat.



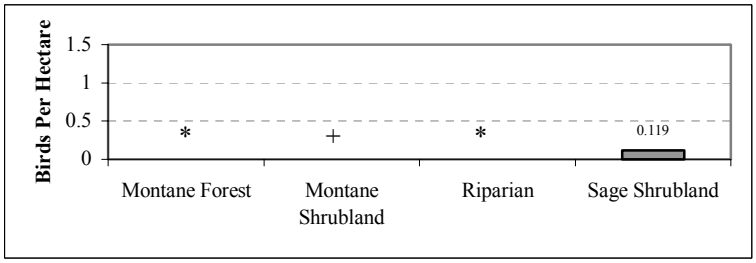
Density of Red-breasted Nuthatch among habitat types in Curecanti National recreation area. * Detections of Red-breasted Nuthatch were insufficient (<20) to calculate density in this habitat type.
+ Red-breasted Nuthatch was not detected in this habitat type.



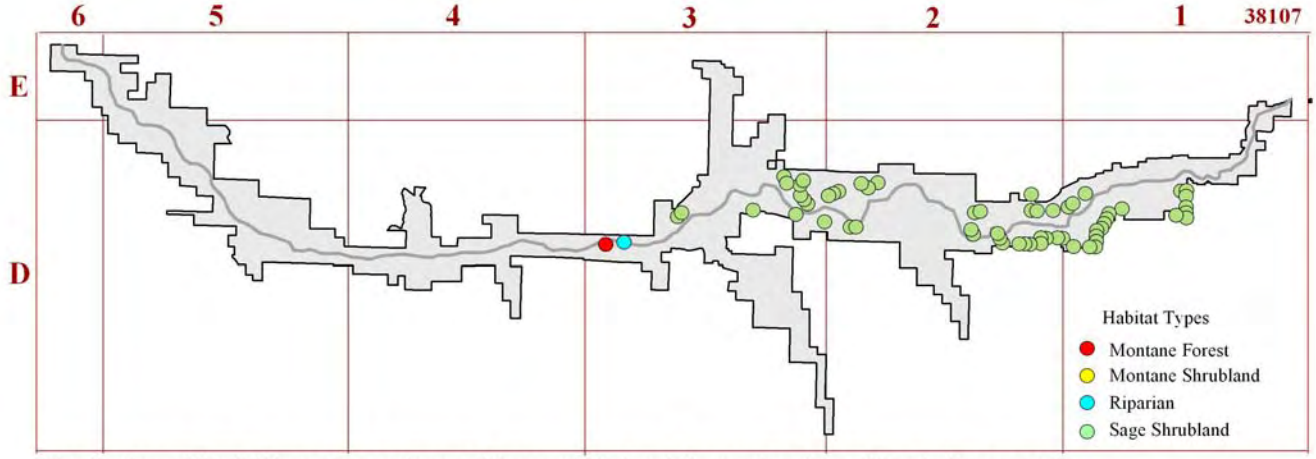
Distribution of Red-breasted Nuthatch observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Rock Wren

Detections of Rock Wren were sufficient to calculate density in Sage Shrubland (D = 0.119 habitat. Rock Wren was detected in low numbers in Montane Forest (n = 1), and Riparian (n = 1) habitats.



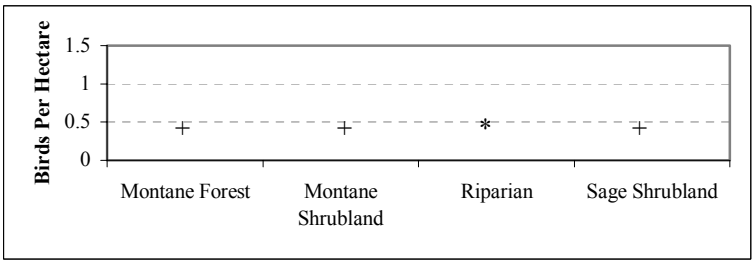
Density of Rock Wren among habitat types in Curecanti National recreation area. * Detections of Rock Wren were insufficient (<20) to calculate density in this habitat type.
+ Rock Wren was not detected in this habitat type.



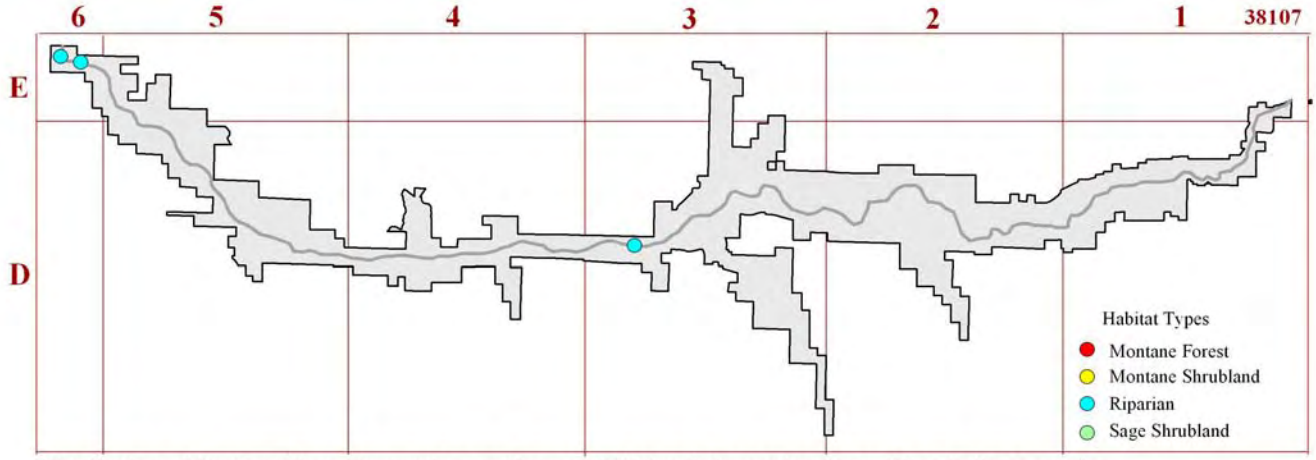
Distribution of Rock Wren observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Canyon Wren

Canyon Wren was detected in low numbers in Riparian (n = 3) habitat.



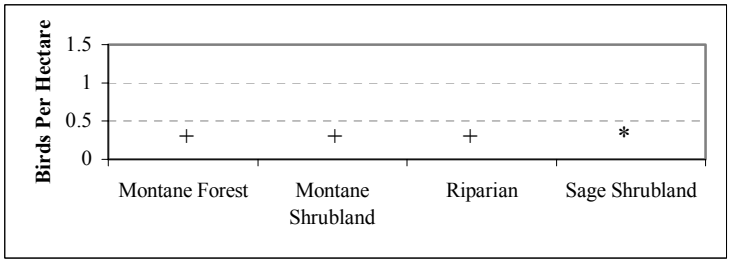
Density of Canyon Wren among habitat types in Curecanti National recreation area. * Detections of Canyon Wren were insufficient (<20) to calculate density in this habitat type.
+ Canyon Wren was not detected in this habitat type.



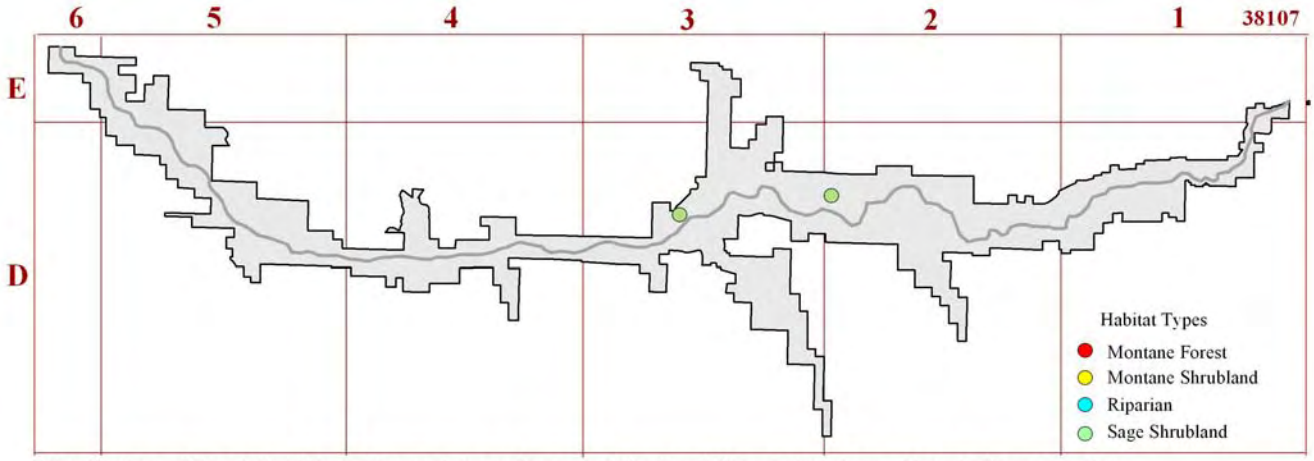
Distribution of Canyon Wren observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Bewick's Wren

Bewick's Wren was detected in low numbers in Sage Shrubland (n = 2) habitat.



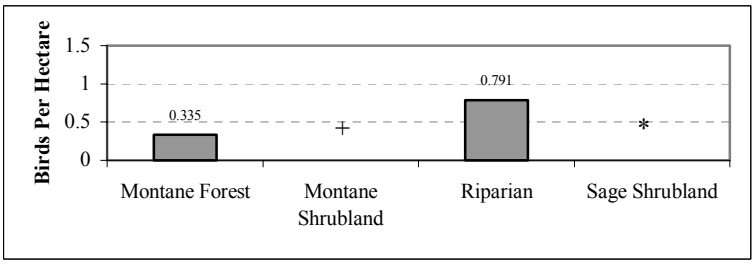
Density of Bewick's Wren among habitat types in Curecanti National recreation area. * Detections of Bewick's Wren were insufficient (<20) to calculate density in this habitat type.
+ Bewick's Wren was not detected in this habitat type.



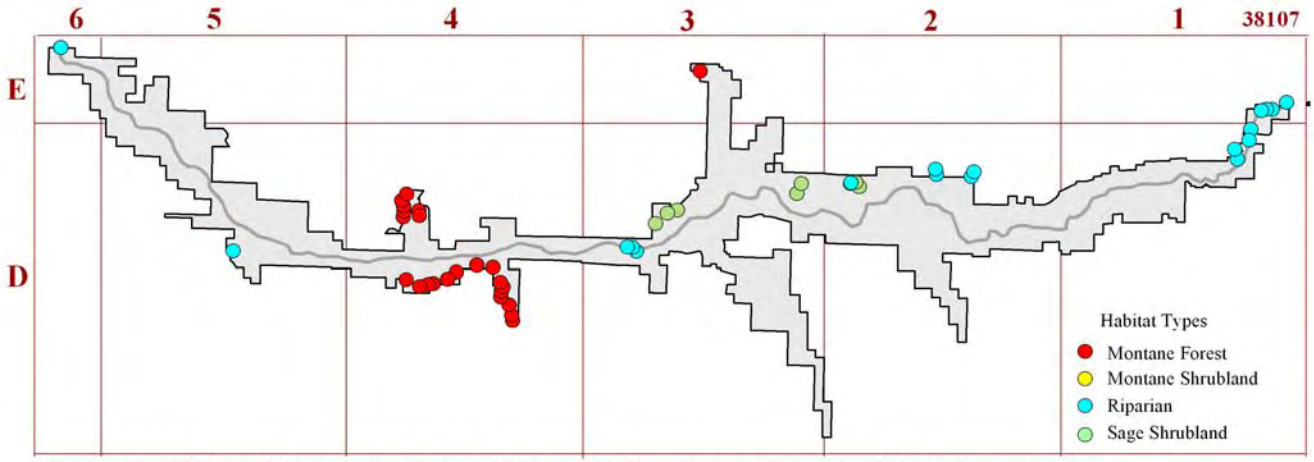
Distribution of Bewick's Wren observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

House Wren

Detections of House Wren were sufficient to calculate density in Montane Forest (D = 0.335 birds per hectare) and Riparian (D = 0.791 birds per hectare) habitats. House Wren was detected in low numbers in Sage Shrubland (n = 9) habitat.



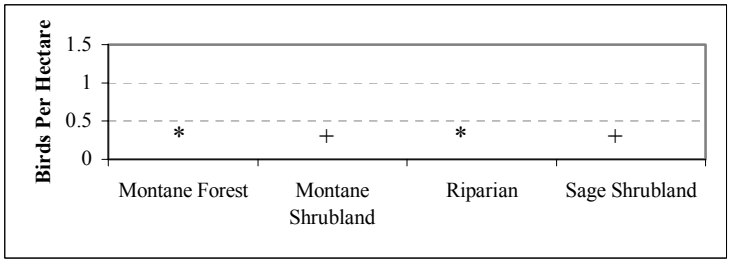
Density of House Wren among habitat types in Curecanti National recreation area. * Detections of House Wren were insufficient (<20) to calculate density in this habitat type.
+ House Wren was not detected in this habitat type.



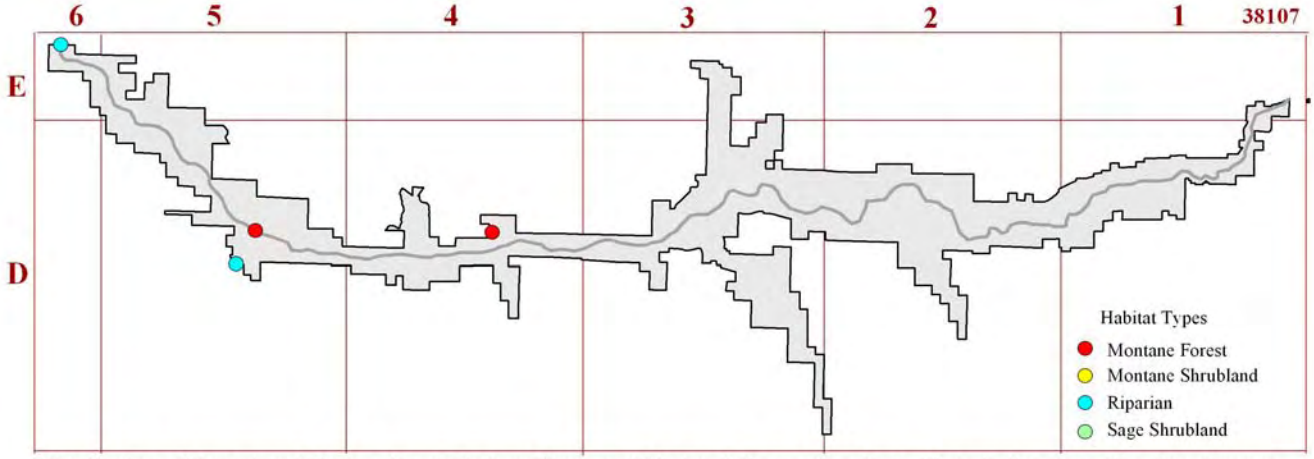
Distribution of House Wren observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

American Dipper

American Dipper was detected in low numbers in Montane Forest (n = 2) and Riparian (n = 2) habitats.



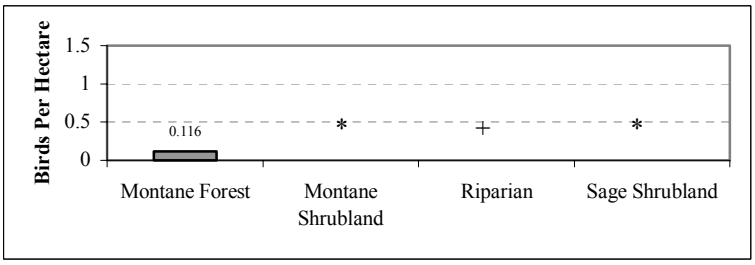
Density of American Dipper among habitat types in Curecanti National recreation area. * Detections of American Dipper were insufficient (<20) to calculate density in this habitat type.
+ American Dipper was not detected in this habitat type.



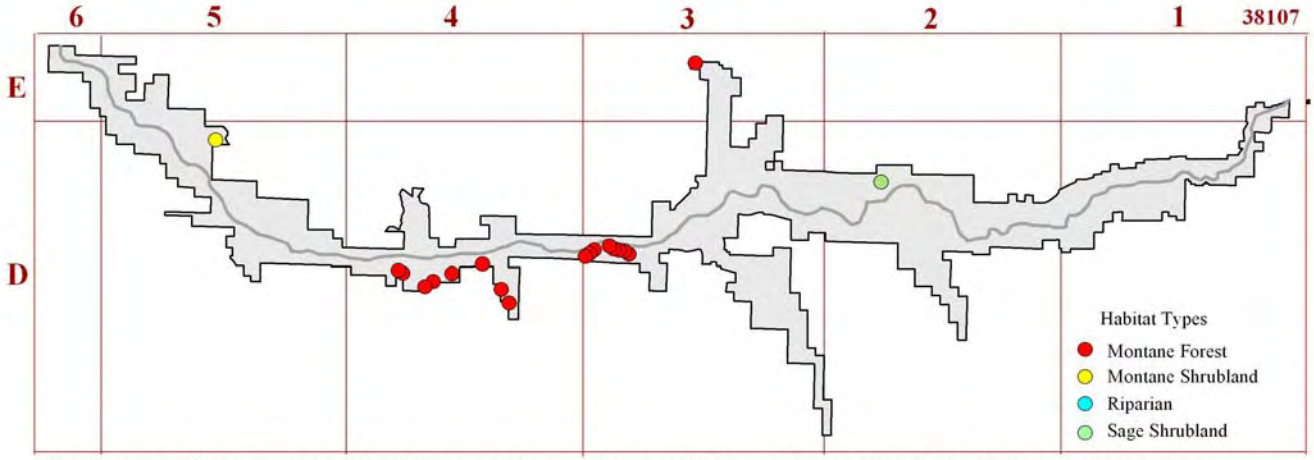
Distribution of American Dipper observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Ruby-crowned Kinglet

Detections of Ruby-crowned Kinglet were sufficient to calculate density in Montane Forest (D = 0.116 birds per hectare) habitat. Ruby-crowned Kinglet was detected in low numbers in Montane Shrubland (n = 1), and Sage Shrubland (n = 1) habitats.



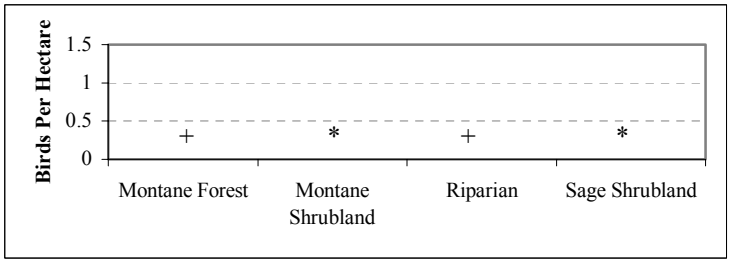
Density of Ruby-crowned Kinglet among habitat types in Curecanti National recreation area. * Detections of Ruby-crowned Kinglet were insufficient (<20) to calculate density in this habitat type.
+ Ruby-crowned Kinglet was not detected in this habitat type.



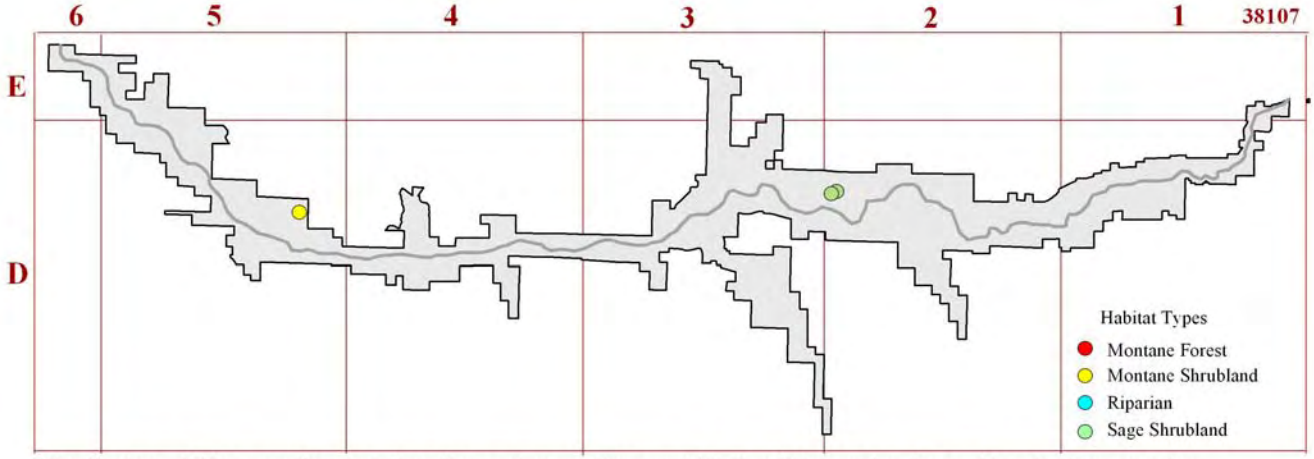
Distribution of Ruby-crowned Kinglet observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Blue-gray Gnatcatcher

Blue-gray Gnatcatcher was detected in low numbers in Montane Shrubland (n = 1) and Sage Shrubland (n = 2) habitats.



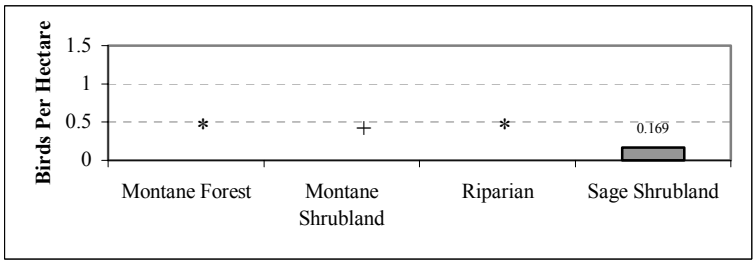
Density of Blue-gray Gnatcatcher among habitat types in Curecanti National recreation area. * Detections of Blue-gray Gnatcatcher were insufficient (<20) to calculate density in this habitat type.
+ Blue-gray Gnatcatcher was not detected in this habitat type.



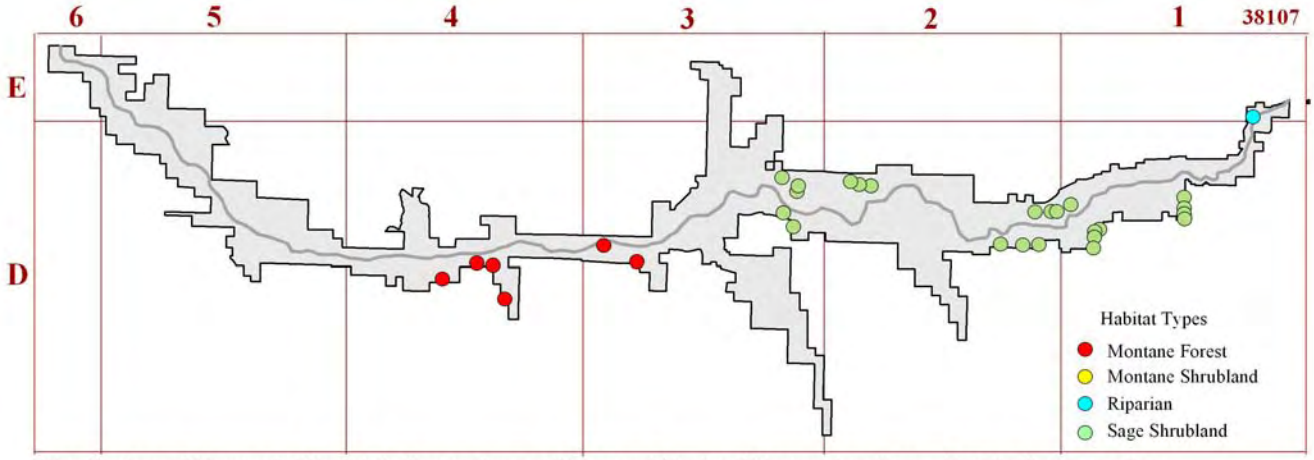
Distribution of Blue-gray Gnatcatcher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Mountain Bluebird

Detections of Mountain Bluebird were sufficient to calculate density in Sage Shrubland (D = 0.169 birds per hectare) habitat. Mountain Bluebird was detected in low numbers in Montane Forest (n = 6), and Riparian (n = 1) habitats.



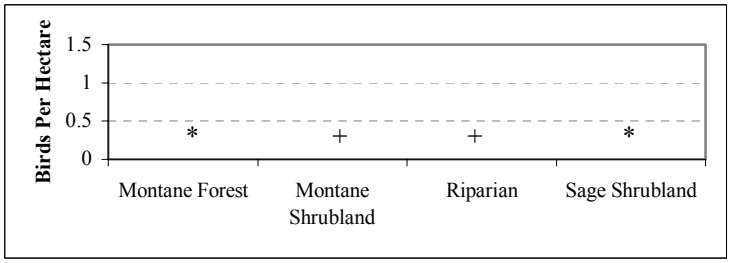
Density of Mountian Bluebird among habitat types in Curecanti National recreation area. * Detections of Mountian Bluebird were insufficient (<20) to calculate density in this habitat type.
+ Mountain Bluebird was not detected in this habitat type.



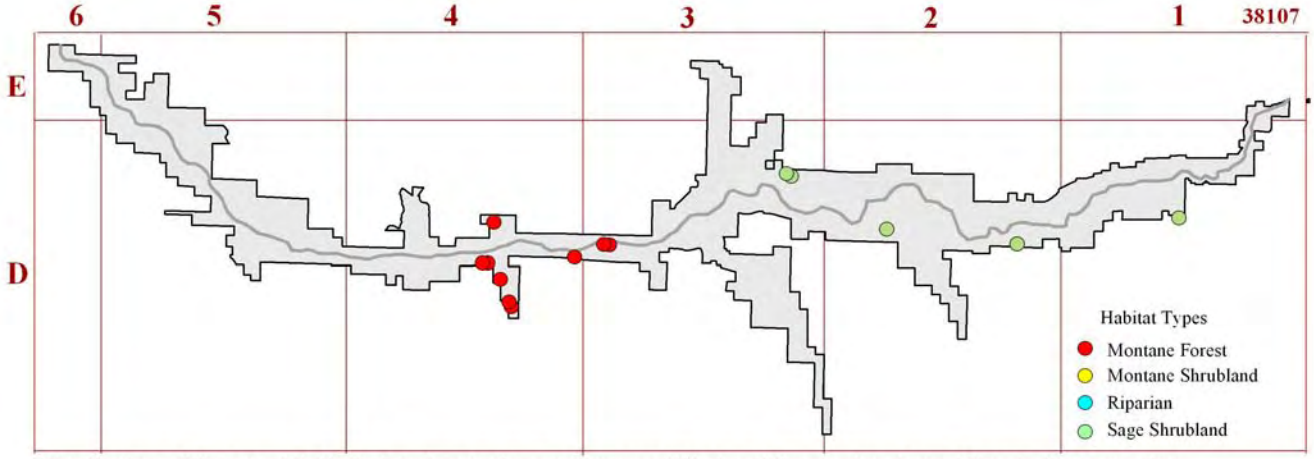
Distribution of Mountain Bluebird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Townsend's Solitaire

Townsend's Solitaire was detected in low numbers in Montane Forest (n = 9) and Sage Shrubland (n = 6) habitats.



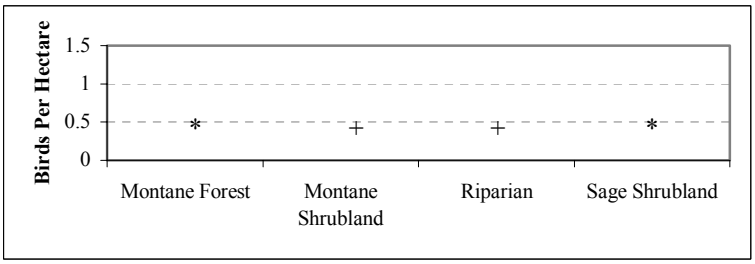
Density of Townsend's Solitaire among habitat types in Curecanti National recreation area. * Detections of Townsend's Solitaire were insufficient (<20) to calculate density in this habitat type.
+ Townsend's Solitaire was not detected in this habitat type.



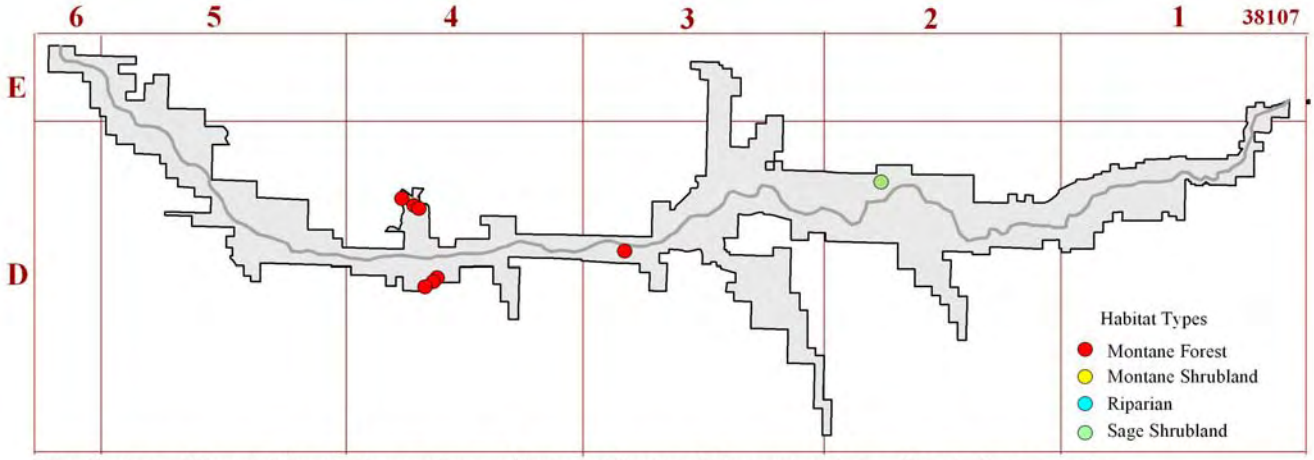
Distribution of Townsend's Solitaire observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Hermit Thrush

Hermit Thrush was detected in low numbers in Montane Forest (n = 7) and Sage Shrubland (n = 1) habitats.



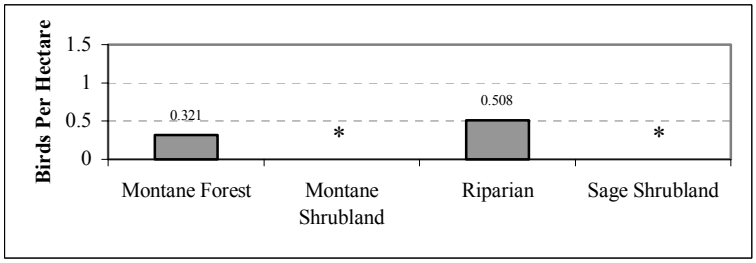
Density of Hermit Thrush among habitat types in Curecanti National recreation area. * Detections of Hermit Thrush were insufficient (<20) to calculate density in this habitat type.
+ Hermit Thrush was not detected in this habitat type.



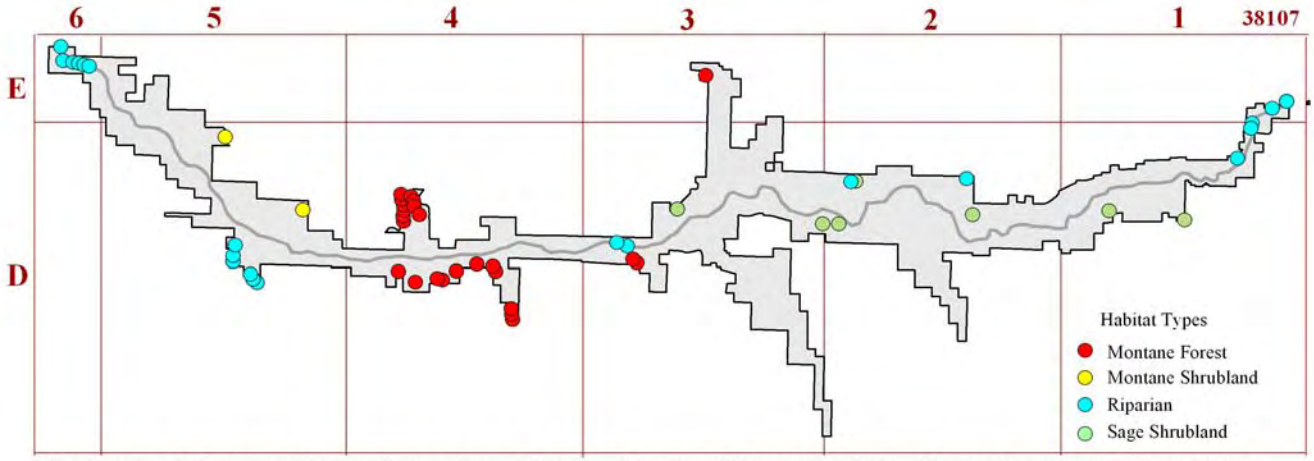
Distribution of Hermit Thrush observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

American Robin

Detections of American Robin were sufficient to calculate density in Montane Forest (D = 0.321 birds per hectare) and Riparian (D = 0.508 birds per hectare) habitats. American Robin was detected in low numbers in Montane Shrubland (n = 2) and Sage Shrubland (n = 9) habitats.



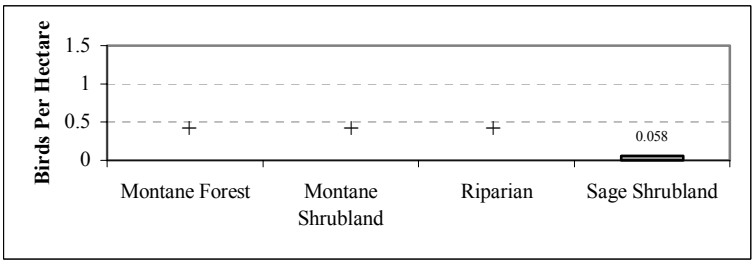
Density of American Robin among habitat types in Curecanti National recreation area. * Detections of American Robin were insufficient (<20) to calculate density in this habitat type.
+ American Robin was not detected in this habitat type.



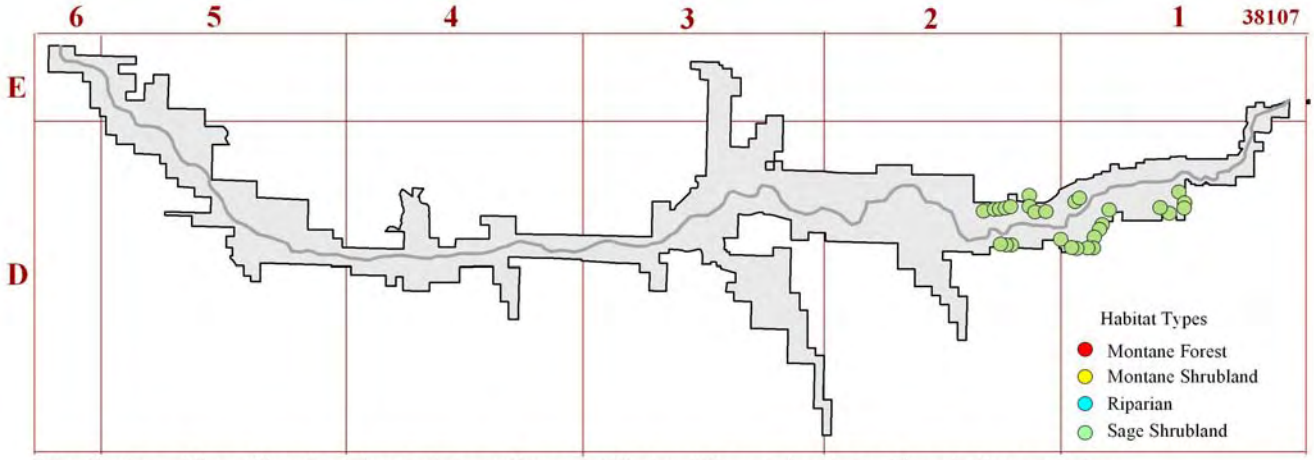
Distribution of American Robin observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Sage Thrasher

Detections of Sage Thrasher were sufficient to calculate density in Sage Shrubland (D = 0.058 birds per hectare) habitat. Sage Thrasher was detected in no other habitat.



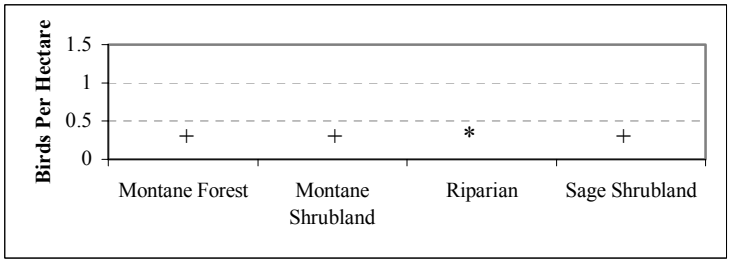
Density of Sage Thrasher among habitat types in Curecanti National recreation area. * Detections of Sage Thrasher were insufficient (<20) to calculate density in this habitat type.
+ Sage Thrasher was not detected in this habitat type.



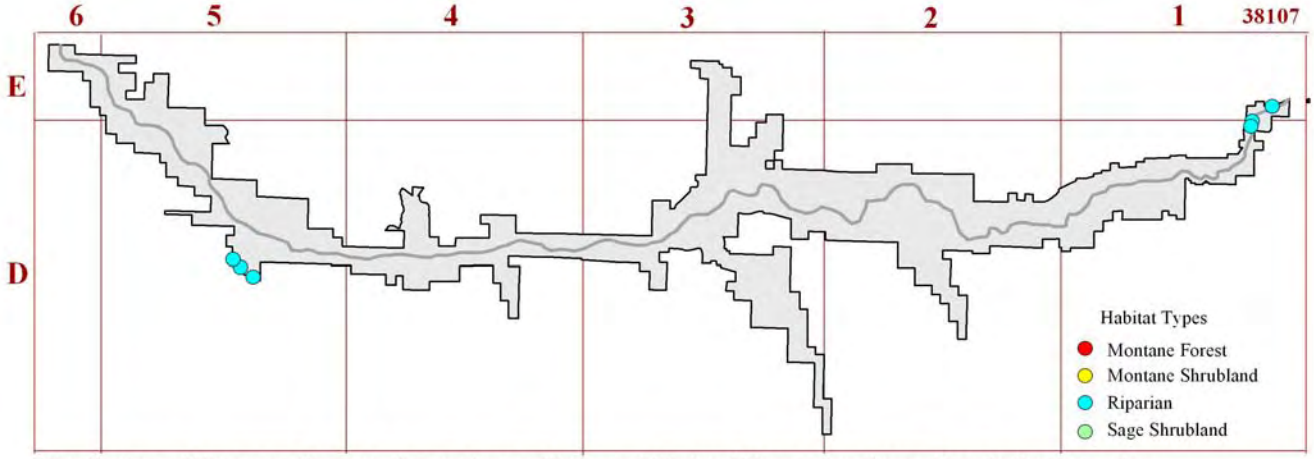
Distribution of Sage Thrasher observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

European Starling

European Starling was detected in low numbers in Riparian (n = 7) habitat.



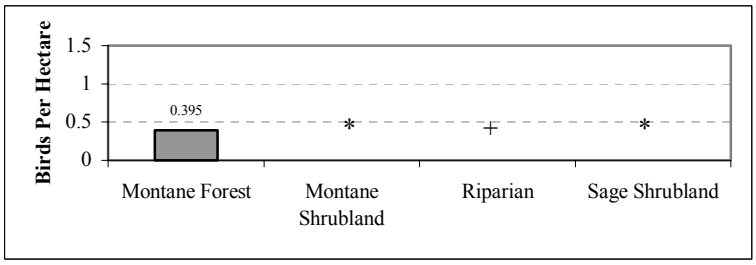
Density of European Starling among habitat types in Curecanti National recreation area. * Detections of European Starling were insufficient (<20) to calculate density in this habitat type.
+ European Starling was not detected in this habitat type.



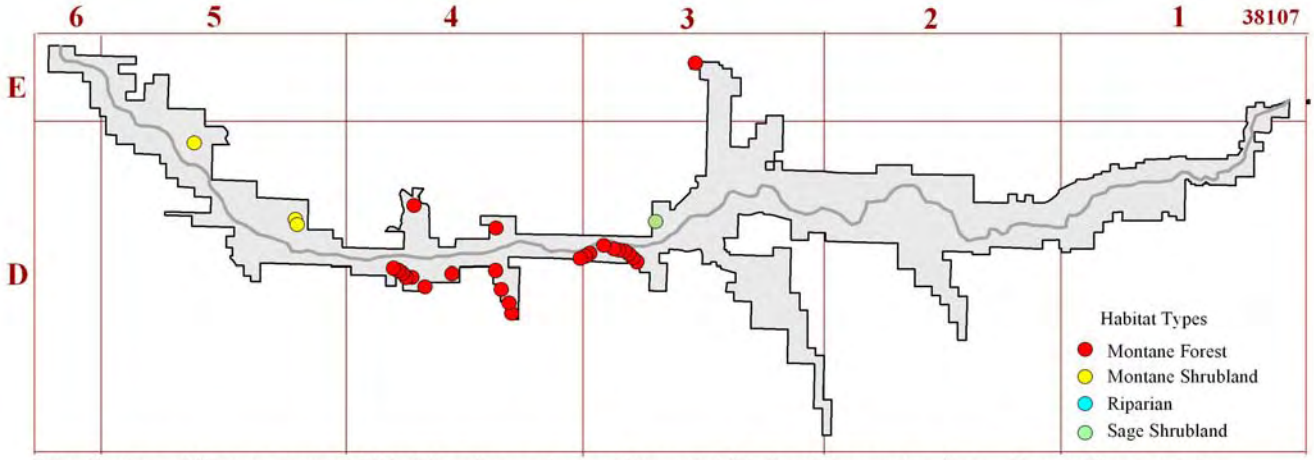
Distribution of European Starling observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Orange-crowned Warbler

Detections of Orange-crowned Warbler were sufficient to calculate density in Montane Forest (D = 0.395 birds per hectare) habitat. Orange-crowned Warbler was detected in low numbers in Montane Shrubland (n = 3), and Sage Shrubland (n = 1) habitats.



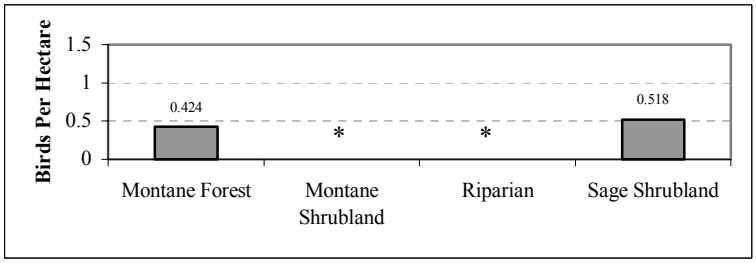
Density of Orange-crowned Warbler among habitat types in Curecanti National recreation area. * Detections of Orange-crowned Warbler were insufficient (<20) to calculate density in this habitat type.
+ Orange-crowned Warbler was not detected in this habitat type.



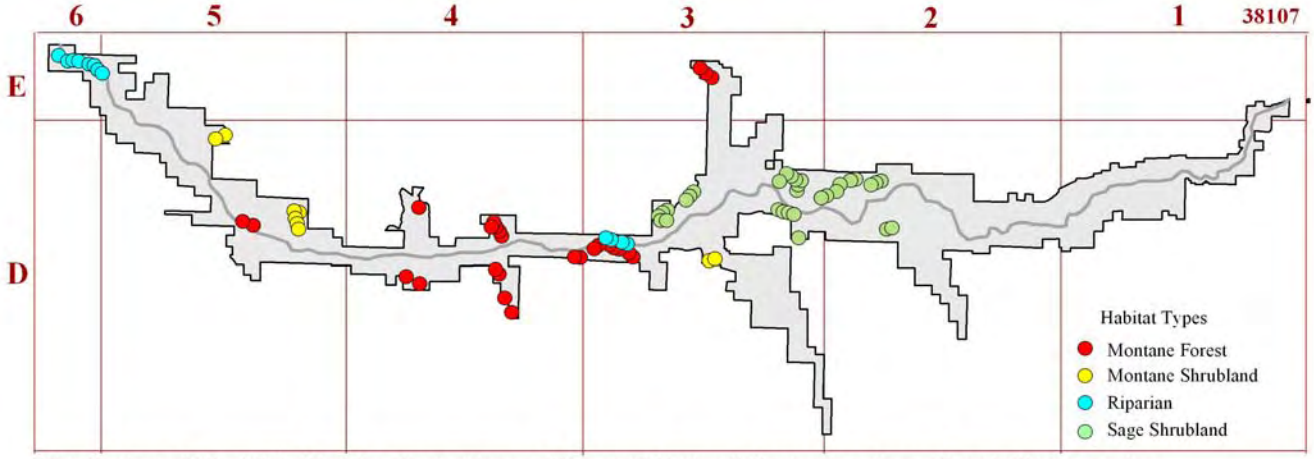
Distribution of Orange-crowned Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Virginia's Warbler

Detections of Virginia's Warbler were sufficient to calculate density in Montane Forest (D = 0.424 birds per hectare), and Sage Shrubland (0.518 birds per hectare) habitats. Virginia's Warbler was detected in low numbers in Montane Shrubland (n = 12), and Riparian (n = 15) habitats.



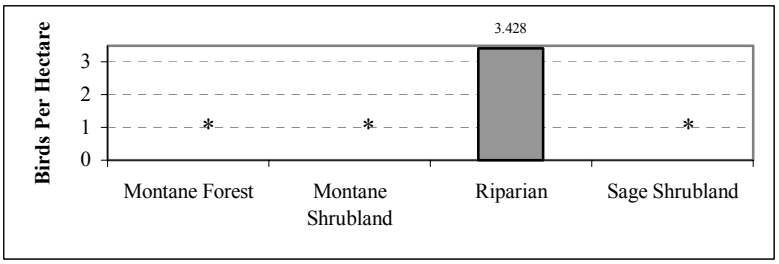
Density of Virginia's Warbler among habitat types in Curecanti National recreation area. * Detections of Virginia's Warbler were insufficient (<20) to calculate density in this habitat type.
+ Virginia's Warbler was not detected in this habitat type.



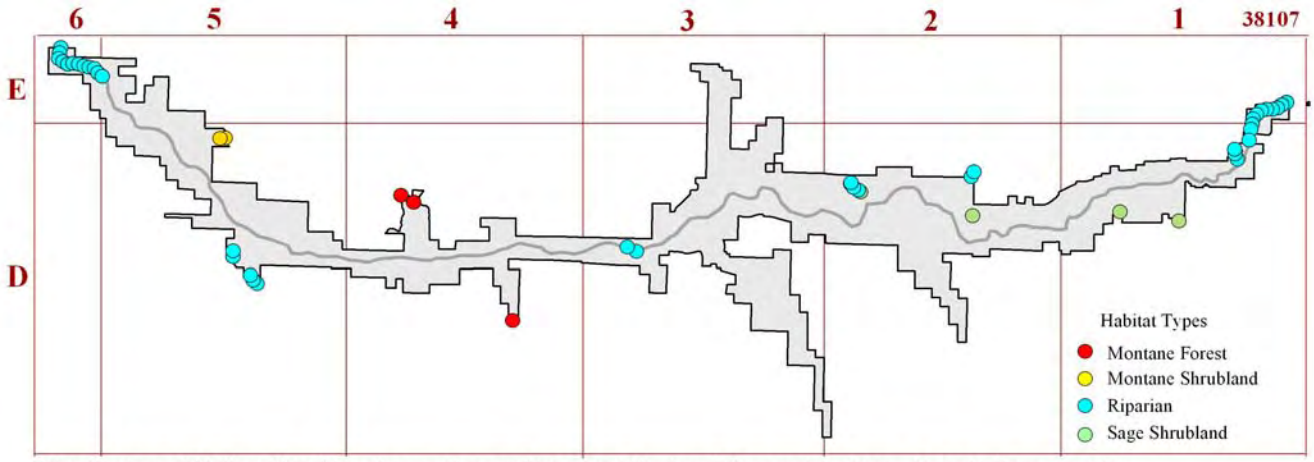
Distribution of Virginia's Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Yellow Warbler

Detections of Yellow Warbler were sufficient to calculate density in Riparian (D = 3.428 birds per hectare) habitat. Yellow Warbler was detected in low numbers in Montane Forest (n = 4), Montane Shrubland (n = 2), and Sage Shrubland (n = 5) habitats.



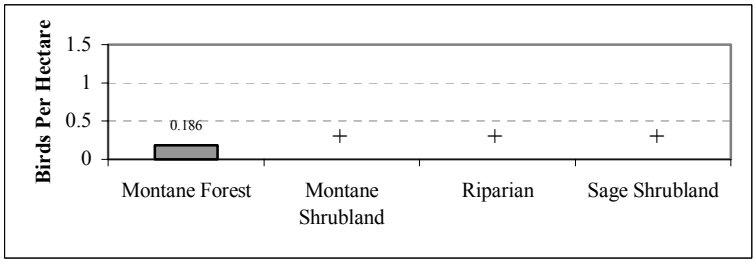
Density of Yellow Warbler among habitat types in Curecanti National recreation area. * Detections of Yellow Warbler were insufficient (<20) to calculate density in this habitat type.
+ Yellow Warbler was not detected in this habitat type.



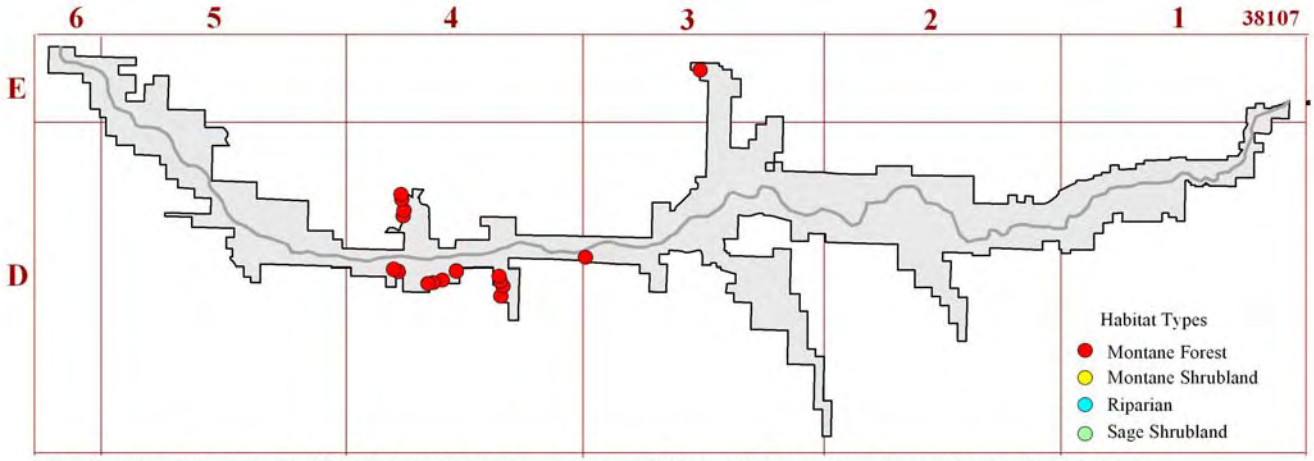
Distribution of Yellow Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Audubon's Warbler

Detections of Audubon's Warbler were sufficient to calculate density in Montane Forest (D = 0.186 birds per hectare) habitat. Audubon's Warbler was detected in no other habitat.



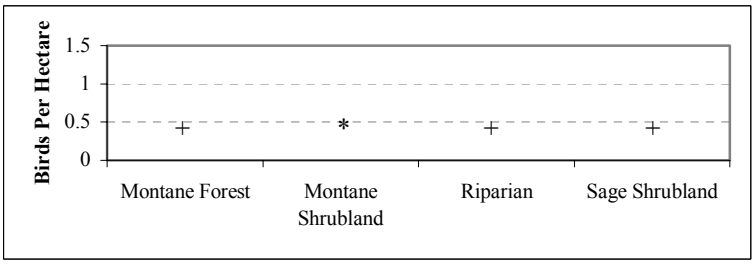
Density of Audubon's Warbler among habitat types in Curecanti National recreation area. * Detections of Audubon's Warbler were insufficient (<20) to calculate density in this habitat type.
+ Audubon's Warbler was not detected in this habitat type.



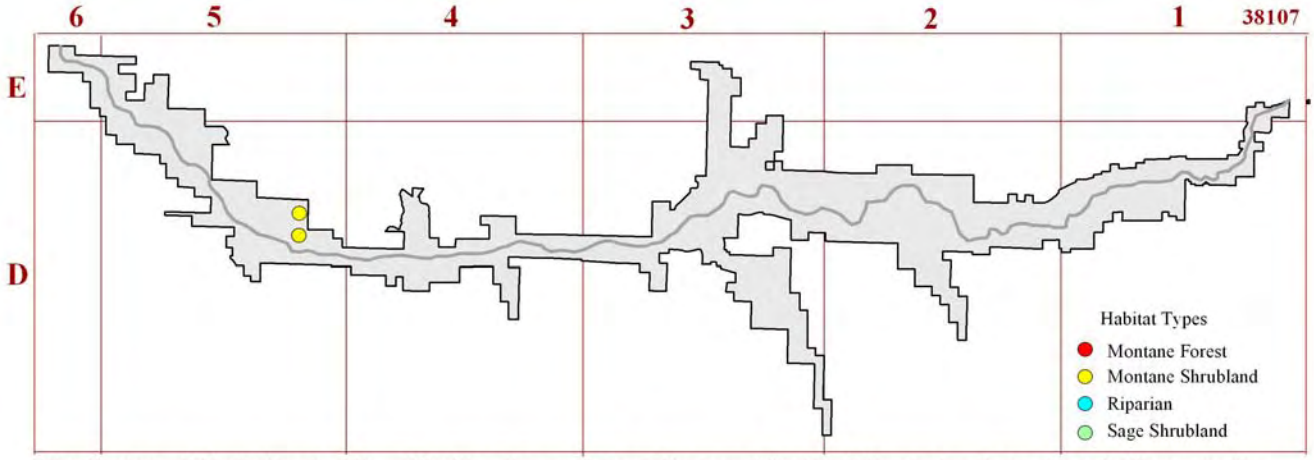
Distribution of Audubon's Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Black-throated Gray Warbler

Black-throated Gray Warbler was detected in low numbers in Montane Shrubland (n = 3) habitat.



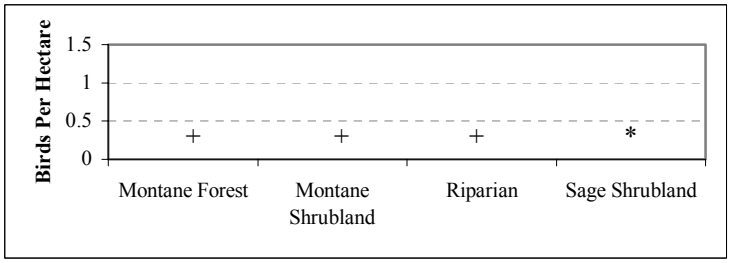
Density of Black-throated Gray Warbler among habitat types in Curecanti National recreation area. * Detections of Black-throated Gray Warbler were insufficient (<20) to calculate density in this habitat type.
+ Black-throated Gray Warbler was not detected in this habitat type.



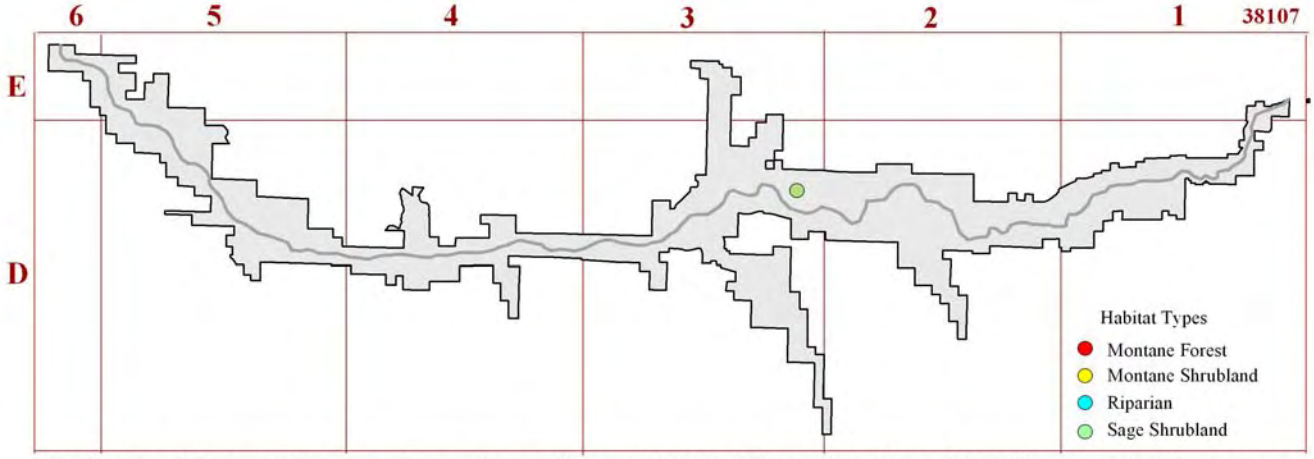
Distribution of Black-throated Gray Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

American Redstart

American Redstart was detected in low numbers in Sage Shrubland (n = 1) habitat.



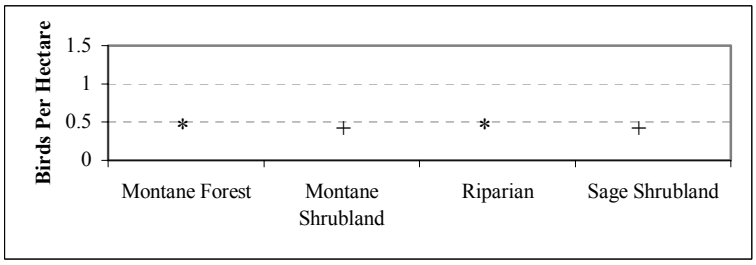
Density of American Redstart among habitat types in Curecanti National recreation area. * Detections of American Redstart were insufficient (<20) to calculate density in this habitat type.
+ American Redstart was not detected in this habitat type.



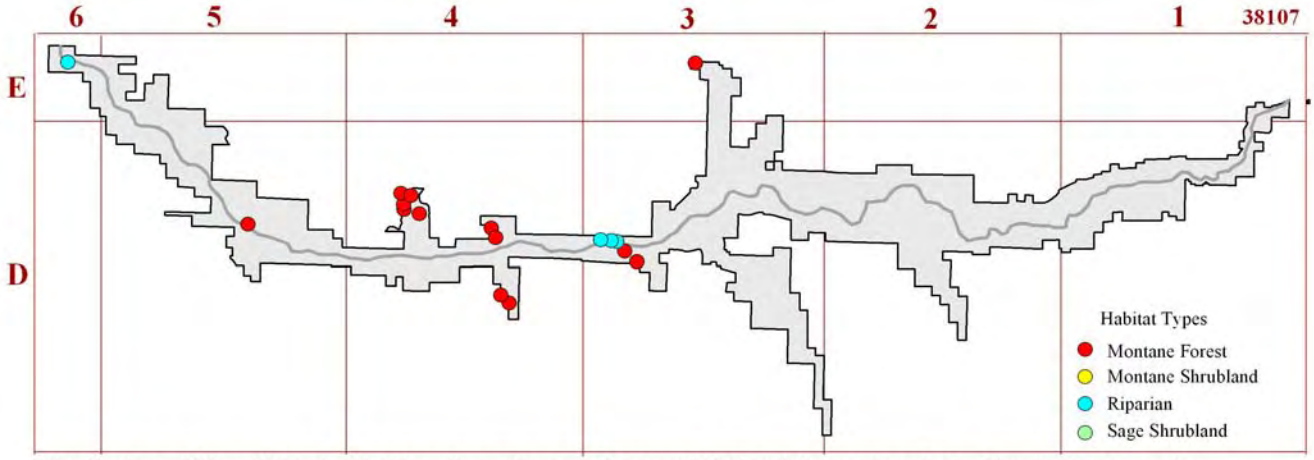
Distribution of American Redstart observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

MacGillivray's Warbler

MacGillivray's Warbler was detected in low numbers in Montane Forest (n = 16) and Riparian (n = 4) habitats.



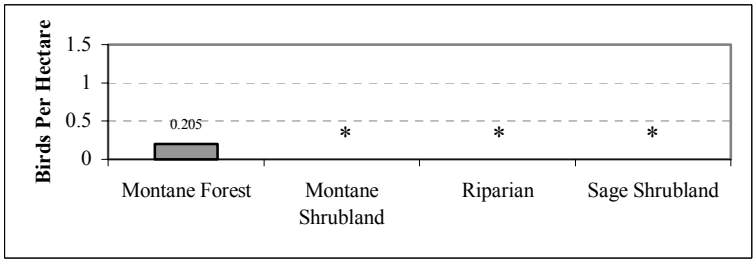
Density of MacGillivray's Warbler among habitat types in Curecanti National recreation area. * Detections of MacGillivray's Warbler were insufficient (<20) to calculate density in this habitat type.
+ MacGillivray's Warbler was not detected in this habitat type.



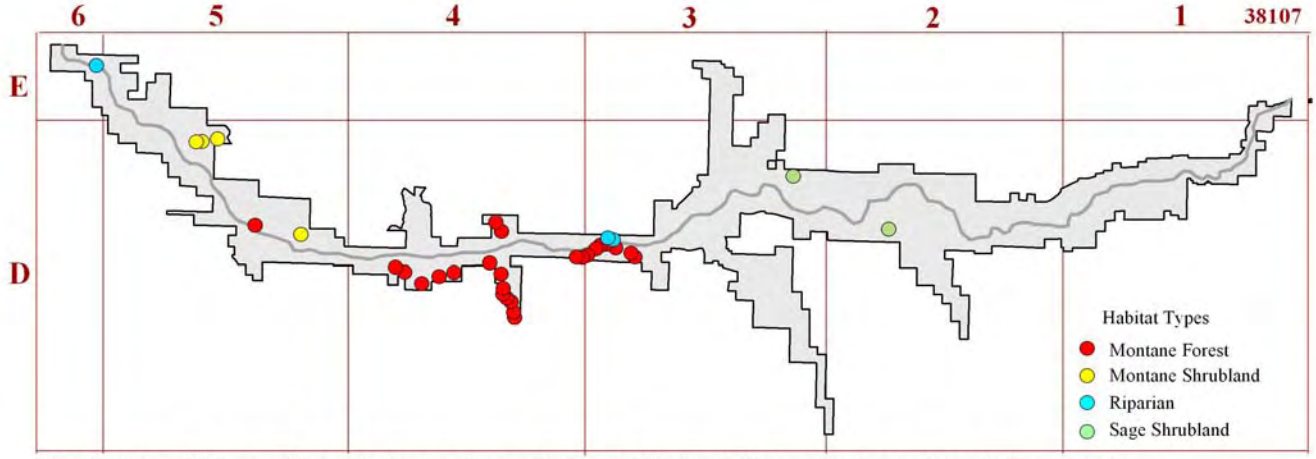
Distribution of Macgillivray's Warbler observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Western Tanager

Detections of Western Tanager were sufficient to calculate density in Montane Forest (D = 0.205 birds per hectare) habitat. Western Tanager was detected in low numbers in Montane Shrubland (n = 31), Riparian (n = 3), and Sage Shrubland (n = 002) habitats.



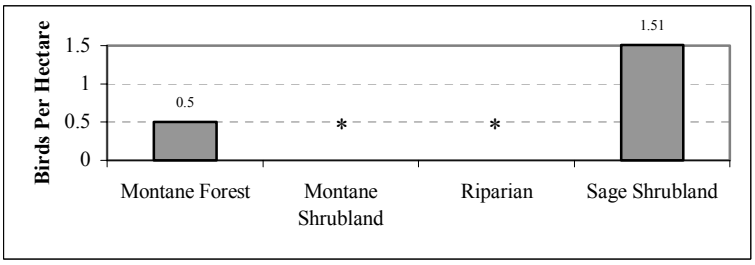
Density of Western Tanager among habitat types in Curecanti National recreation area. * Detections of Western Tanager were insufficient (<20) to calculate density in this habitat type.
+ Western Tanager was not detected in this habitat type.



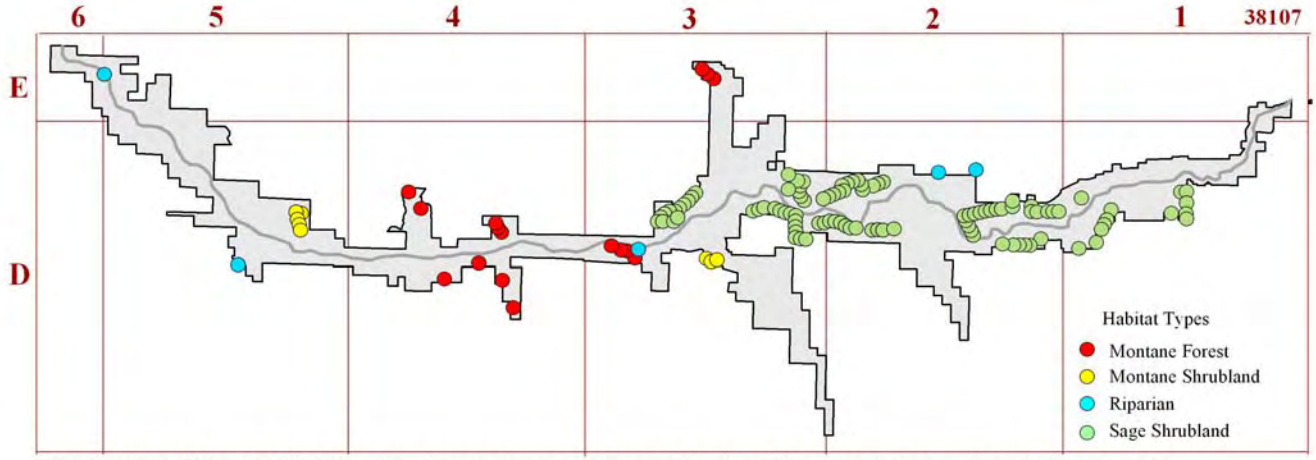
Distribution of Western Tanager observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Green-tailed Towhee

Detections of Green-tailed Towhee were sufficient to calculate density in Montane Forest (D = 0.500 birds per hectare) and Sage Shrubland (D = 1.51 birds per hectare) habitats. Green-tailed Towhee was detected in low numbers in Montane Shrubland (n = 13) and Riparian (n = 5) habitats.



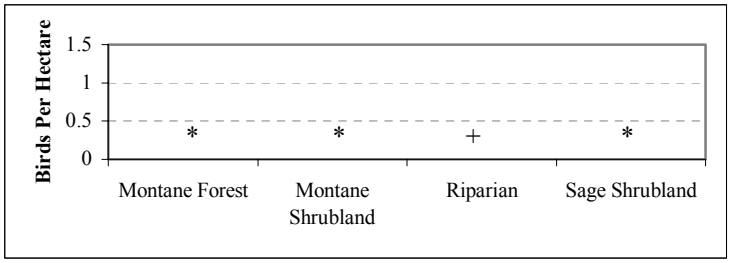
Density of Green-tailed Towhee among habitat types in Curecanti National recreation area. * Detections of Green-tailed Towhee were insufficient (<20) to calculate density in this habitat type.
+ Green-tailed Towhee was not detected in this habitat type.



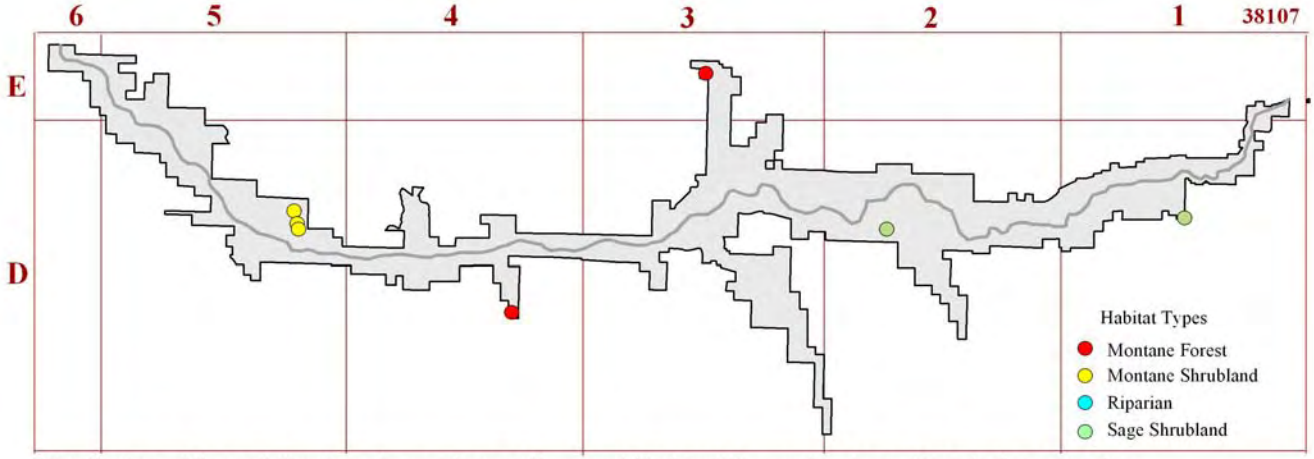
Distribution of Green-tailed Towhee observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Spotted Towhee

Spotted Towhee was detected in low numbers in Montane Forest (n = 2), Montane Shrubland (n = 3), and Sage Shrubland (n = 2) habitats.



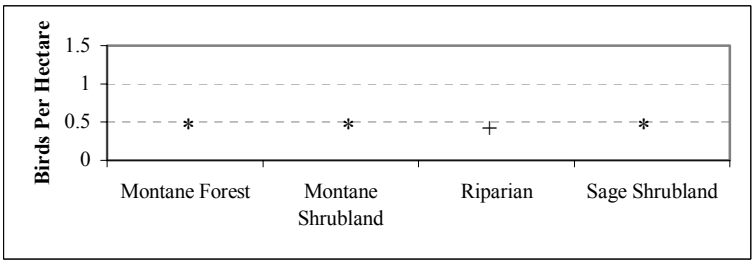
Density of Spotted Towhee among habitat types in Curecanti National recreation area. * Detections of Spotted Towhee were insufficient (<20) to calculate density in this habitat type.
+ Spotted Towhee was not detected in this habitat type.



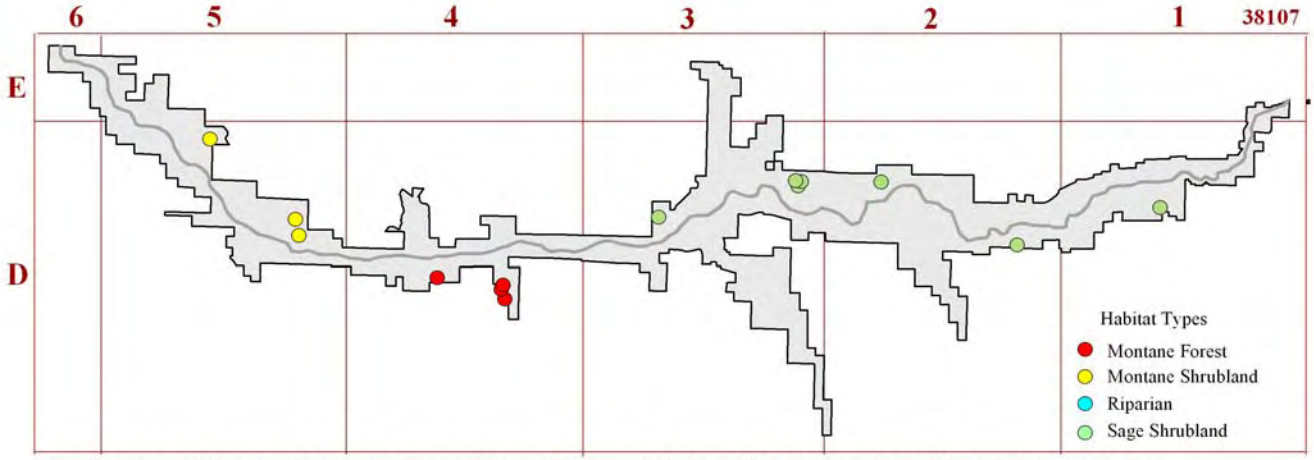
Distribution of Spotted Towhee observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Chipping Sparrow

Chipping Sparrow was detected in low numbers Montane Forest (n = 4), Montane Shrubland (n = 3), and Sage Shrubland (n = 7) habitats.



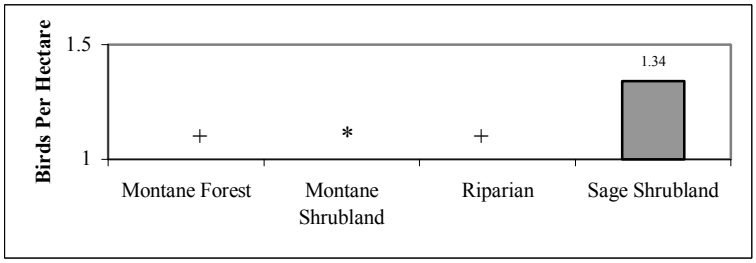
Density of Chipping Sparrow among habitat types in Curecanti National recreation area. * Detections of Chipping Sparrow were insufficient (<20) to calculate density in this habitat type.
+ Chipping Sparrow was not detected in this habitat type.



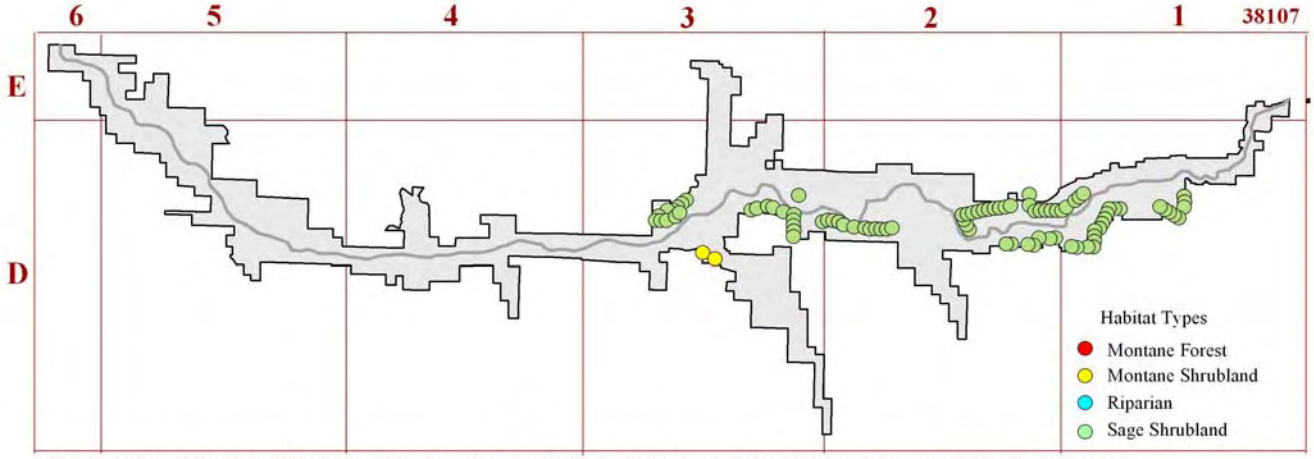
Distribution of Chipping Sparrow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Brewer's Sparrow

Detections of Brewer's Sparrow were sufficient to calculate density in Sage Shrubland (D = 1.34 birds per hectare). Brewer's Sparrow was detected in low numbers in Montane Shrubland (n = 2) habitat.



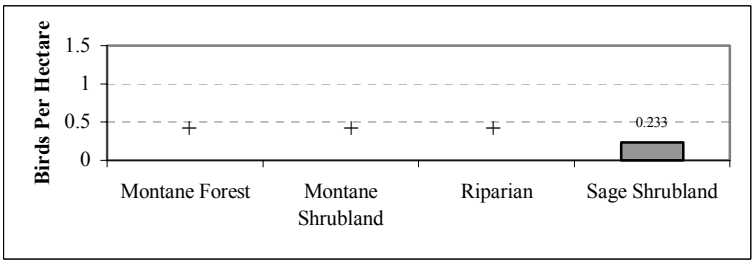
Density of Brewer's Sparrow among habitat types in Curecanti National recreation area. * Detections of Brewer's Sparrow were insufficient (<20) to calculate density in this habitat type.
+ Brewer's Sparrow was not detected in this habitat type.



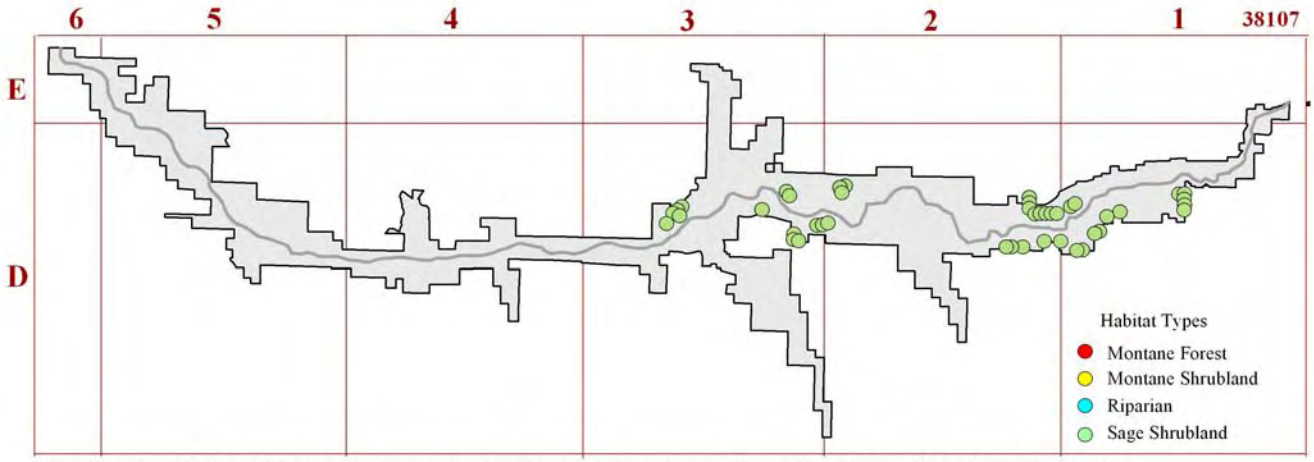
Distribution of Brewer's Sparrow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Vesper Sparrow

Detections of Vesper Sparrow were sufficient to calculate density in Sage Shrubland (D = 0.223 birds per hectare) habitat. Vesper Sparrow was detected in no other habitat.



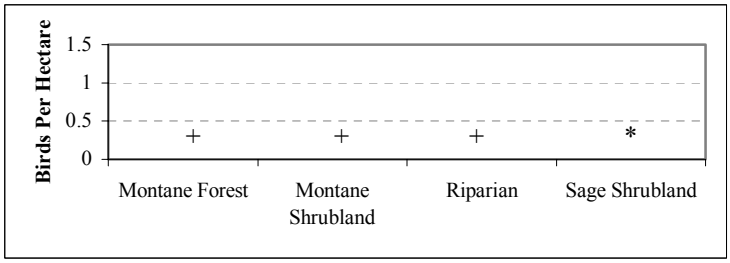
Density of Vesper Sparrow among habitat types in Curecanti National recreation area. * Detections of Vesper Sparrow were insufficient (<20) to calculate density in this habitat type.
+ Vesper Sparrow was not detected in this habitat type.



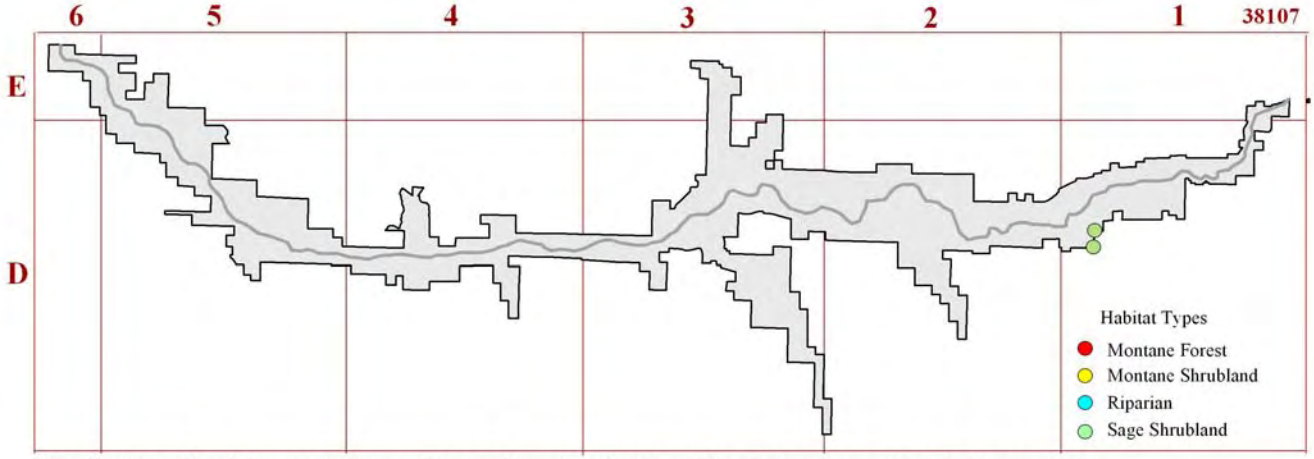
Distribution of Vesper Sparrow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Lark Sparrow

Lark Sparrow was detected in low numbers in Sage Shrubland (n = 2) habitat.



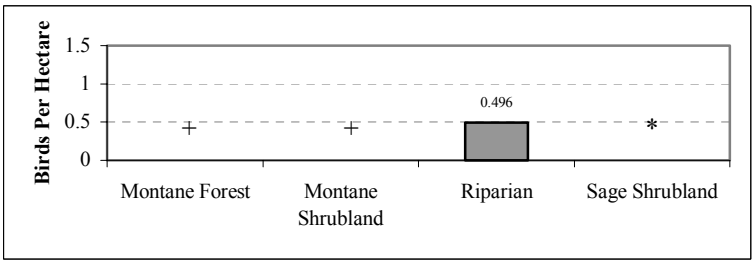
Density of Lark Sparrow among habitat types in Curecanti National recreation area. * Detections of Lark Sparrow were insufficient (<20) to calculate density in this habitat type.
+ Lark Sparrow was not detected in this habitat type.



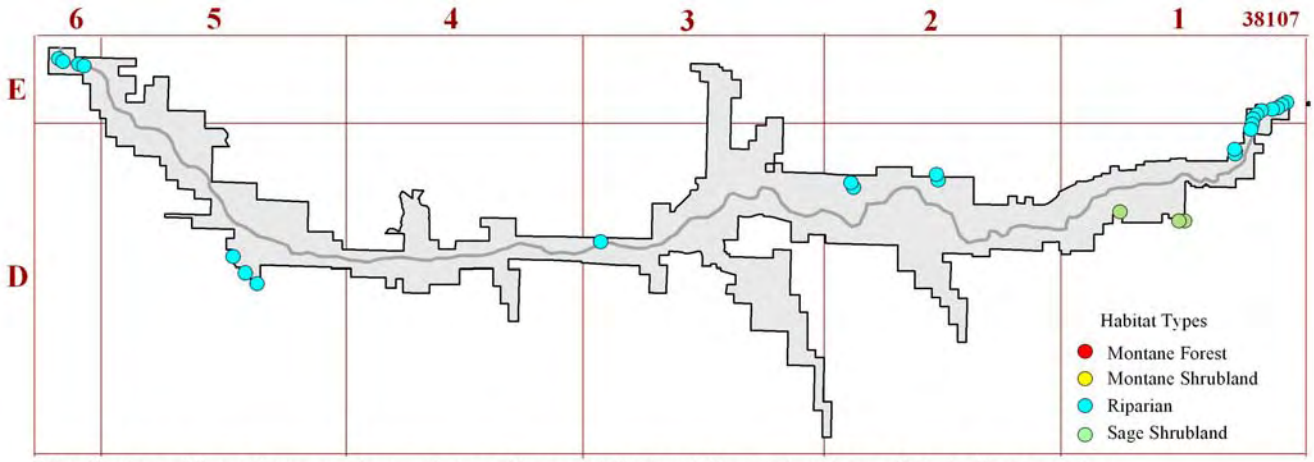
Distribution of Lark Sparrow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Song Sparrow

Detections of Song Sparrow were sufficient to calculate density in Riparian (D = 0.496 birds per hectare) habitat. Song Sparrow was detected in low numbers in Sage Shrubland (n = 3) habitat.



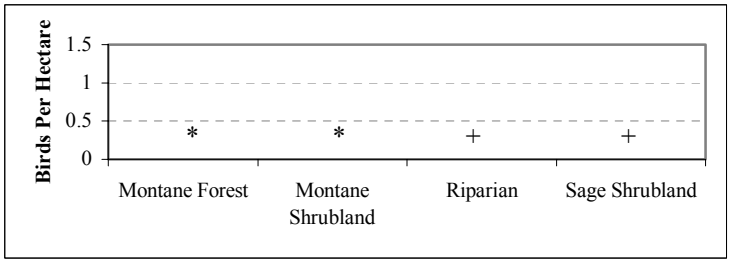
Density of Song Sparrow among habitat types in Curecanti National recreation area. * Detections of Song Sparrow were insufficient (<20) to calculate density in this habitat type.
+ Song Sparrow was not detected in this habitat type.



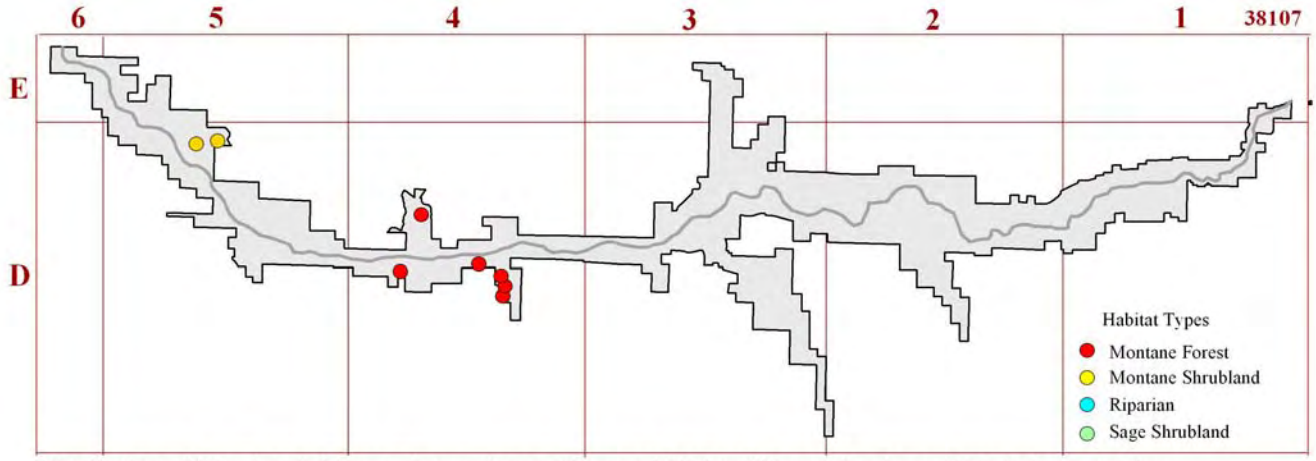
Distribution of Song Sparrow observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Gray-headed Junco

Gray-headed Junco was detected in low numbers in Montane Forest (n = 7) and Montane Shrubland (n = 2) habitats.



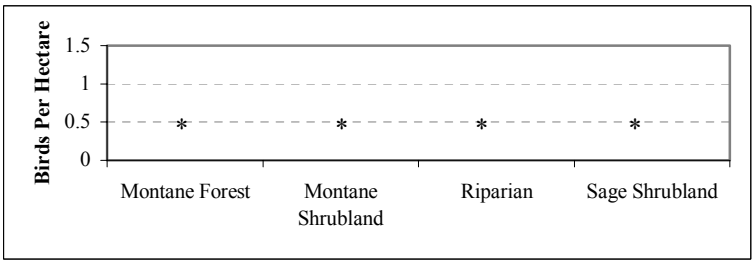
Density of Gray-headed Junco among habitat types in Curecanti National recreation area. * Detections of Gray-headed Junco were insufficient (<20) to calculate density in this habitat type.
+ Gray-headed Junco was not detected in this habitat type.



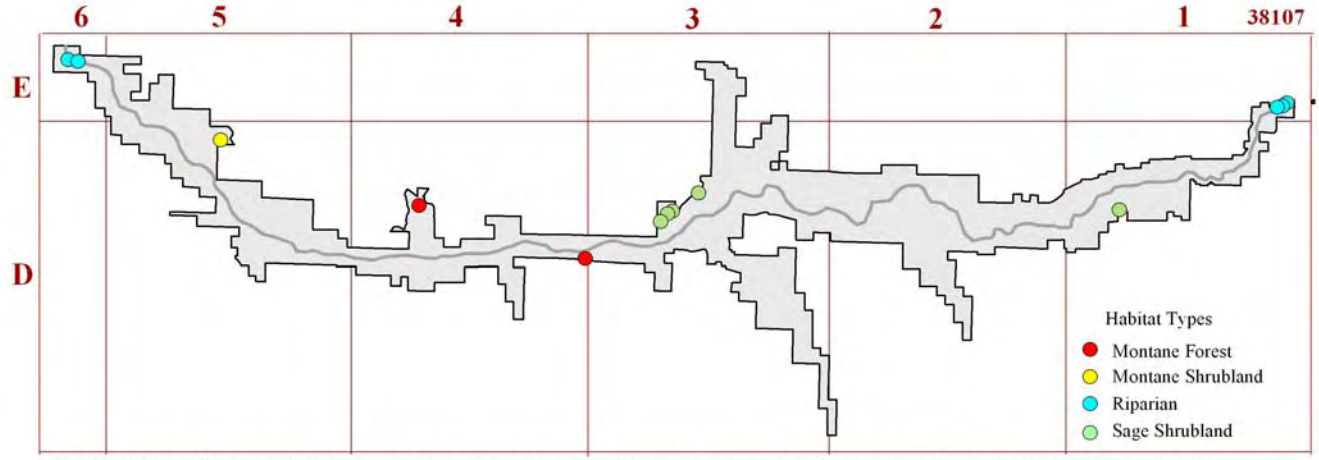
Distribution of Gray-headed Junco observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Black-headed Grosbeak

Black-headed Grosbeak was detected in low numbers in Montane Forest (n = 2), Montane Shrubland (n = 2), Riparian (n = 6), and Sage Shrubland (n = 5) habitats.



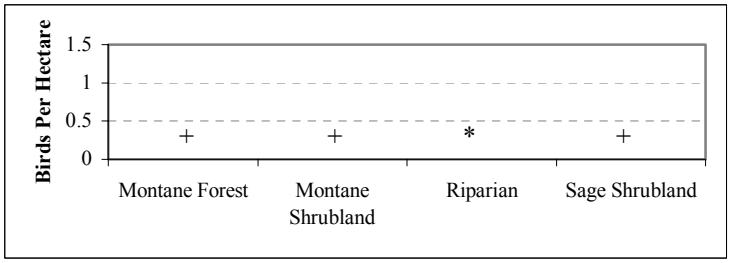
Density of Black-headed Grosbeak among habitat types in Curecanti National recreation area. * Detections of Black-headed Grosbeak were insufficient (<20) to calculate density in this habitat type.
+ Black-headed Grosbeak was not detected in this habitat type.



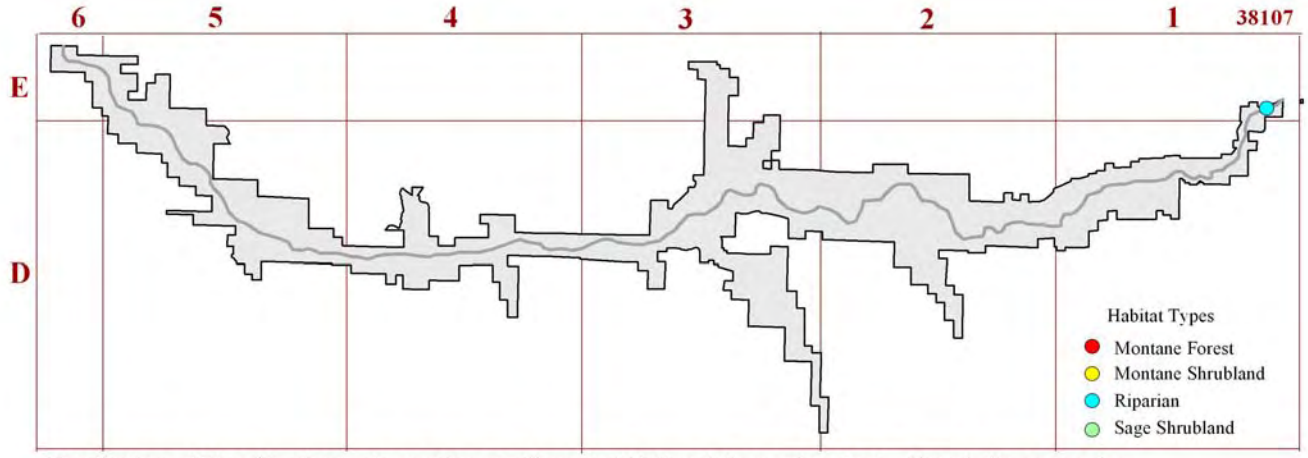
Distribution of Black-headed Grosbeak observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Blue Grosbeak

Blue Grosbeak was detected in low numbers in Riparian (n = 1) habitat.



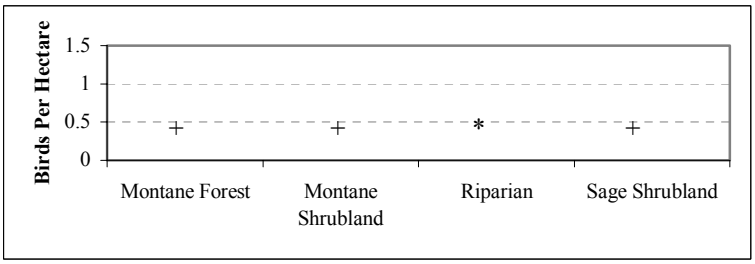
Density of Blue Grosbeak among habitat types in Curecanti National recreation area. * Detections of Blue Grosbeak were insufficient (<20) to calculate density in this habitat type.
+ Blue Grosbeak was not detected in this habitat type.



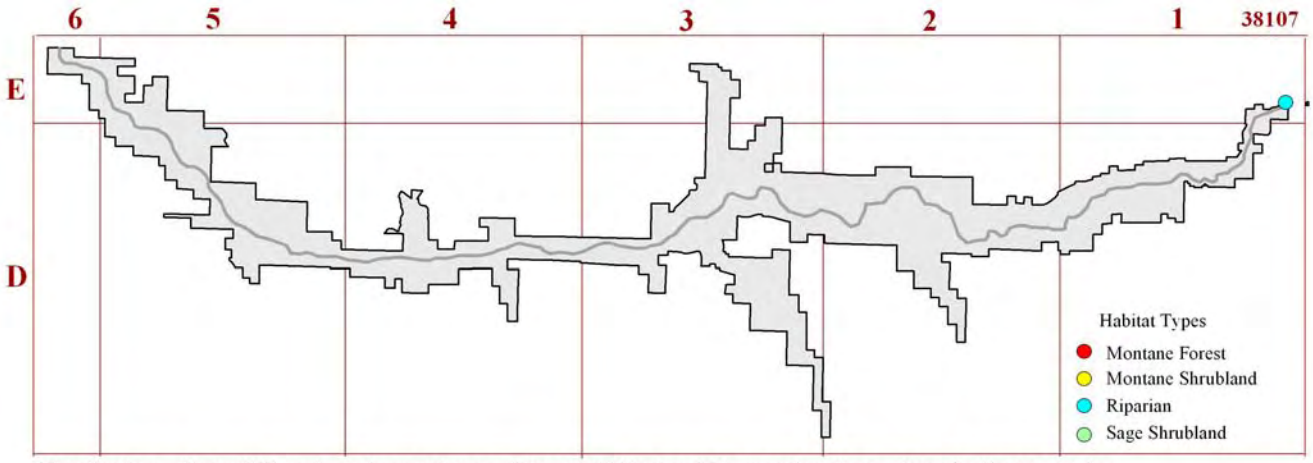
Distribution of Blue Grosbeak observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Lazuli Bunting

Lazuli Bunting was detected in low numbers in Riparian (n = 1) habitat.



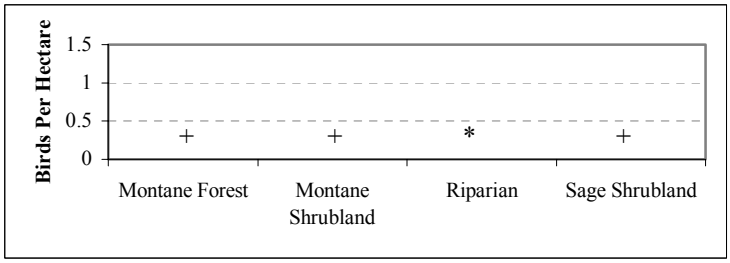
Density of Lazuli Bunting among habitat types in Curecanti National recreation area. * Detections of Lazuli Bunting were insufficient (<20) to calculate density in this habitat type.
+Lazuli Bunting was not detected in this habitat type.



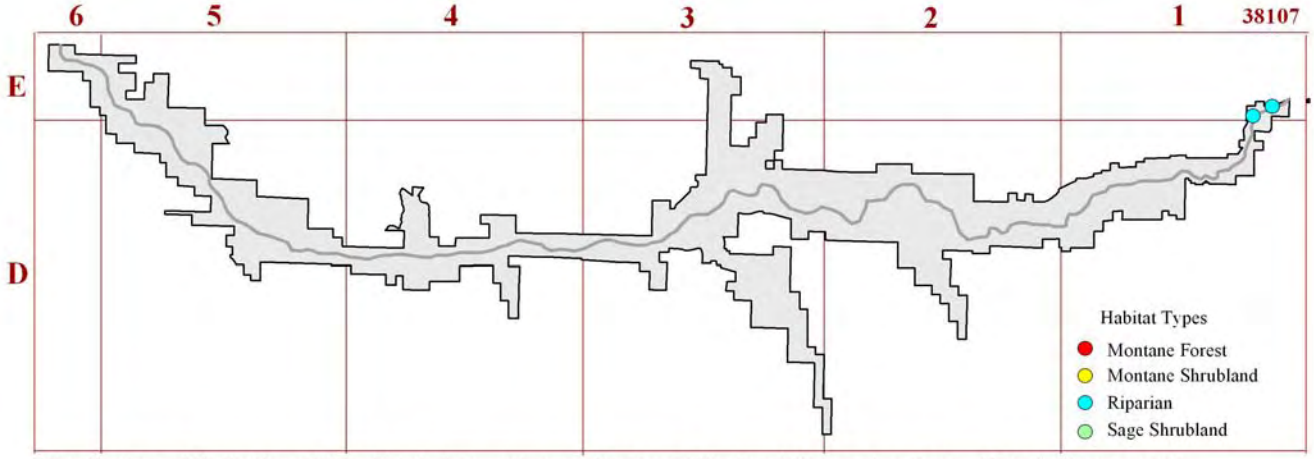
Distribution of Lazuli Bunting observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Red-winged Blackbird

Red-winged Blackbird was detected in low numbers in Riparian (n = 3) habitat.



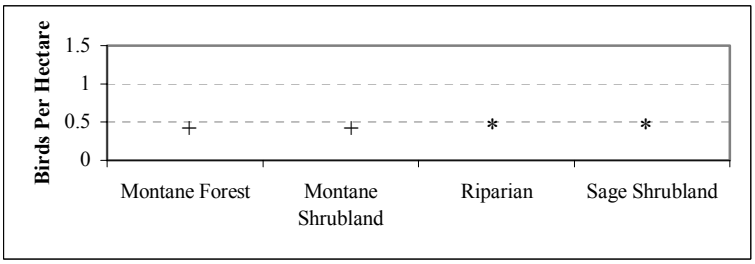
Density of Red-winged Blackbird among habitat types in Curecanti National recreation area. * Detections of Red-winged Blackbird were insufficient (<20) to calculate density in this habitat type.
+ Red-winged Blackbird was not detected in this habitat type.



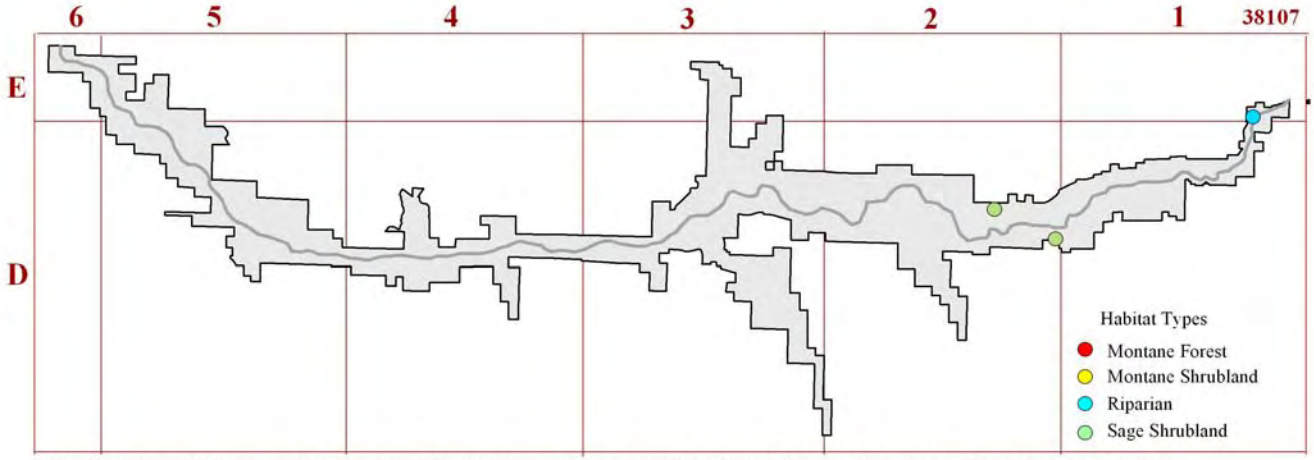
Distribution of Red-winged Blackbird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Western Meadowlark

Western Meadowlark was detected in low numbers in Riparian (n = 1) and Sage Shrubland (n = 2) habitats.



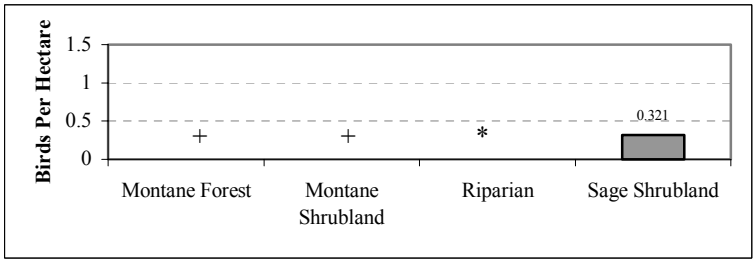
Density of Western Meadowlark among habitat types in Curecanti National recreation area. * Detections of Western Meadowlark were insufficient (<20) to calculate density in this habitat type.
+ Western Meadowlark was not detected in this habitat type.



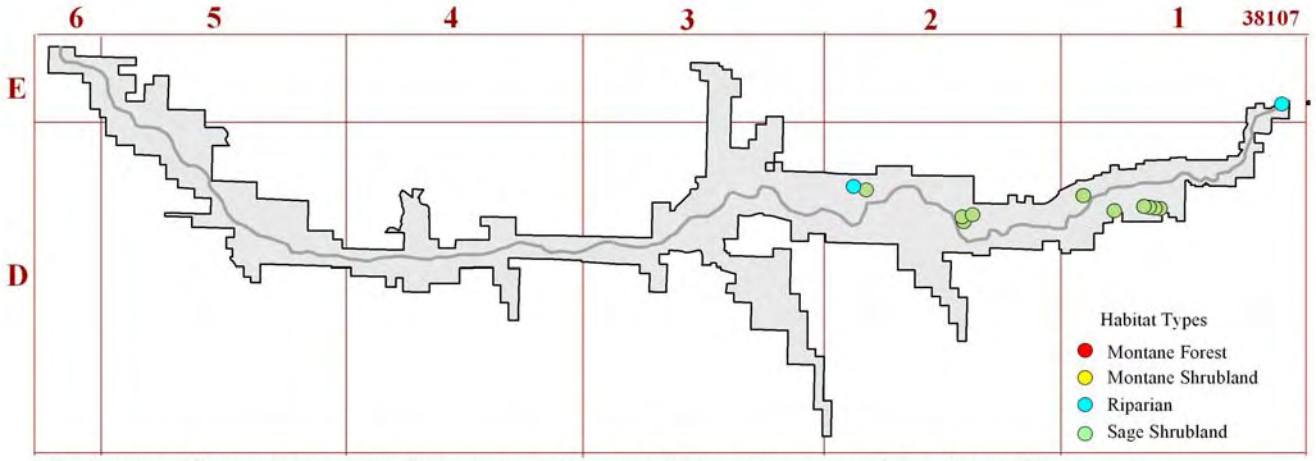
Distribution of Western Meadowlark observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Brewer's Blackbird

Detections of Brewer's Blackbird was sufficient to calculate density in Sage Shrubland (D = 0.321) habitat. Brewer's Blackbird was detected in low numbers in Riparian (n = 3) habitat.



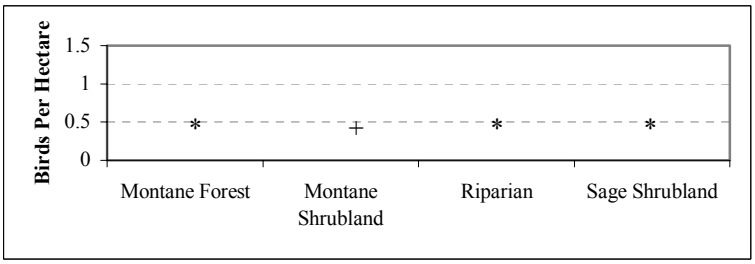
Density of Brewer's Blackbird among habitat types in Curecanti National recreation area. * Detections of Brewer's Blackbird were insufficient (<20) to calculate density in this habitat type.
+ Brewer's Blackbird was not detected in this habitat type.



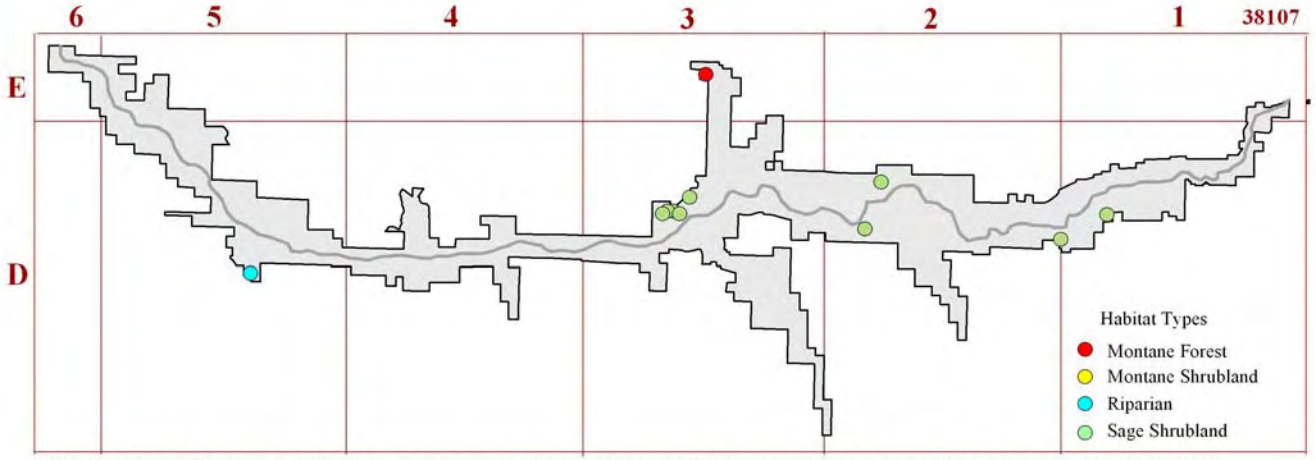
Distribution of Brewer's Blackbird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Brown-headed Cowbird

Brown-headed Cowbird was detected in low numbers in Montane Forest (n = 1), Riparian (n = 1), and Sage Shrubland (n = 11) habitat.



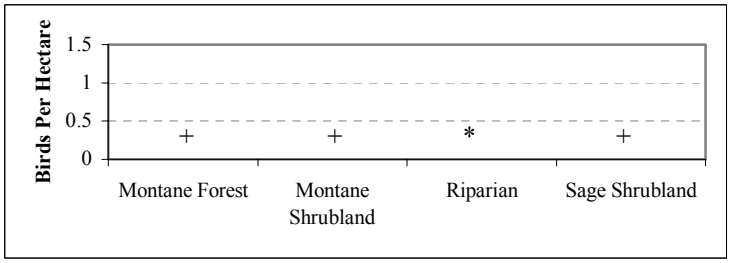
Density of Brown-headed Cowbird among habitat types in Curecanti National recreation area. * Detections of Brown-headed Cowbird were insufficient (<20) to calculate density in this habitat type.
+ Brown-headed Cowbird was not detected in this habitat type.



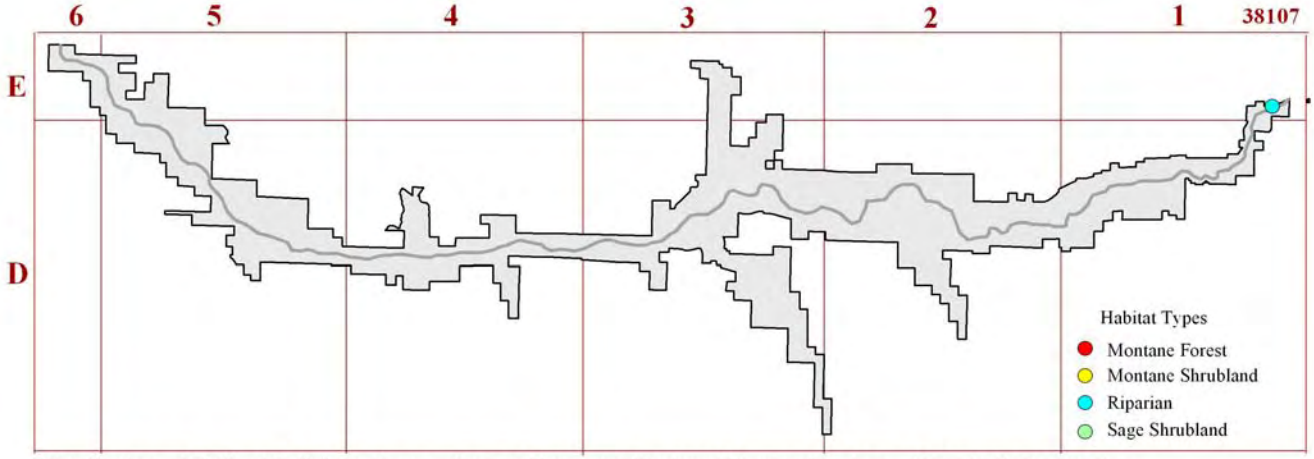
Distribution of Brown-headed Cowbird observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Bullock's Oriole

Bullock's Oriole was detected in low numbers in Riparian (n = 1) habitat.



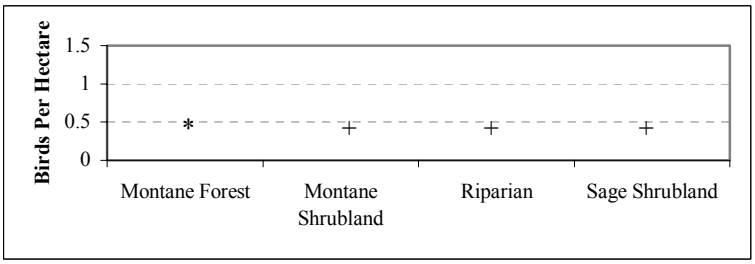
Density of Bullock's Oriole among habitat types in Curecanti National recreation area. * Detections of Bullock's Oriole were insufficient (<20) to calculate density in this habitat type.
+ Bullock's Oriole was not detected in this habitat type.



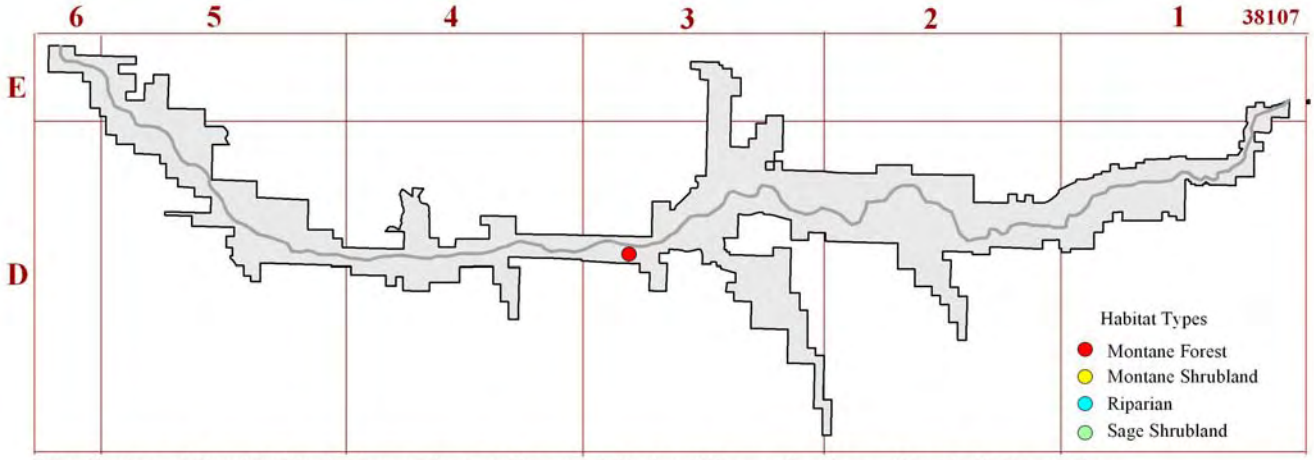
Distribution of Bullock's Oriole observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Cassin's Finch

Cassin's Finch was detected in low numbers in Montane Forest (n = 2) habitat.



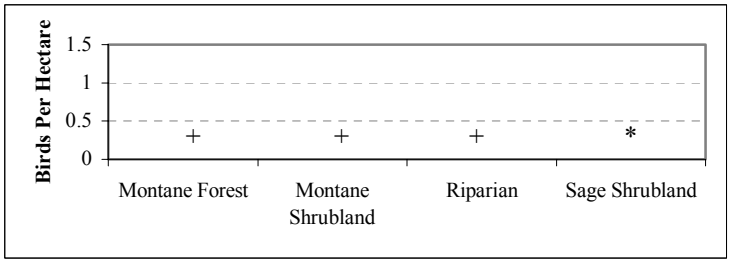
Density of Cassin's Finch among habitat types in Curecanti National recreation area. * Detections of Cassin's Finch were insufficient (<20) to calculate density in this habitat type.
+ Cassin's Finch was not detected in this habitat type.



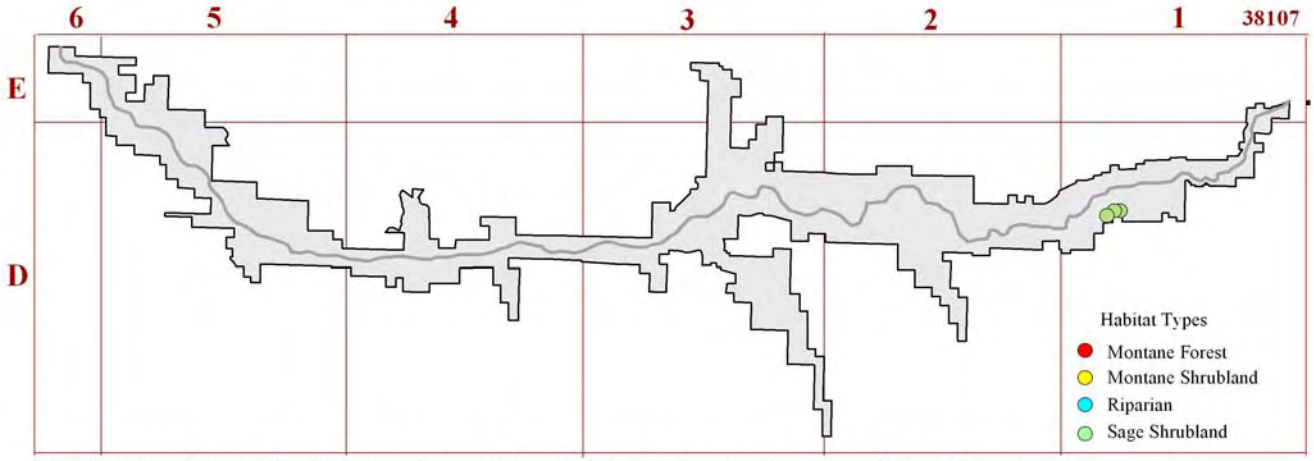
Distribution of Cassin's Finch observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

House Finch

House Finch was detected in low numbers in Sage Shrubland (n = 4) habitat.



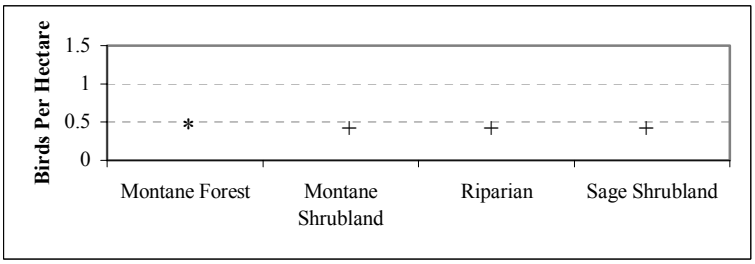
Density of House Finch among habitat types in Curecanti National recreation area. * Detections of House Finch were insufficient (<20) to calculate density in this habitat type.
+ House Finch was not detected in this habitat type.



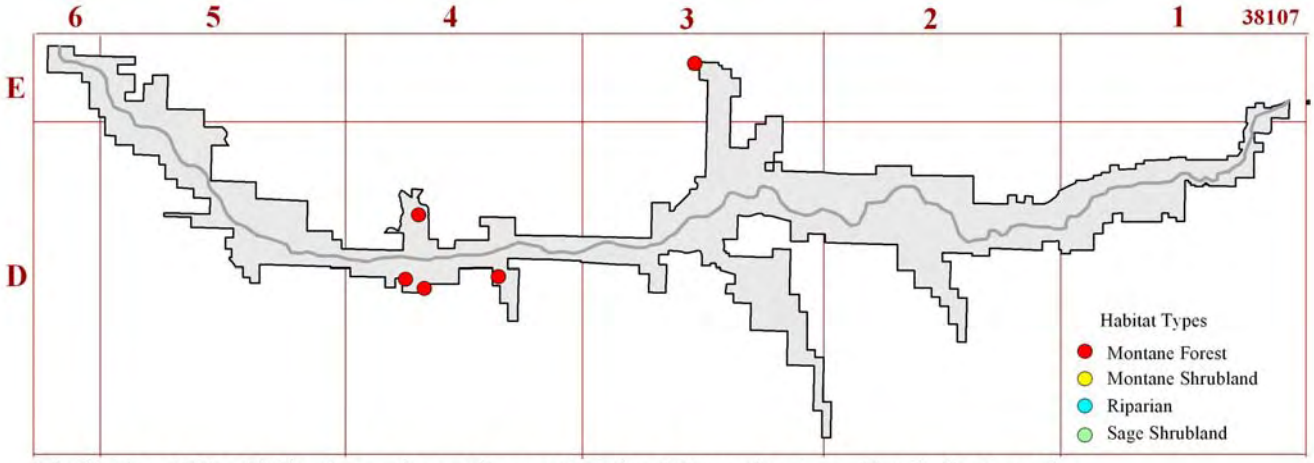
Distribution of House Finch observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Pine Siskin

Pine Siskin was detected in low numbers in Montane Forest (n = 8) habitat.

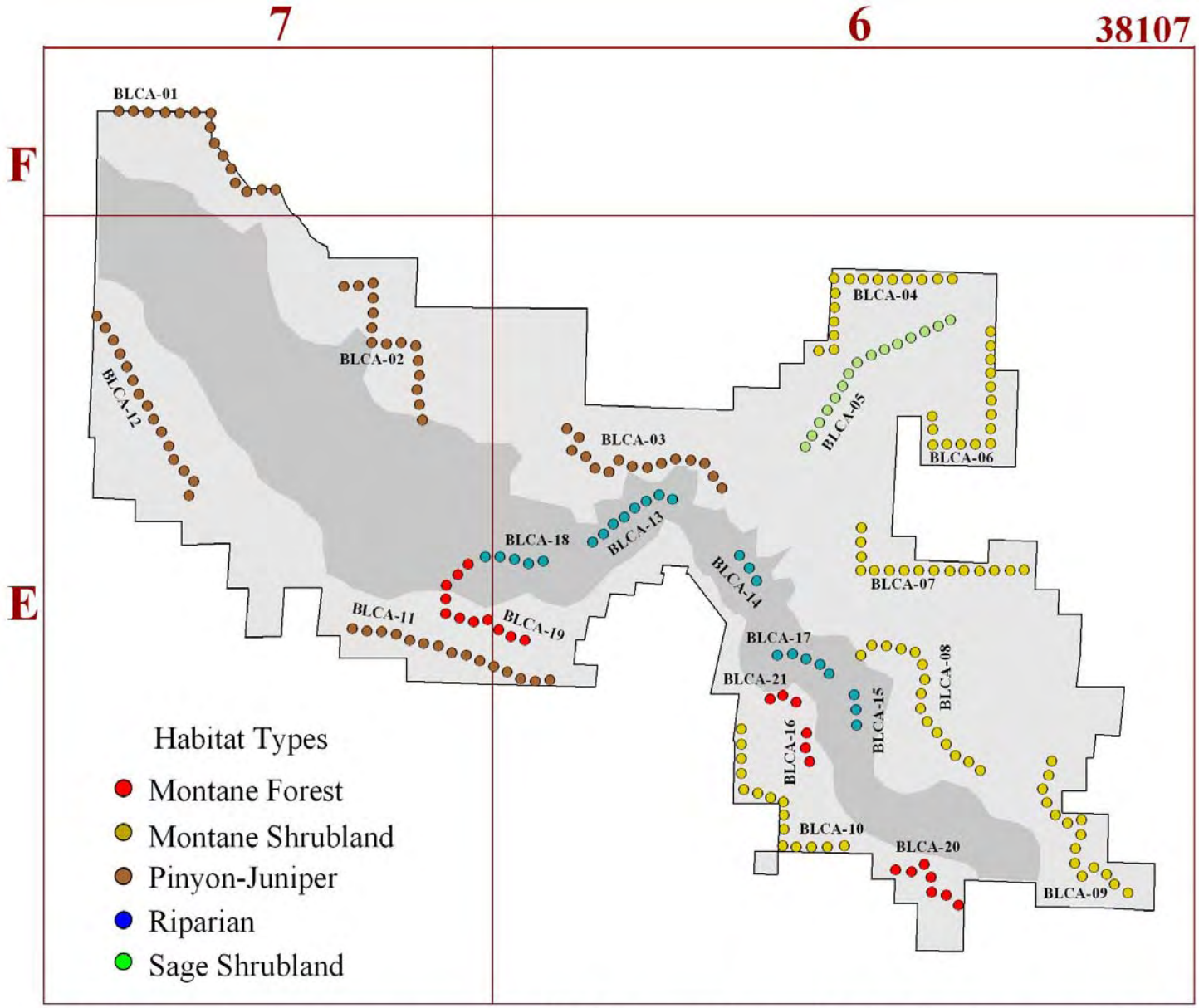


Density of Pine Siskin among habitat types in Curecanti National recreation area. * Detections of Pine Siskin were insufficient (<20) to calculate density in this habitat type.
+ Pine Siskin was not detected in this habitat type.



Distribution of Pine Siskin observations at Curecanti National Recreation Area. Dots indicate species detections at those point count locations. Grids represent USGS 7.5-minute quad maps.

Appendix B. Point count locations and transect descriptions

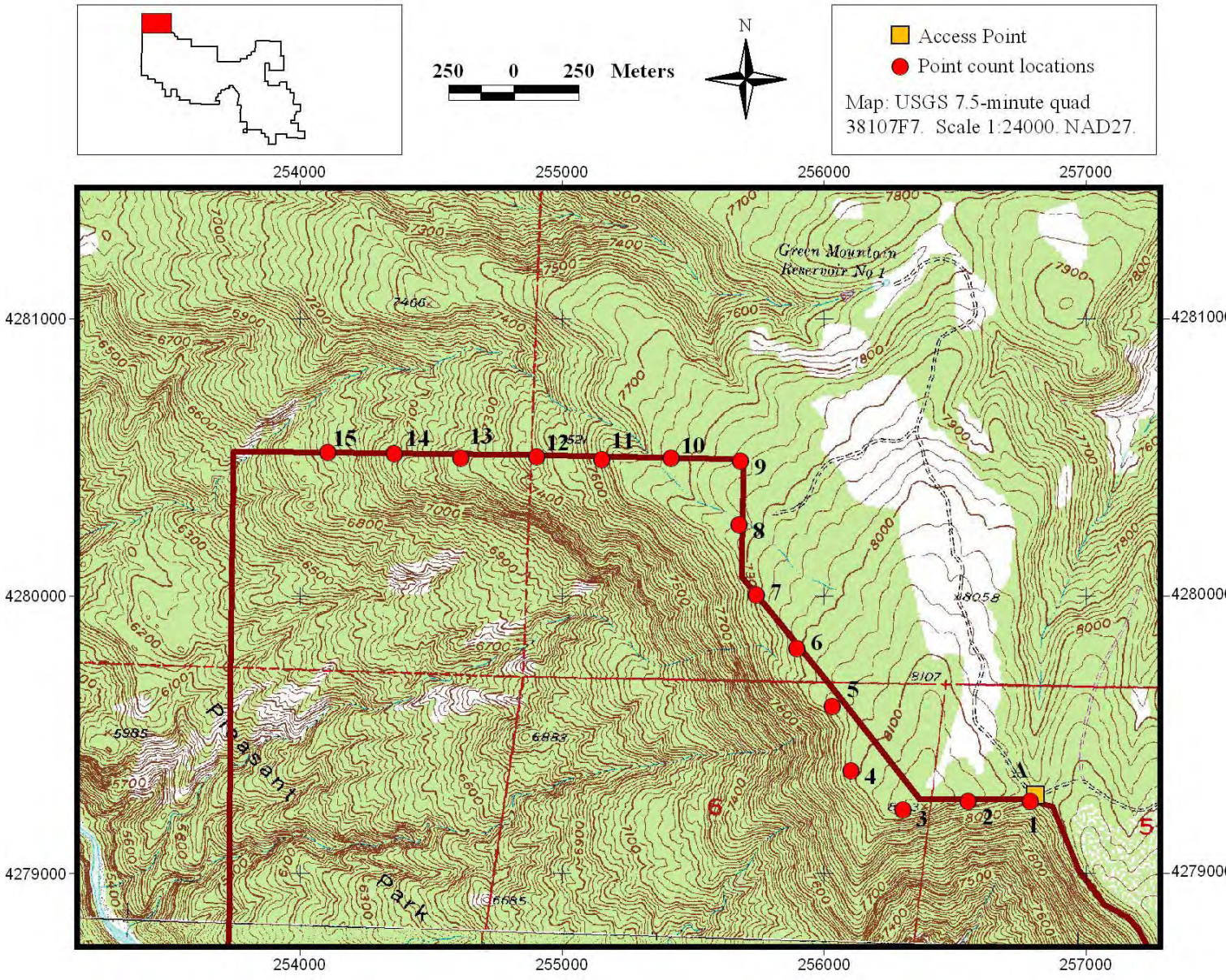


Distribution of point count transects at Black Canyon National Park. Dots indicate individual point count locations. Grids represent USGS 7.5-minute quad maps.

Transect BLCA-01 (Points BLCA-01-01 through BLCA-01-15).
Access is from the north rim on C77 Road. Take the Black Canyon Road toward the park entrance. Turn right (west) onto C77 Road. This intersection was not marked in 2003, but there was a BLM sign indicating seasonal closure after November 15th. Take C77 Road to Green Mountain; there are several minor roads branching off, but follow the main road toward Green Mountain (a radio antenna will be visible on the summit). Circle around Green Mountain, and follow the road to a point where it skirts the canyon. This is the access point; there is a small parking area with an NPS marker. Point 1 is just inside of the Park boundary. The transect follows the park boundary; there are few markers, so use GPS to navigate. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-01 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	256808	4279237	8	255677	4280263
1	256789	4279212	9	255682	4280506
2	256551	4279212	10	255417	4280517
3	256302	4279179	11	255151	4280512
4	256103	4279328	12	254903	4280523
5	256031	4279571	13	254615	4280517
6	255898	4279793	14	254361	4280534
7	255743	4279997	15	254106	4280539

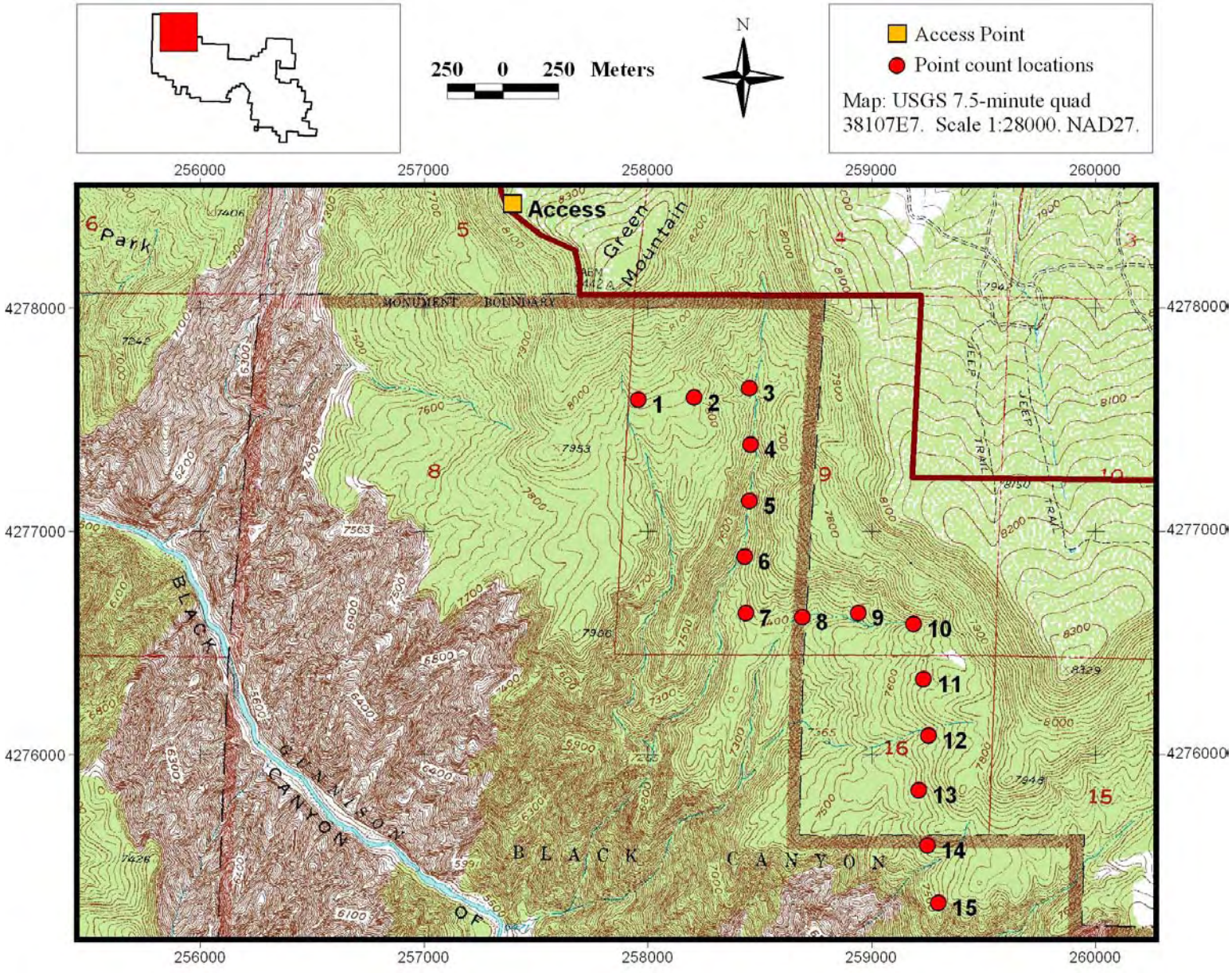
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	31	217	8	9	250	001
1	2	250	270	9	10	250	272
2	3	250	262	10	11	250	269
3	4	250	307	11	12	250	273
4	5	250	343	12	13	250	269
5	6	250	329	13	14	250	274
6	7	250	323	14	15	250	271
7	8	250	346				



Transect BLCA-02 (Points BLCA-02-01 through BLCA-02-15).
Access is from the north rim on C77 Road. Take the Black Canyon Road toward the park entrance. Turn right (west) onto C77 Road. This intersection was not marked in 2003, but there was a BLM sign indicating seasonal closure after November 15th. Take C77 Road to Green Mountain; there are several minor roads branching off, but follow the main road toward Green Mountain (a radio antenna will be visible on the summit). Circle around Green Mountain, and find a two-track dirt road heading to the summit of Green Mountain. Take this road to its end; this is the access point. From the access point, walk to the summit of Green Mountain, and then walk south down the steep slope to point 1. The transect travels south and east. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-02 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	257394	4278465	8	258690	4276617
1	257958	4277588	9	258941	4276635
2	258207	4277598	10	259188	4276586
3	258455	4277640	11	259233	4276338
4	258460	4277388	12	259256	4276087
5	258455	4277137	13	259212	4275842
6	258435	4276886	14	259250	4275593
7	258440	4276634	15	259299	4275336

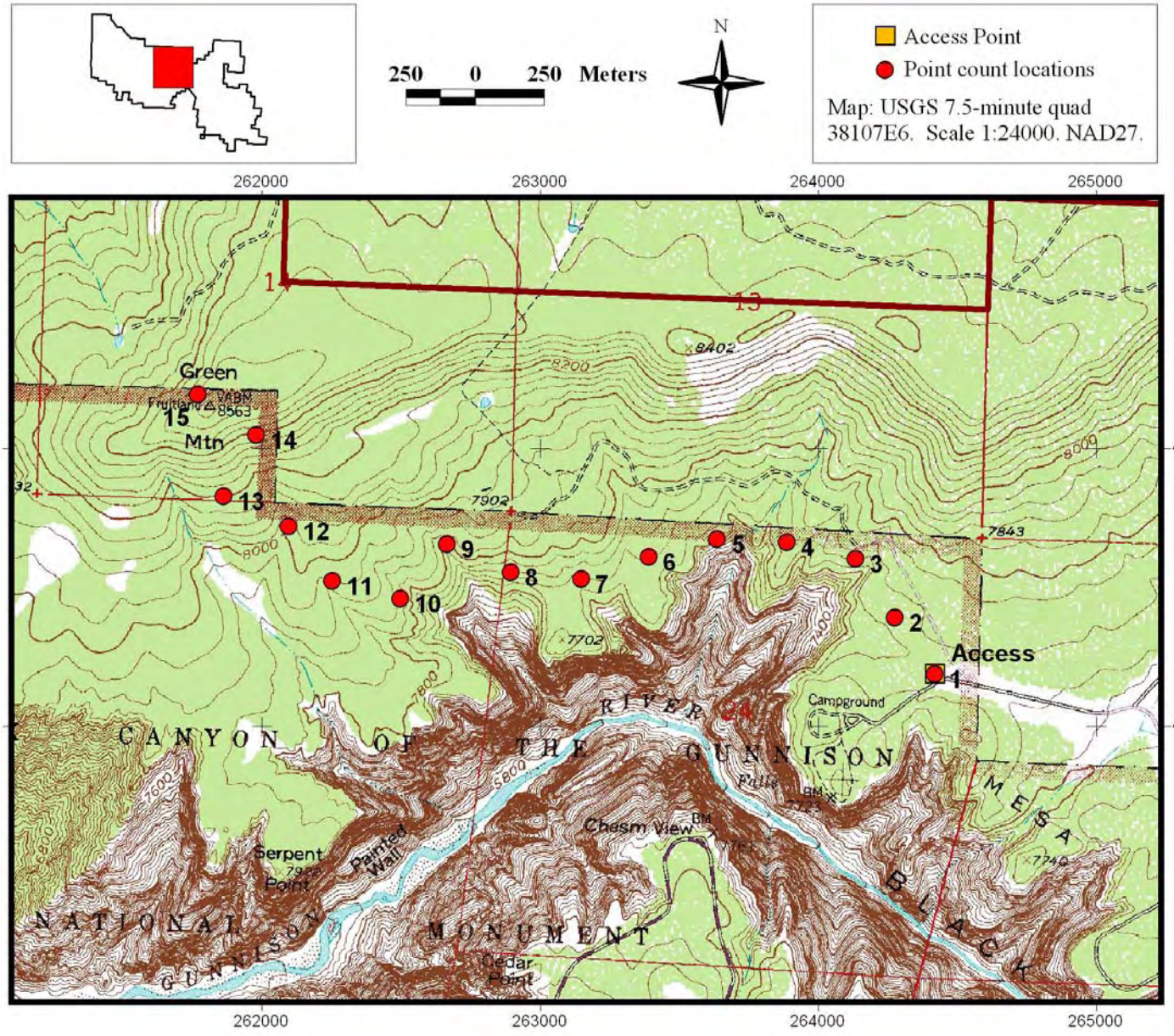
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	1043	147	8	9	250	86
1	2	250	88	9	10	250	101
2	3	250	80	10	11	250	170
3	4	250	179	11	12	250	175
4	5	250	181	12	13	250	190
5	6	250	185	13	14	250	171
6	7	250	179	14	15	250	169
7	8	250	94				



Transect BLCA-03 (Points BLCA-03-01 through BLCA-03-15).
Access is from the north rim at the Ranger Station. Park at the small parking area near the Ranger Station; this is the access point and point 1. The transect follows the North Vista Trail to the summit of Green Mountain. Because of the switchbacks on the trail, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	264420	4274187	8	262895	4274554
1	264420	4274187	9	262665	4274655
2	264276	4274391	10	262498	4274459
3	264136	4274602	11	262253	4274524
4	263888	4274662	12	262097	4274720
5	263636	4274673	13	261862	4274828
6	263392	4274609	14	261979	4275048
7	263148	4274530	15	261770	4275193

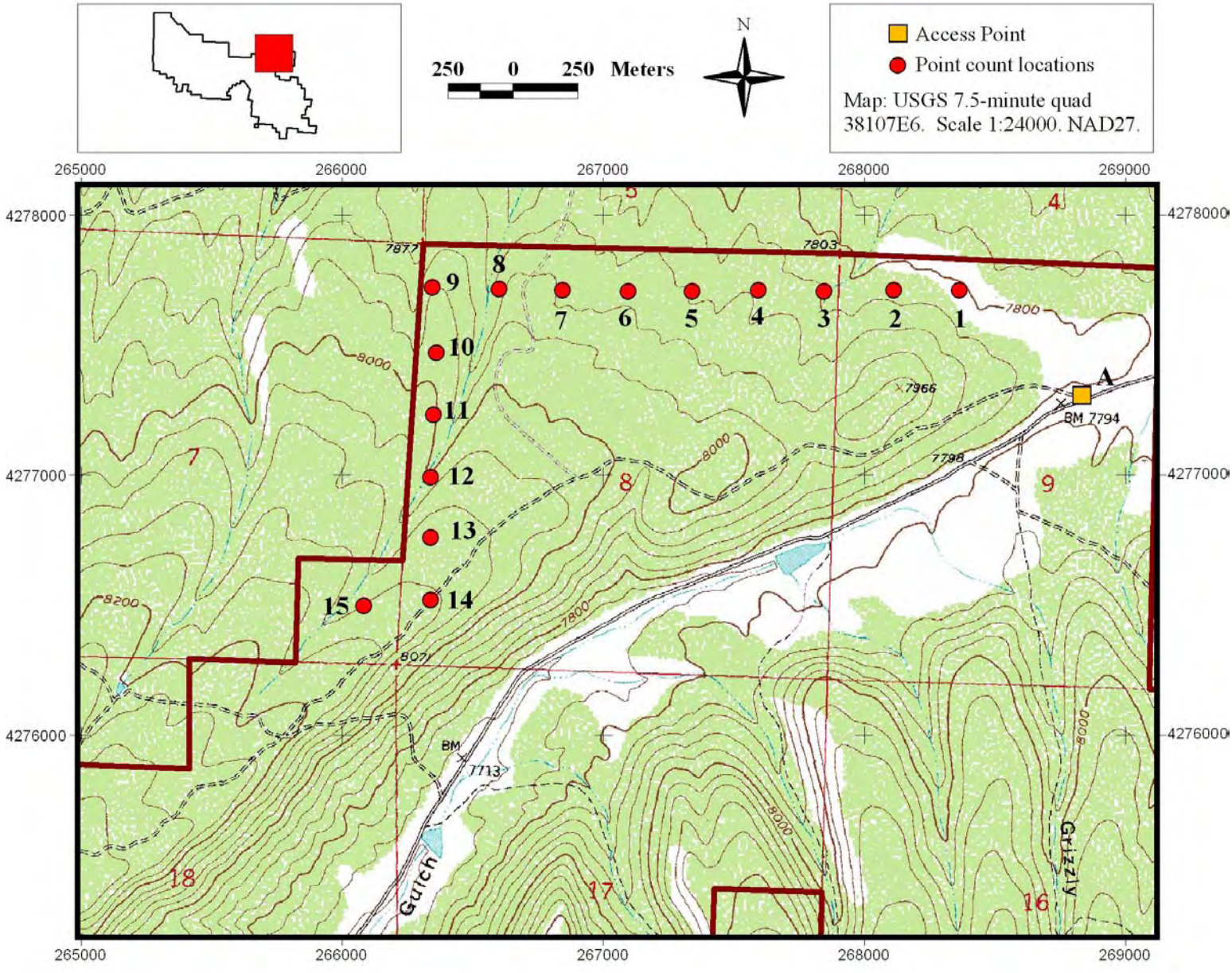
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	0	NA	8	9	250	294
1	2	250	325	9	10	250	220
2	3	250	326	10	11	250	285
3	4	250	284	11	12	250	321
4	5	250	272	12	13	250	295
5	6	250	255	13	14	250	028
6	7	250	252	14	15	250	305
7	8	250	275				



Transect BLCA-04 (Points BLCA-04-01 through BLCA-04-15).
Access is from the north rim. On the North Rim entrance road, park at a two-track dirt road heading west. The road is 300 meters west of the park boundary and is the access point. From the access point, walk along a bearing of 311 degrees for 620 meters to the transect's starting point. The transect travels west to reach points 2-9. It travels south to reach points 10-14, and west again to reach point 15. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	268833	4277305	8	266602	4277716
1	268365	4277711	9	266345	4277722
2	268113	4277711	10	266361	4277470
3	267846	4277706	11	266350	4277233
4	267594	4277711	12	266340	4276992
5	267342	4277706	13	266340	4276760
6	267096	4277706	14	266340	4276519
7	266844	4277711	15	266083	4276498

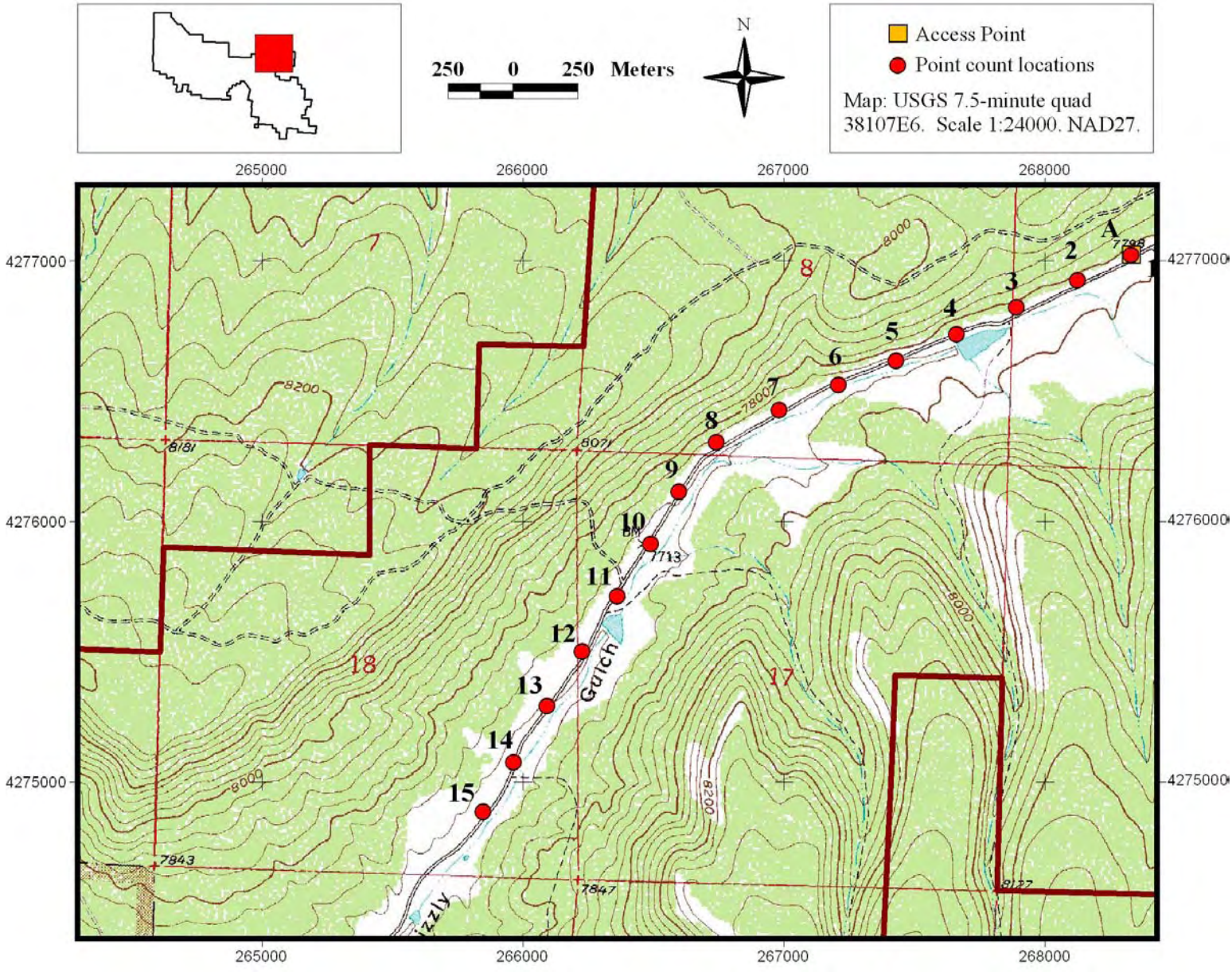
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	620	311	8	9	250	271
1	2	250	270	9	10	250	176
2	3	250	269	10	11	250	183
3	4	250	271	11	12	250	182
4	5	250	269	12	13	250	180
5	6	250	270	13	14	250	180
6	7	250	271	14	15	250	265
7	8	250	271				



Transect BLCA-05 (Points BLCA-05-01 through BLCA-05-15).
Access is from the North Rim. Drive the North Rim entrance road west 870 meters from its entrance in the park; this is the access point and point 1. The transect follows the entrance road west and south for its entire length. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	268329	4277023	8	266741	4276303
1	268329	4277023	9	266597	4276113
2	268124	4276925	10	266489	4275912
3	267892	4276822	11	266361	4275712
4	267661	4276719	12	266227	4275501
5	267430	4276616	13	266093	4275290
6	267209	4276524	14	265965	4275075
7	266983	4276426	15	265847	4274884

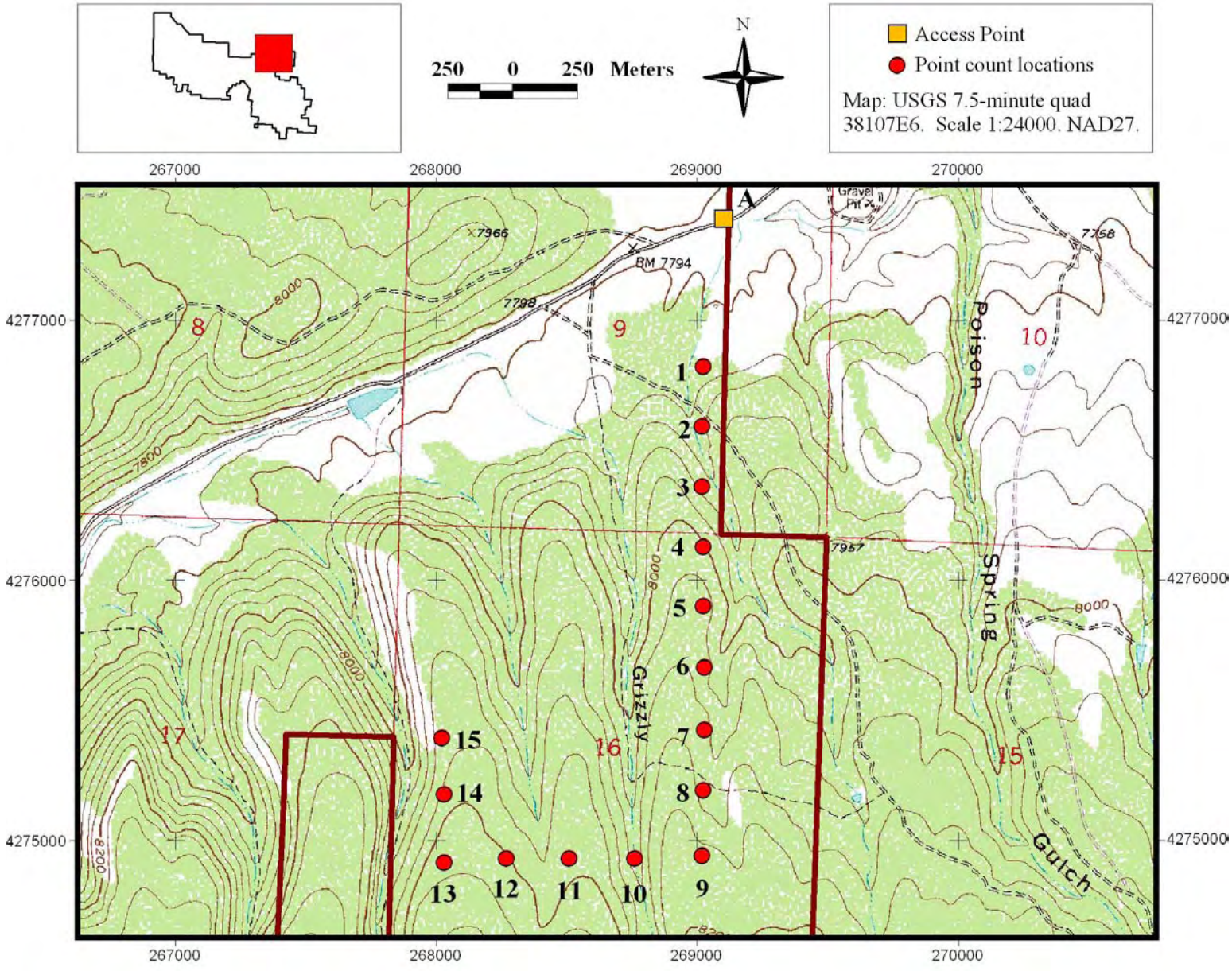
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	0	NA	8	9	250	217
1	2	250	244	9	10	250	208
2	3	250	246	10	11	250	213
3	4	250	246	11	12	250	212
4	5	250	246	12	13	250	212
5	6	250	247	13	14	250	211
6	7	250	247	14	15	250	212
7	8	250	243				



Transect BLCA-06 (Points BLCA-06-01 through BLCA-06-15).
Access is from the north rim. Drive the North Rim entrance to the park boundary; this is the access point. From the access point, walk 570 meters along a bearing of 188 degrees to point 1. The transect travels south, west, and then north near Grizzly creek. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	269100	4277387	8	269023	4275193
1	269023	4276822	9	269018	4274941
2	269018	4276591	10	268761	4274931
3	269018	4276360	11	268509	4274931
4	269023	4276128	12	268268	4274931
5	269023	4275902	13	268031	4274915
6	269028	4275666	14	268031	4275177
7	269028	4275424	15	268021	4275393

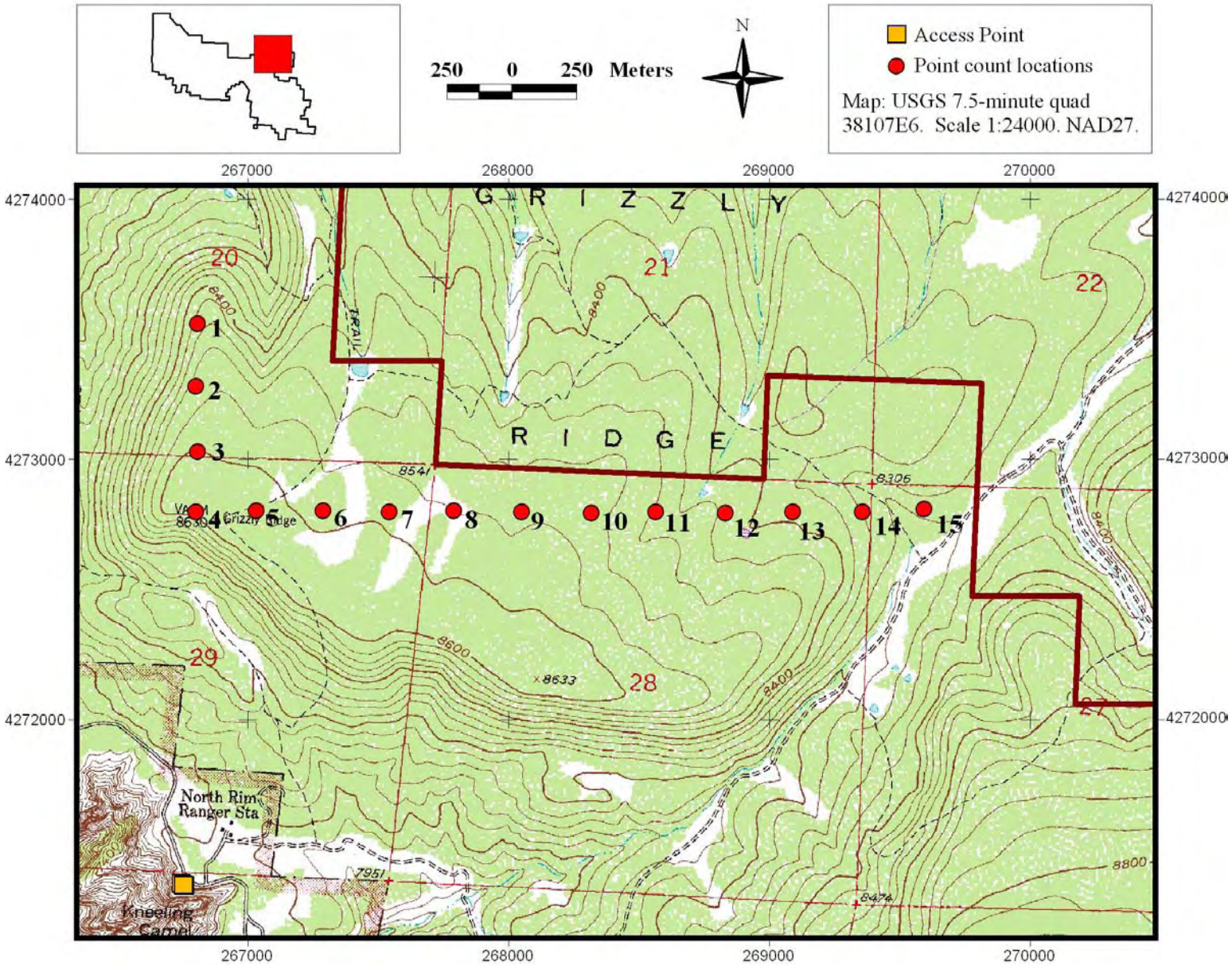
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	570	188	8	9	250	181
1	2	250	181	9	10	250	270
2	3	250	180	10	11	250	270
3	4	250	180	11	12	250	270
4	5	250	180	12	13	250	266
5	6	250	179	13	14	250	357
6	7	250	180	14	15	250	358
7	8	250	181				



Transect BLCA-07 (Points BLCA-07-01 through BLCA-07-15).
Access is from the north rim. Drive the North Rim entrance road to the Kneeling Camel Overlook; this is the access point. From the access point, walk 2150 meters along a bearing of 002 degrees to point 1. The transect travels south and then east along Grizzly Ridge. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	266746	4271369	8	267790	4272803
1	266808	4273522	9	268052	4272798
2	266803	4273281	10	268319	4272793
3	266808	4273029	11	268566	4272798
4	266803	4272798	12	268833	4272793
5	267034	4272803	13	269090	4272798
6	267291	4272803	14	269357	4272798
7	267543	4272798	15	269594	4272808

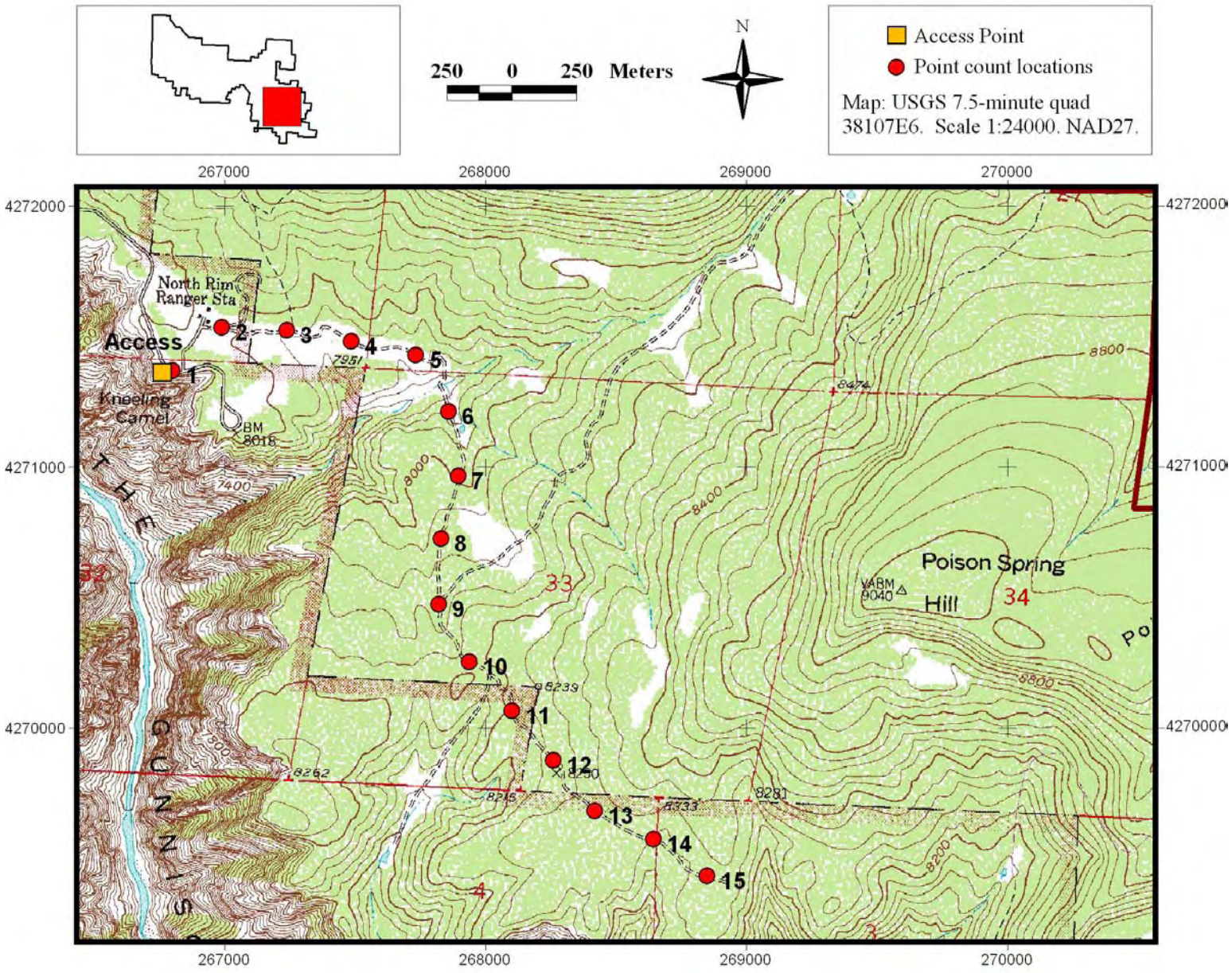
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	2150	002	8	9	250	091
1	2	250	180	9	10	250	091
2	3	250	181	10	11	250	089
3	4	250	181	11	12	250	091
4	5	250	089	12	13	250	089
5	6	250	090	13	14	250	090
6	7	250	091	14	15	250	088
7	8	250	089				



Transect BLCA-08 (Points BLCA-08-01 through BLCA-08-15).
Access is from the north rim at the Kneeling Camel Overlook. Park at the overlook; this is the access point. From the overlook, walk east along the road to the beginning of the Deadhorse Trail; this is point 1. The transect follows the Deadhorse Trail for its entirety. Because of the switchbacks on the trail, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-08 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	266759	4271360	8	267829	4270724
1	266800	4271369	9	267822	4270474
2	266989	4271534	10	267937	4270252
3	267239	4271524	11	268101	4270066
4	267485	4271481	12	268261	4269875
5	267732	4271429	13	268419	4269681
6	267858	4271212	14	268644	4269574
7	267895	4270965	15	268850	4269433

Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	42	078	8	9	250	182
1	2	250	49	9	10	250	153
2	3	250	92	10	11	250	139
3	4	250	100	11	12	250	140
4	5	250	102	12	13	250	141
5	6	250	150	13	14	250	115
6	7	250	171	14	15	250	124
7	8	250	195				

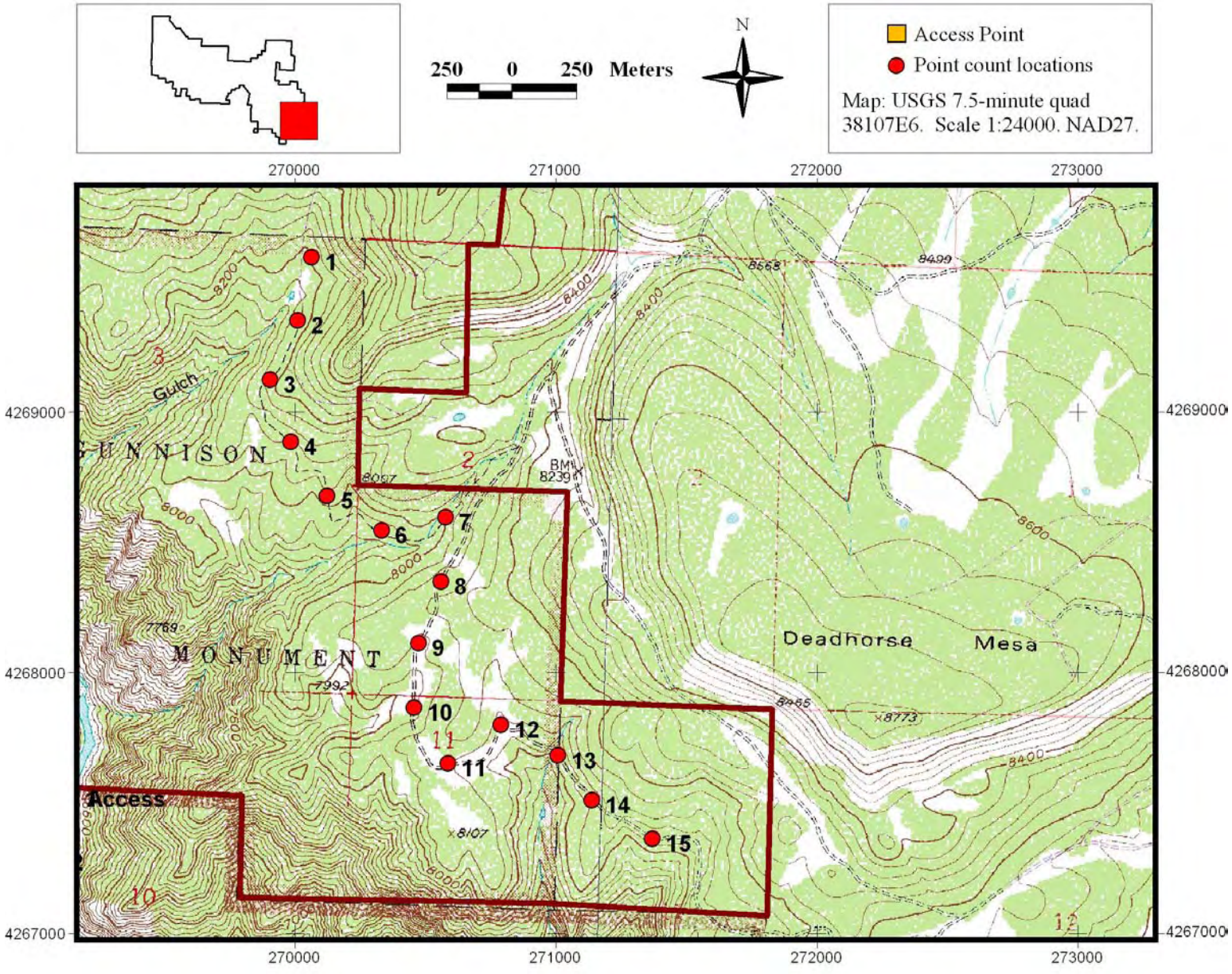


Transect BLCA-09 (Points BLCA-09-01 through BLCA-09-15).

Access is from the north rim at the Kneeling Camel Overlook. The overlook is the access point. From the overlook, walk east along the road to the beginning of the Deadhorse Trail. Follow the Deadhorse trail to its end (at a fence). From the fence at the end of the trail, find a two-track dirt road heading east, and follow it to point 1. There are few landmarks in the area, so it will be necessary to use GPS to find point 1 (it is 3.7 kilometers from the access point to point 1). The transect follows the two-track dirt road for its entirety. There are a few roads branching off of the main road; always remain on the lower road. Because of the switchbacks on the road, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-09 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	266759	4271360	8	270561	4268349
1	270064	4269594	9	270475	4268114
2	270012	4269350	10	270457	4267866
3	269905	4269123	11	270587	4267652
4	269984	4268886	12	270789	4267799
5	270123	4268679	13	271008	4267682
6	270333	4268546	14	271138	4267510
7	270578	4268597	15	271369	4267364

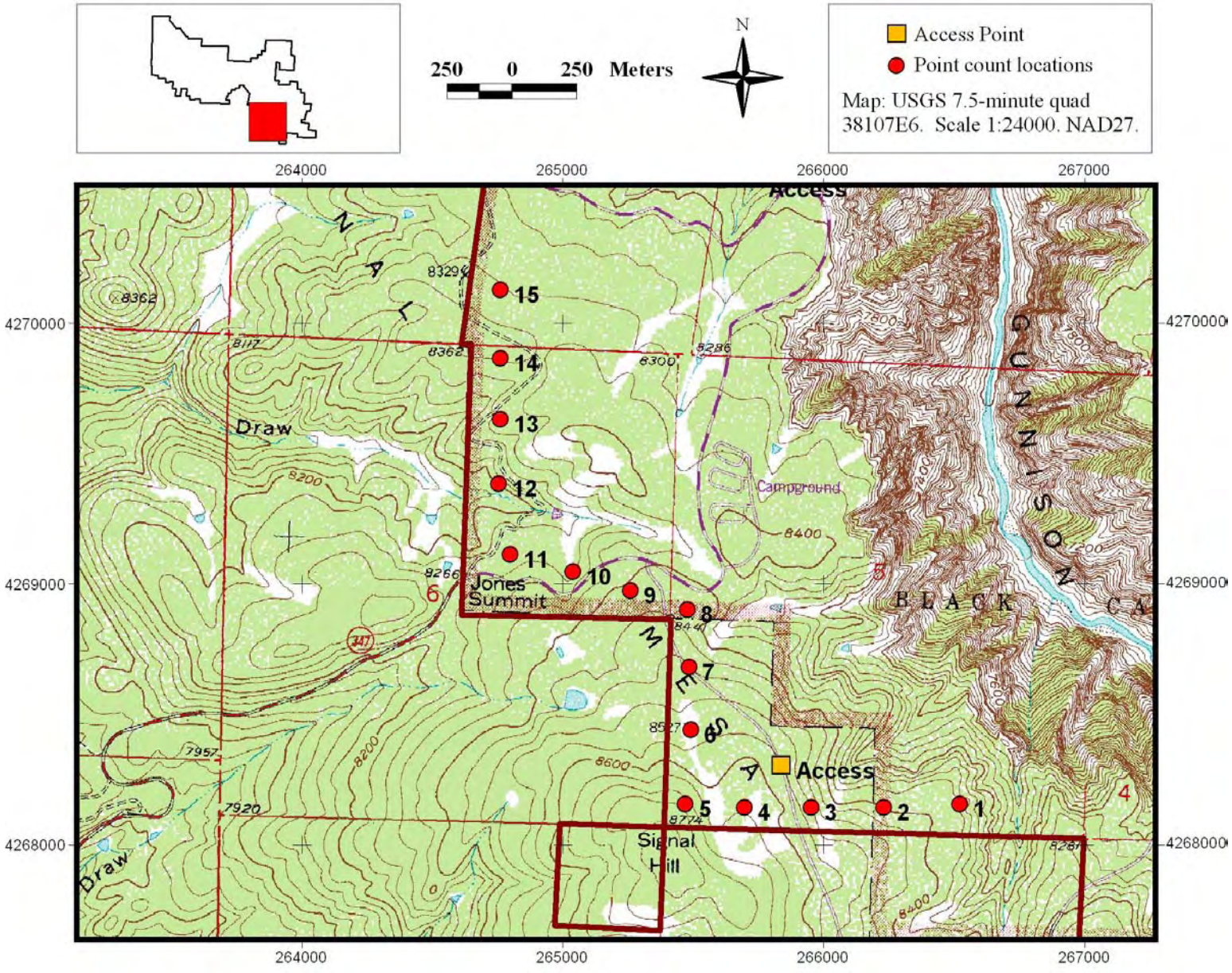
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	3747	118	8	9	250	200
1	2	250	192	9	10	250	184
2	3	250	205	10	11	250	149
3	4	250	162	11	12	250	054
4	5	250	146	12	13	250	118
5	6	250	122	13	14	250	143
6	7	250	078	14	15	250	122
7	8	250	184				



Transect BLCA-10 (Points BLCA-10-01 through BLCA-10-15).
Access is from the south rim on the East Portal Road. Park at a small parking area on the east side of the East Portal Road (use GPS to find access point). From the access point, walk 701 meters along a bearing of 102 degrees to point 1. The transect travels west and north through the dense Gambel oak and serviceberry. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-10 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	265836	4268303	8	265478	4268902
1	266522	4268157	9	265259	4268975
2	266230	4268142	10	265039	4269048
3	265952	4268142	11	264798	4269113
4	265697	4268142	12	264755	4269384
5	265470	4268157	13	264762	4269632
6	265492	4268441	14	264762	4269866
7	265485	4268682	15	264762	4270129

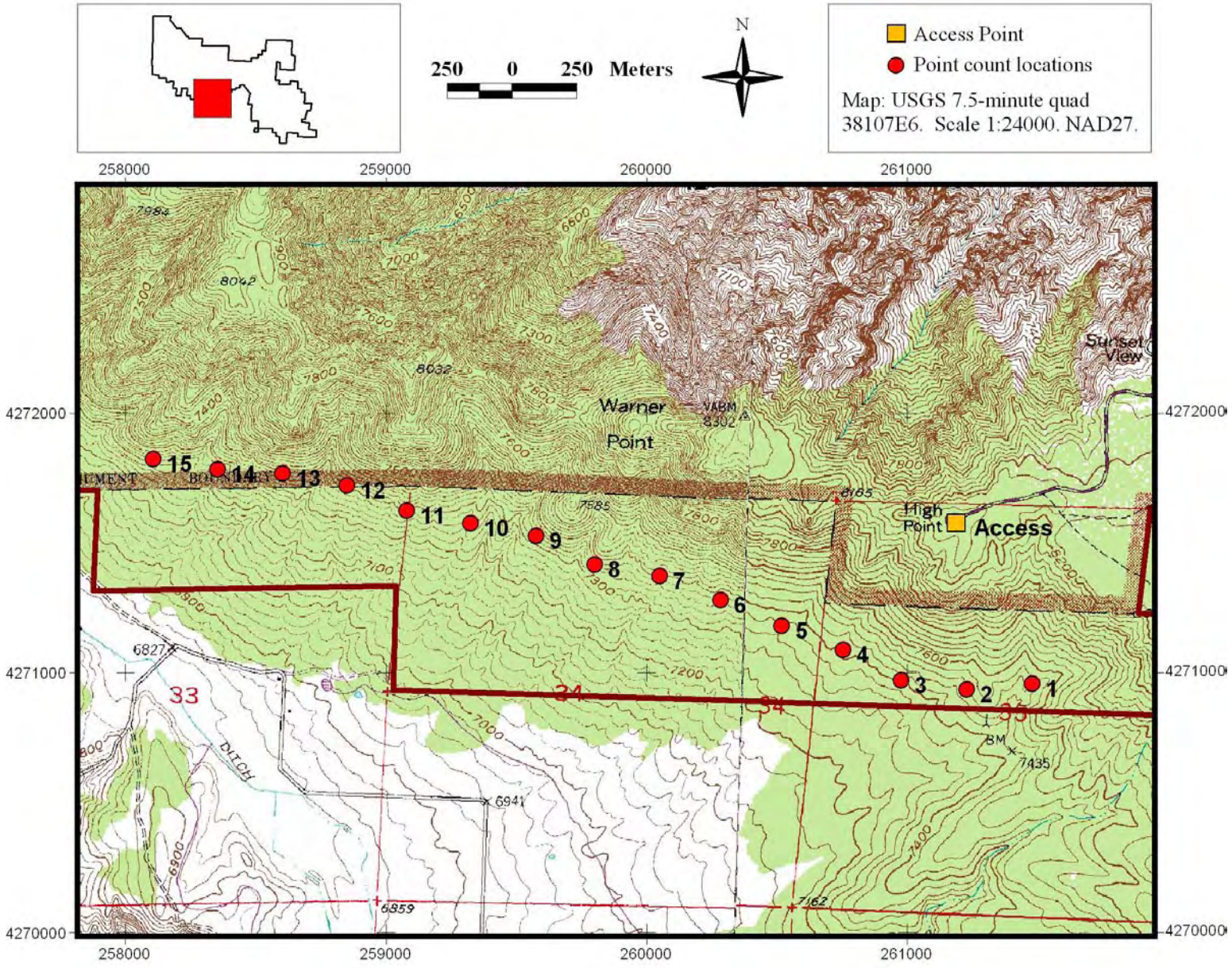
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	701	102	8	9	250	288
1	2	250	267	9	10	250	288
2	3	250	270	10	11	250	285
3	4	250	270	11	12	250	351
4	5	250	274	12	13	250	002
5	6	250	004	13	14	250	000
6	7	250	358	14	15	250	000
7	8	250	358				



Transect BLCA-11 (Points BLCA-11-01 through BLCA-11-15).
Access is from the south rim at the High Point Overlook. Park in the parking area near the restroom; this is the access point. From the access point, walk 684 meters along a bearing of 155 degrees to point 1 (it will be necessary to drop off of the steep slope from High Point). The transect travels west through pinyon-juniper woodland. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-11 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	261187	4271576	8	259802	4271416
1	261480	4270958	9	259576	4271528
2	261229	4270935	10	259326	4271575
3	260978	4270972	11	259081	4271625
4	260756	4271087	12	258850	4271722
5	260519	4271180	13	258604	4271767
6	260286	4271280	14	258354	4271783
7	260051	4271372	15	258107	4271822

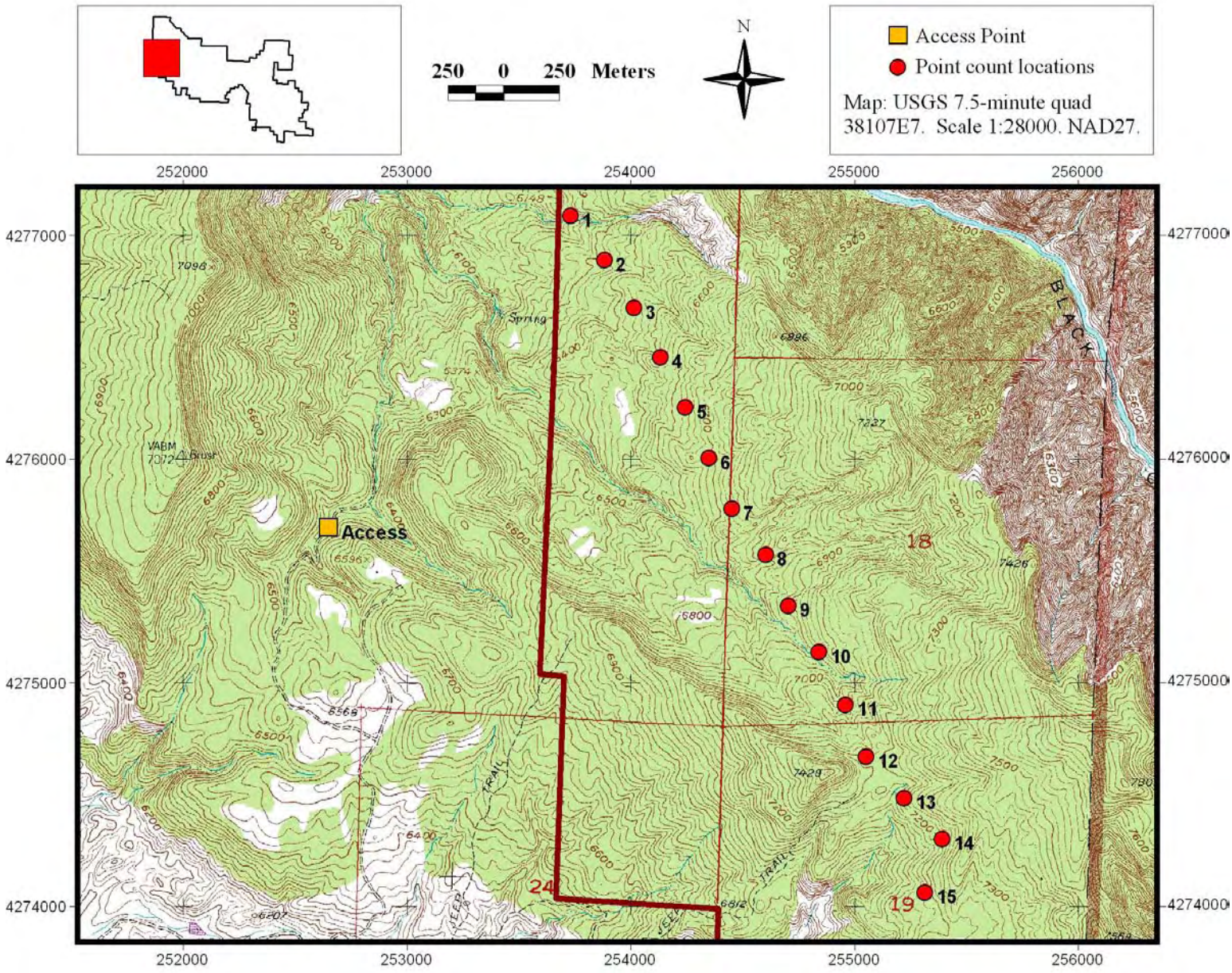
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	684	155	8	9	250	296
1	2	250	265	9	10	250	281
2	3	250	278	10	11	250	282
3	4	250	297	11	12	250	293
4	5	250	291	12	13	250	280
5	6	250	293	13	14	250	274
6	7	250	291	14	15	250	279
7	8	250	280				



Transect BLCA-12 (Points BLCA-12-01 through BLCA-12-15).
Access is near Olathe on the Peach Valley Road. Take the Peach Valley Road to its junction with the Chuckar Trail Road. Follow the Chuckar Trail road until it is nearly impassable. Park here; this is the access point. From the access point, walk uphill 1.8 kilometers along a bearing of 038 degrees to point 1. The transect travels southeast through the pinyon-juniper woodland. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-12 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	252647	4275692	8	254603	4275573
1	253730	4277088	9	254705	4275344
2	253882	4276889	10	254841	4275136
3	254014	4276676	11	254960	4274901
4	254133	4276456	12	255052	4274669
5	254243	4276231	13	255221	4274484
6	254350	4276004	14	255392	4274301
7	254453	4275777	15	255314	4274062

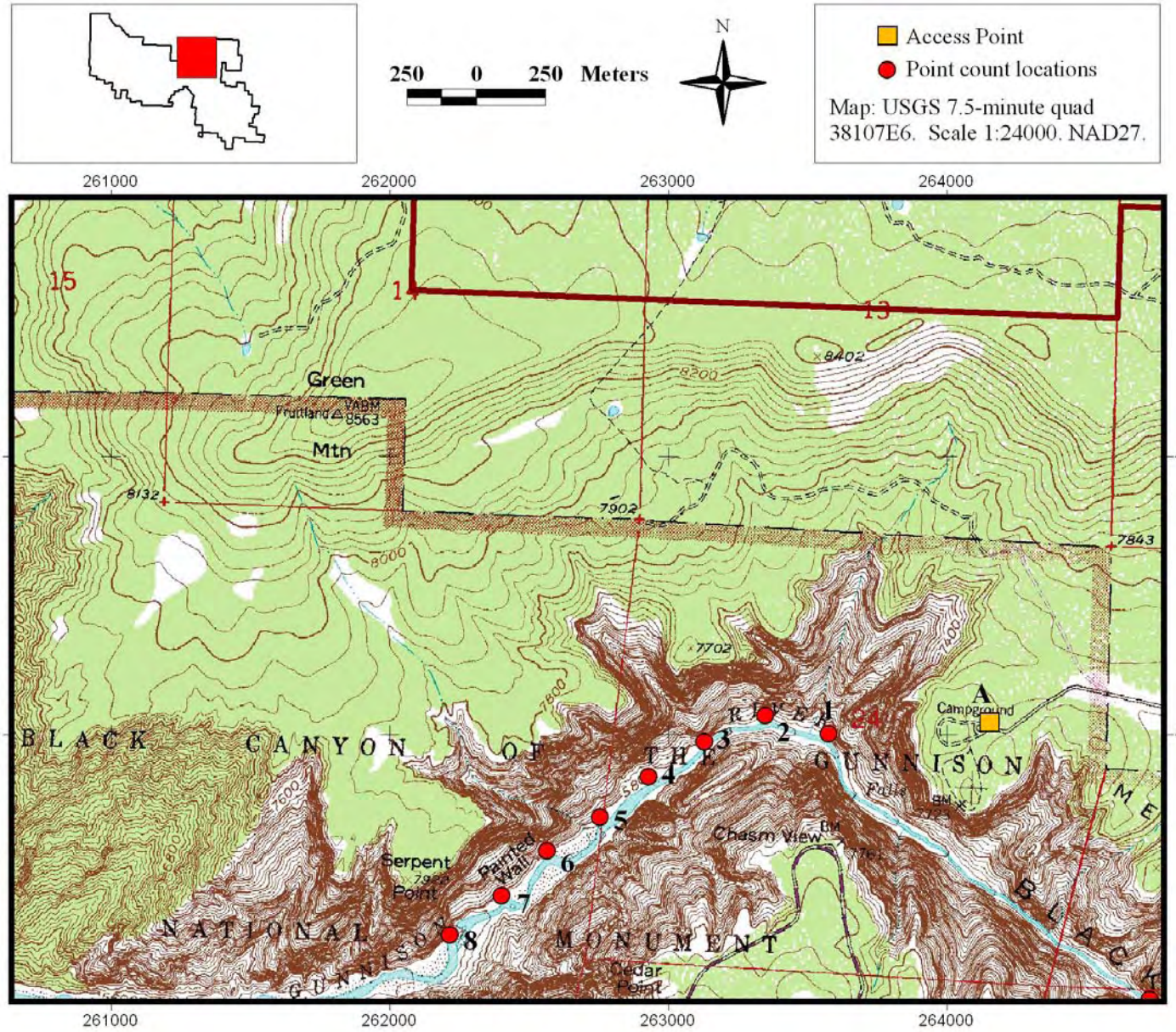
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	1767	038	8	9	250	156
1	2	250	143	9	10	250	147
2	3	250	148	10	11	250	153
3	4	250	152	11	12	250	158
4	5	250	154	12	13	250	138
5	6	250	155	13	14	250	137
6	7	250	156	14	15	250	198
7	8	250	144				



Transect BLCA-13 (Points BLCA-13-01 through BLCA-13-08).
Access is from the North Rim. Drive the North Rim entrance road west to the S.O.B. trailhead, near the North Rim campground; this is the access point. Follow the steep trail to the Gunnison River and point 1. The transect travels downstream to points 2-8. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	264152	4274043	5	262754	4273702
1	263575	4274003	6	262564	4273580
2	263349	4274068	7	262402	4273419
3	263130	4273974	8	262216	4273279
4	262929	4273849			

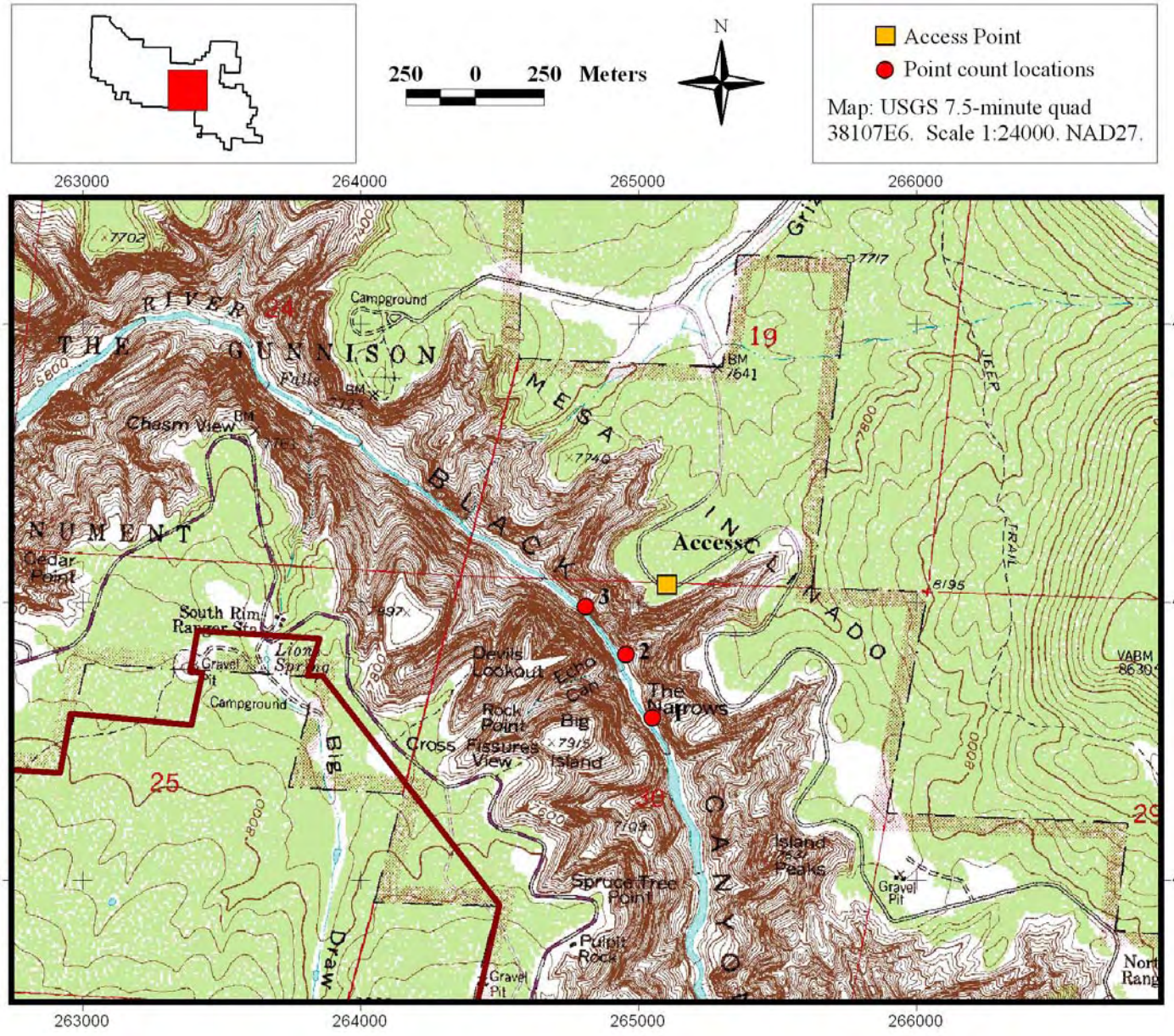
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	578	266	5	6	250	237
1	2	250	286	6	7	250	225
2	3	250	247	7	8	250	233
3	4	250	238				
4	5	250	230				



Transect BLCA-14 (Points BLCA-14-01 through BLCA-14-03).
Access is from the north rim at Balanced Rock Overlook. From the overlook, walk east along the road to the head of Long Draw. Follow the steep long Draw route to the Gunnison River. Once at the river, hike south to the narrows to point 1. The transect follows the Gunnison River downstream. The narrow canyon makes GPS tracking difficult, so UTM locations may not be exact. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-14 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	265114	4273060	2	264892	4272844
1	265019	4272622	3	264727	4273047

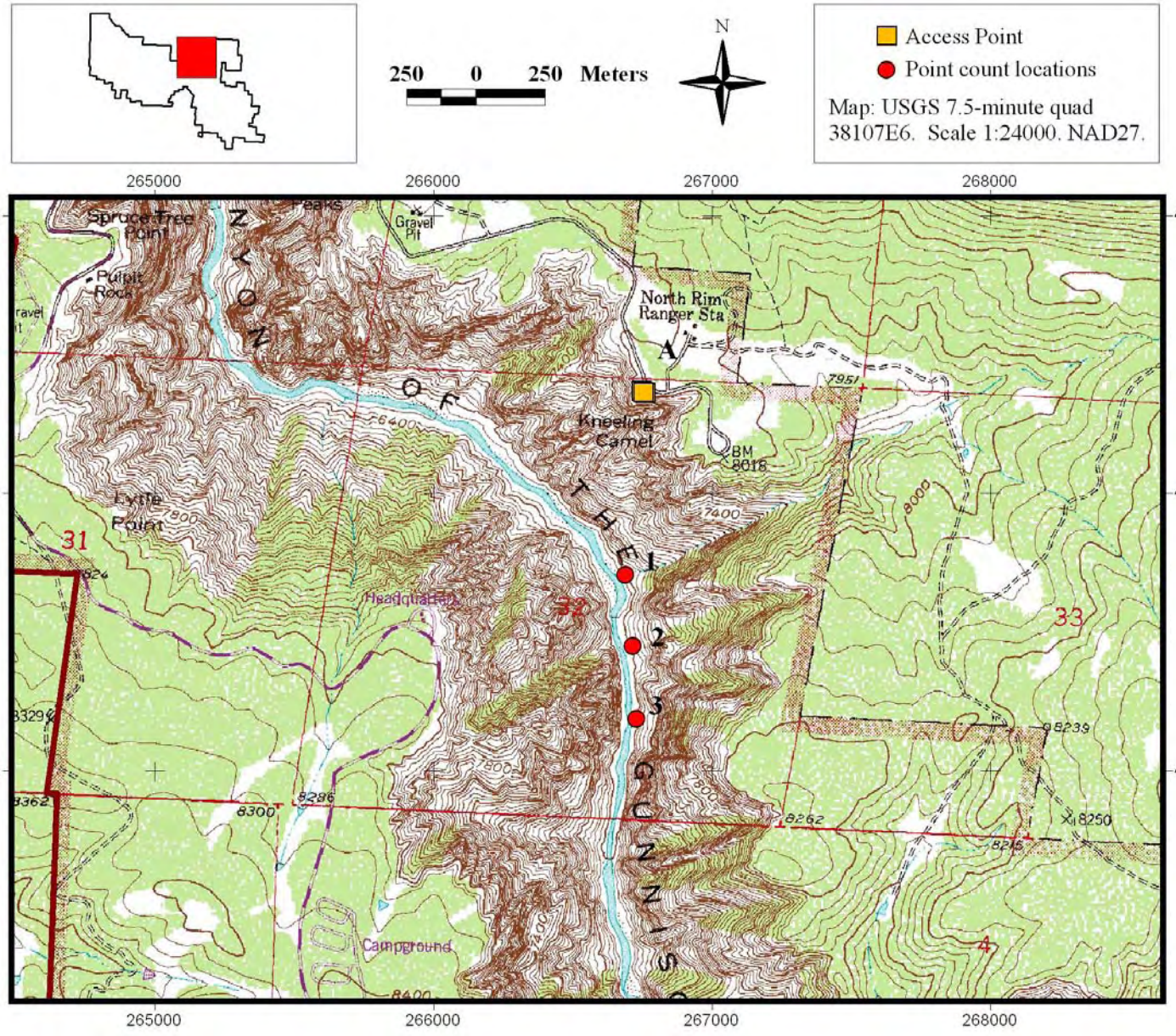
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	NA	NA	2	3	250	321
1	2	250	330				



Transect BLCA-15 (Points BLCA-15-01 through BLCA-15-03).
Access is from the North Rim. Drive the North Rim entrance road to the Kneeling Camel Overlook; this is the access point. Walk east along the road to the Slide Draw trailhead. Follow the steep trail to the Gunnison River and point 1. The transect travels upstream to points 2-3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	266754	4271362	2	266715	4270451
1	266690	4270706	3	266729	4270189

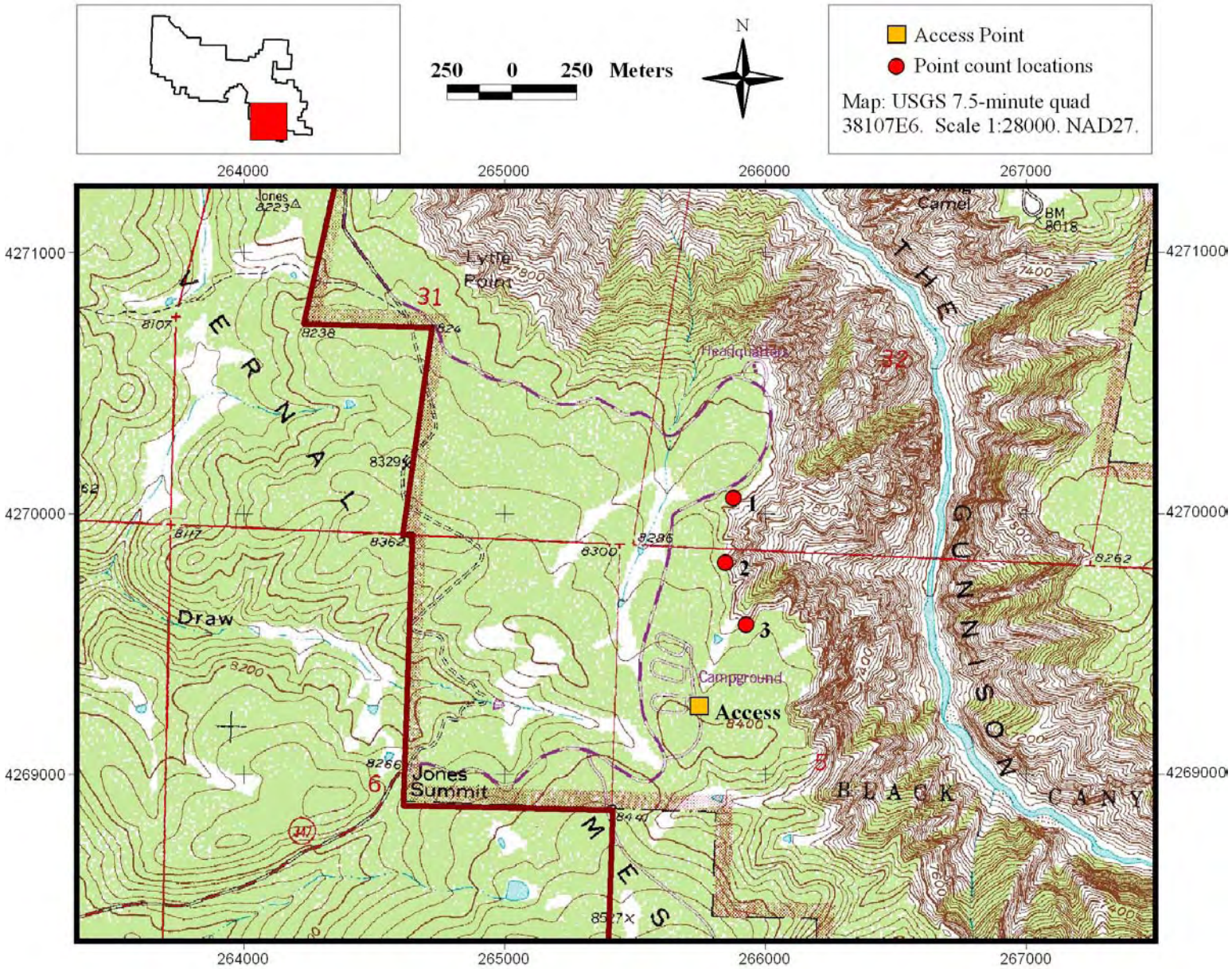
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	659	186	2	3	250	177
1	2	250	174				



Transect BLCA-16 (Points BLCA-16-01 through BLCA-16-03).
Access is from the south rim at the south rim campground. Park at the parking area near loop A; this is the access point. From the parking area, walk 810 meters along a bearing of 009 degree to point 1 in a patch of Douglas fir. Walk north along the Rim Rock Trail to points 2 and 3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-16 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	265746	4269261	2	265847	4269811
1	265878	4270060	3	265926	4269574

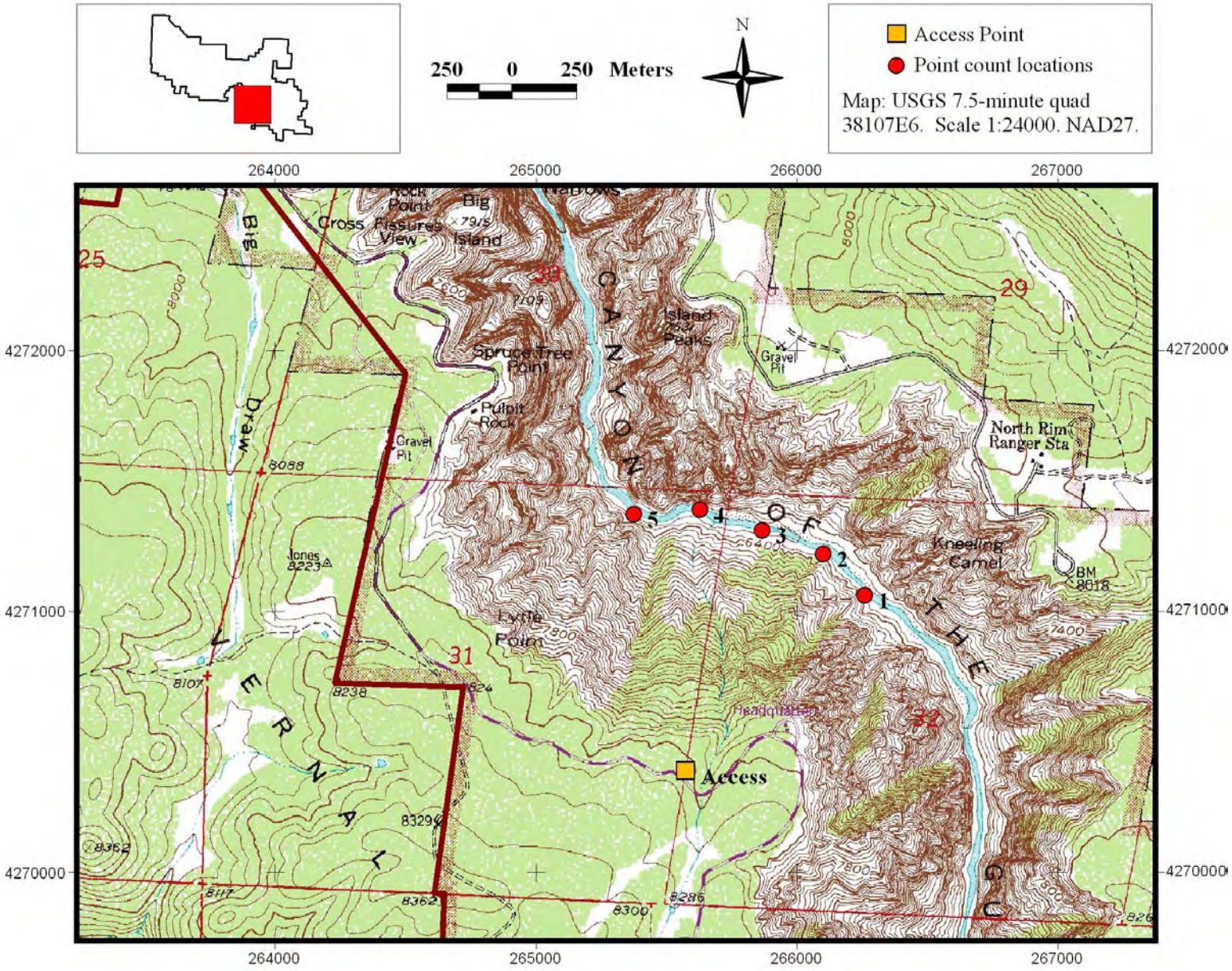
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	810	009	2	3	250	162
1	2	250	187				



Transect BLCA-17 (Points BLCA-17-01 through BLCA-17-05).
Access is from the south rim at the Visitor Center. Park at the Visitor Center; this is the access point. From the access point, hike west on the Oak Flat Trail to the beginning of the Gunnison Route (to the river). Follow the steep Gunnison Route to the Gunnison River. After reaching the river, hike east (upstream) to point 1. The transect travels downstream along the river. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-17 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	265573	4270390	3	265867	4271312
1	266261	4271063	4	265630	4271390
2	266102	4271220	5	265376	4271372

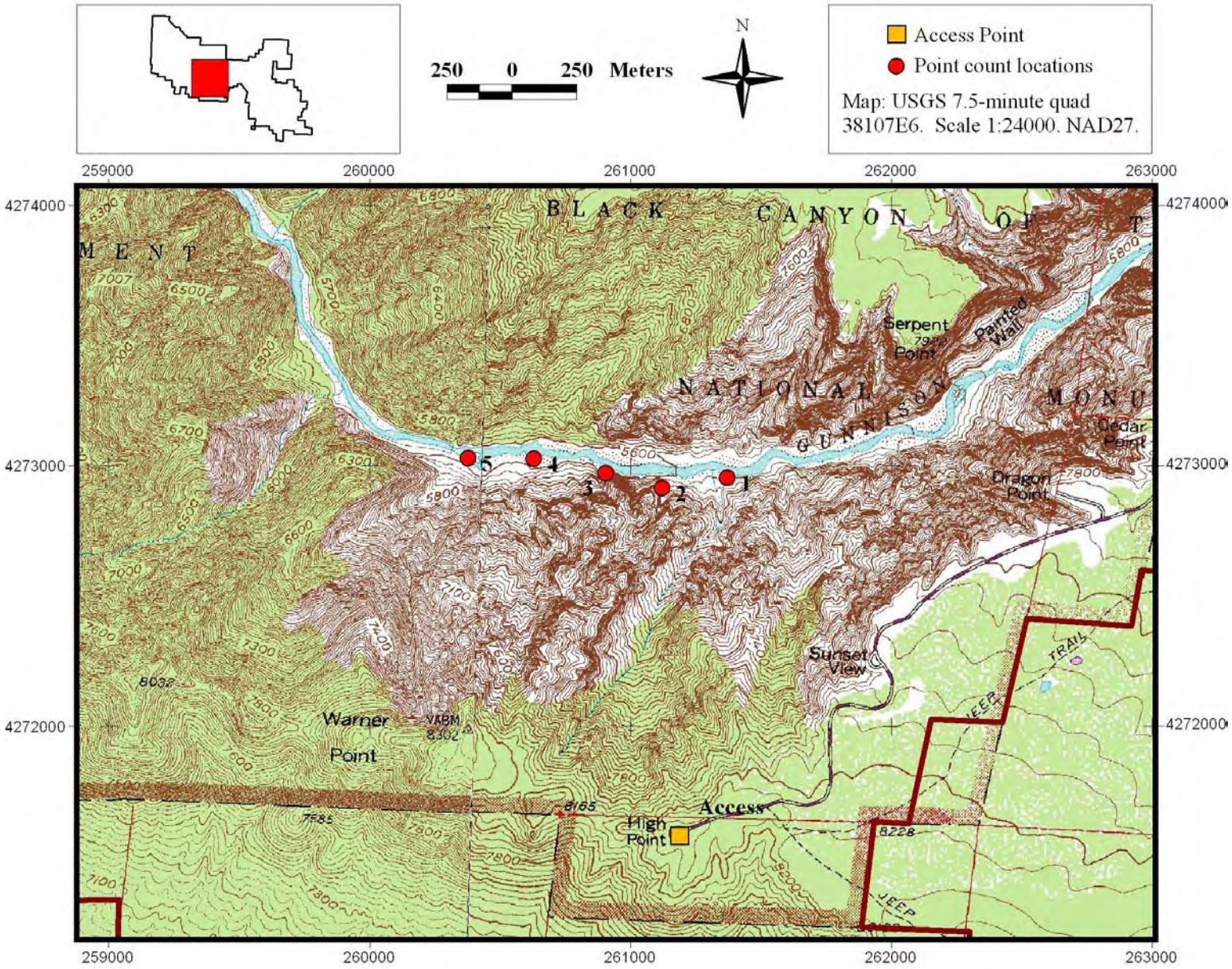
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	NA	NA	3	4	250	288
1	2	250	315	4	5	250	266
2	3	250	291				



Transect BLCA-18 (Points BLCA-18-01 through BLCA-18-05).
Access is from the south rim at the High Point Overlook. Park at the overlook near the restroom; this is the access point. From the access point, hike along the Warner Point Trail, and then the Warner River Access Trail. Hike the steep trail to the Gunnison River. After reaching the river, hike upstream to point 1. The transect travels downstream along the river. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-18 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	261184	4271587	3	260879	4272914
1	261370	4272953	4	260629	4273027
2	261121	4272914	5	260379	4273029

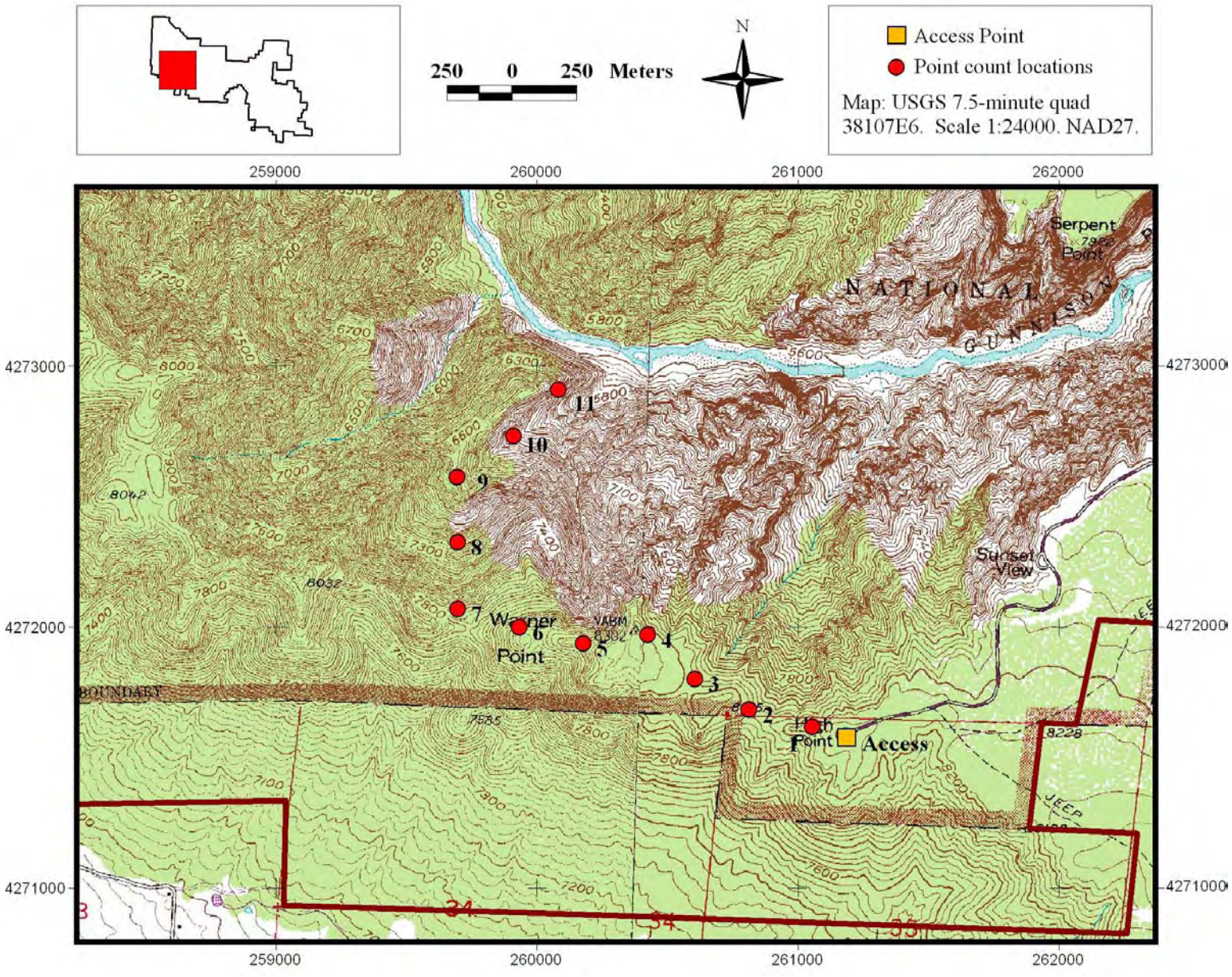
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	NA	NA	3	4	250	294
1	2	250	261	4	5	250	270
2	3	250	270				



Transect BLCA-19 (Points BLCA-19-01 through BLCA-19-11).
Access is from the south rim at the High Point Overlook. Park at the overlook near the restroom; this is the access point. From the access point, walk 94 meters along a bearing of 291 degrees to point 1, on the Warner Point Trail. The transect follows the Warner Point Trail, and then the Warner River Access Trail. Because of the switchbacks on the trail, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-19 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	261145	4271584	6	259934	4272000
1	261057	4271618	7	259697	4272070
2	260814	4271684	8	259697	4272325
3	260606	4271800	9	259708	4272546
4	260424	4271971	10	259911	4272731
5	260177	4271938	11	260084	4272910

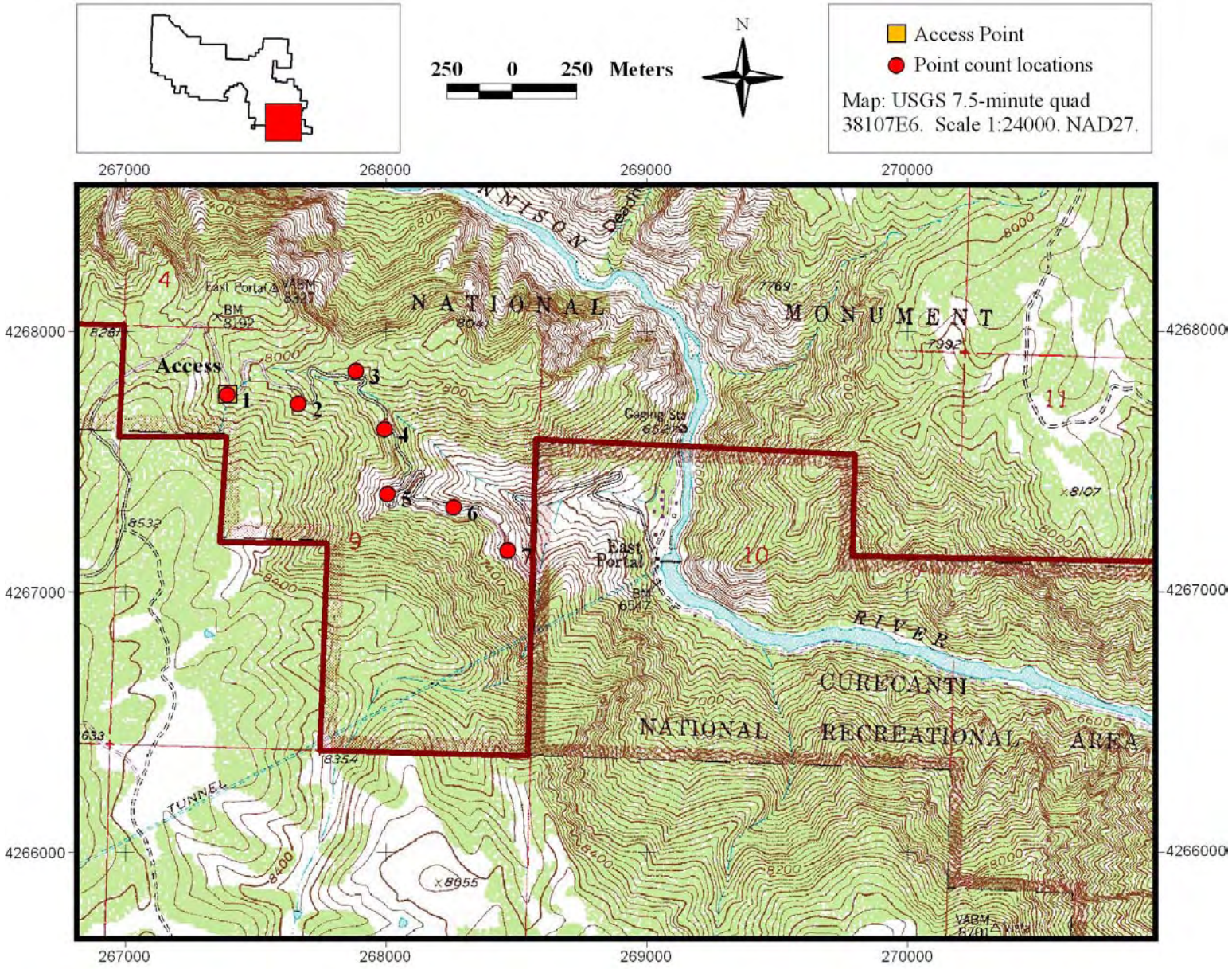
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	94	291	6	7	250	286
1	2	250	285	7	8	250	352
2	3	250	299	8	9	250	352
3	4	250	313	9	10	250	048
4	5	250	262	10	11	250	044
5	6	250	284				



Transect BLCA-20 (Points BLCA-20-01 through BLCA-20-07).
Access is from the south rim on the East Portal Road. From the park entrance, take the East Portal Road to the first set of steep switchbacks; this is the access point and point 1 (use GPS to locate exact point). The transect follows the East Portal Road downhill. Because of the switchbacks on the road, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-20 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	267393	4267758	4	267996	4267624
1	267393	4267758	5	268007	4267376
2	267665	4267721	6	268261	4267324
3	267886	4267848	7	268468	4267160

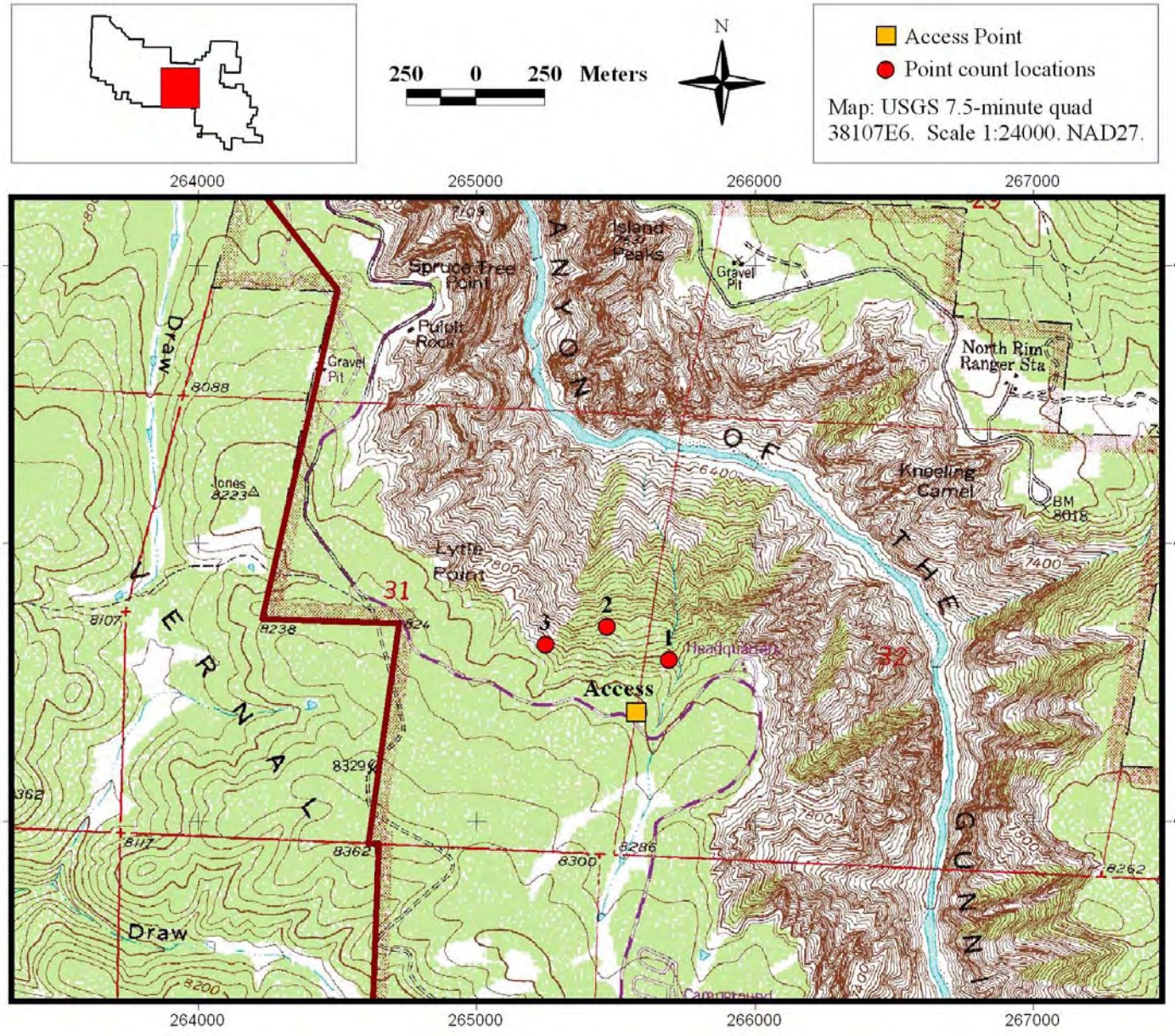
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	0	NA	4	5	250	177
1	2	250	98	5	6	250	102
2	3	250	60	6	7	250	128
3	4	250	154				



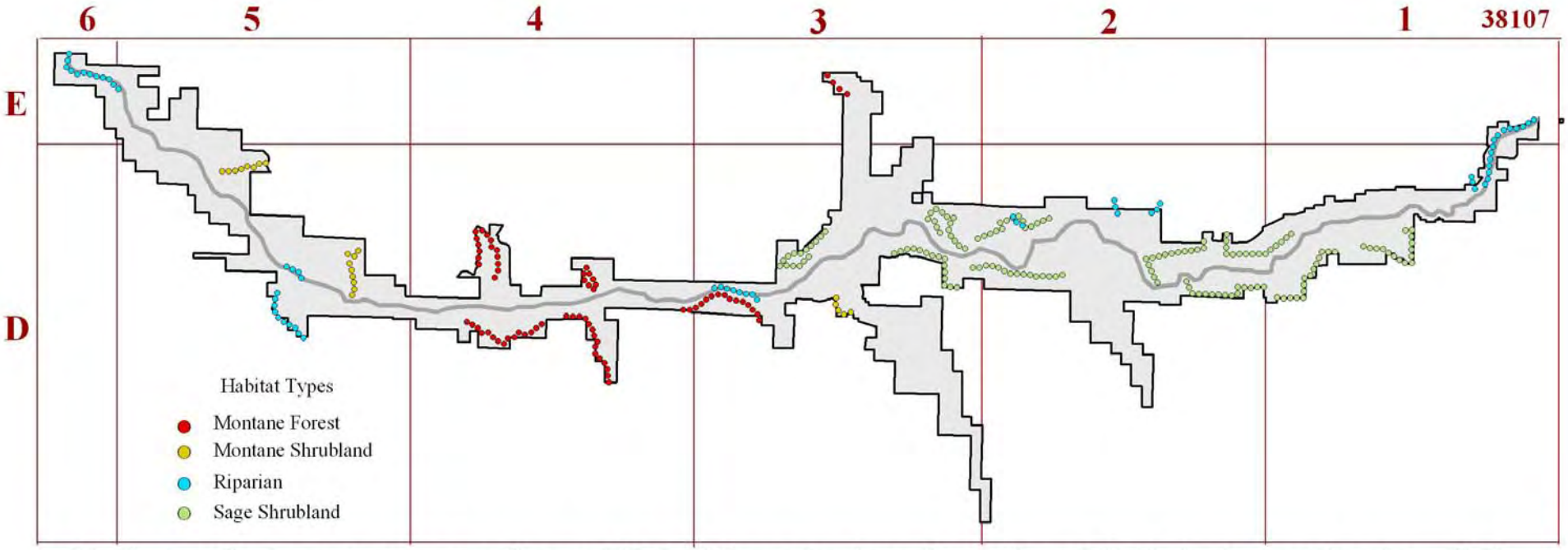
Transect BLCA-21 (Points BLCA-21-01 through BLCA-21-03).
Access is from the south rim at the Visitor Center. Park at the Visitor Center; this is the access point. From the access point, hike west on the Oak Flat Trail to the beginning of the Gunnison Route Trail; this is point 1. Follow the lower Oak Flat Trail to points 2 and 3. Because of the switchbacks on the trail, it is important to use GPS to determine straight-line distances between points. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of BLCA-21 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
Access	265565	4270386	3	265470	4270698
1	265691	4270580	4	265248	4270634

Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
Access	1	NA	NA	2	3	250	254
1	2	250	298				



Appendix B (continued). Point count locations and transect descriptions.

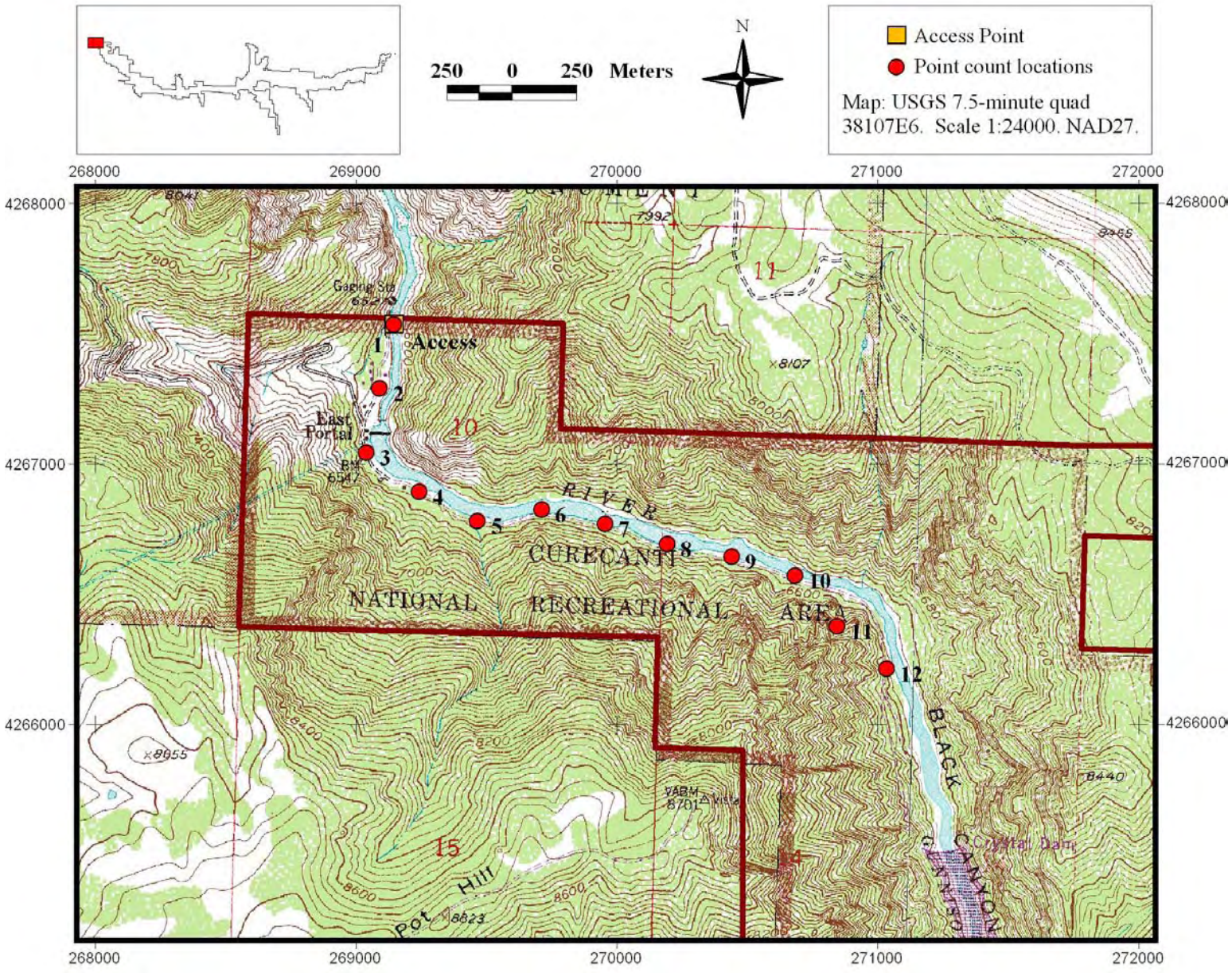


Distribution of point count transects at Curecanti National Recreation Area. Dots indicate individual point count locations. Grids represent USGS 7.5-minute quad maps

Transect CURE-01 (Points CURE-01-01 through CURE-01-12).
Access is from the south rim of Black Canyon National Park. From the park entrance, turn onto the East Portal Road. Take the steep road to the East Portal Campground on the Gunnison River. The campground is the access point and point 1. The transect follows the Gunnison River upstream toward the Crystal Dam. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-01 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	269145	4267535	7	269956	4266769
1	269145	4267535	8	270195	4266693
2	269090	4267291	9	270441	4266645
3	269040	4267044	10	270683	4266572
4	269242	4266894	11	270845	4266377
5	269467	4266780	12	271034	4266213
6	269713	4266825			

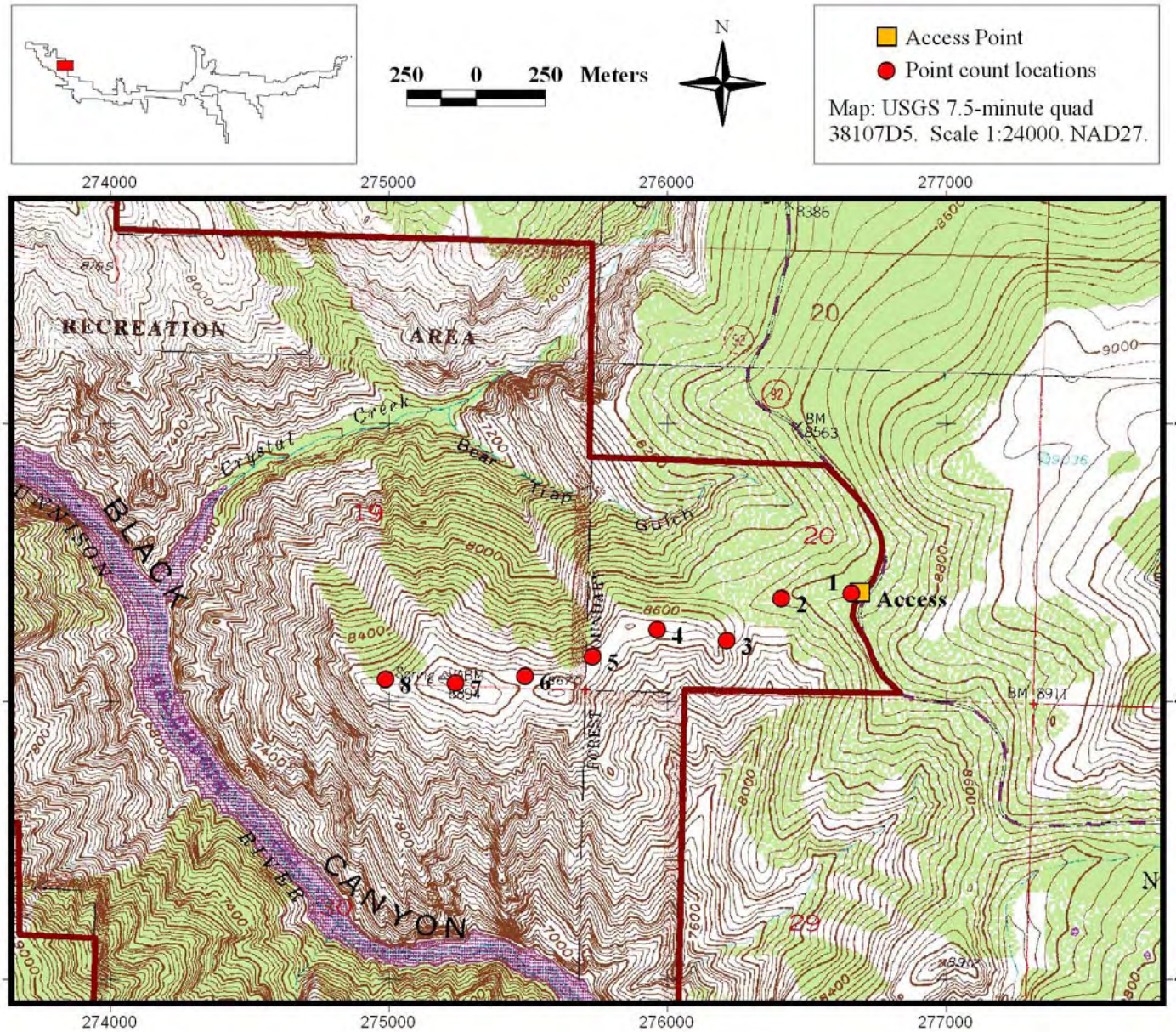
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	0	NA	7	8	250	108
1	2	250	193	8	9	250	101
2	3	250	191	9	10	250	107
3	4	250	127	10	11	250	140
4	5	250	117	11	12	250	131
5	6	250	080				
6	7	250	103				



Transect CURE-02 (Points CURE-02-01 through CURE-02-08).
Access is from Hwy. 92 at the Crystal Creek Trailhead. Park at the Trailhead; this is the access point. From the access point walk 29 meters along a bearing of 262 degrees to point 1. The transect follows the Crystal Trail west to its end. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-02 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	276690	4263391	5	275732	4263161
1	276661	4263387	6	275490	4263091
2	276410	4263371	7	275241	4263066
3	276213	4263218	8	274989	4263080
4	275964	4263257			

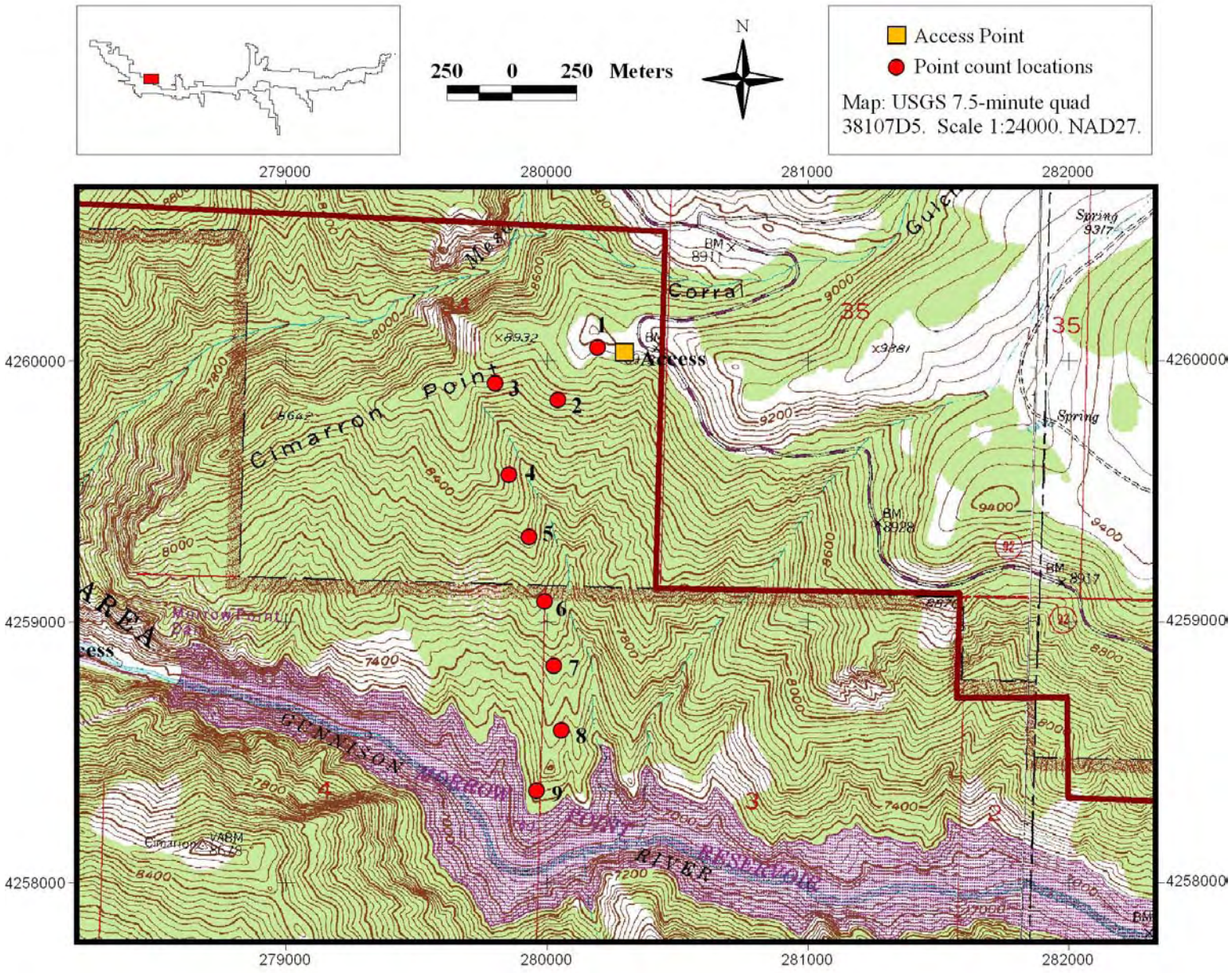
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	29	262	5	6	250	253
1	2	250	266	6	7	250	264
2	3	250	232	7	8	250	273
3	4	250	278				
4	5	250	247				



Transect CURE-03 (Points CURE-03-01 through CURE-03-09).
Access is from Hwy. 92 at the Hermits Rest Overlook. Park at the overlook and walk to the Hermits Rest trailhead; this is the access point. From the access point, hike along the trail 104 meters along a bearing of 281 degrees to point 1. The transect follows the trail downhill to the Morrow Point Reservoir. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-03 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	280296	4260032	5	279933	4259325
1	280194	4260051	6	279993	4259079
2	280043	4259850	7	280028	4258832
3	279803	4259915	8	280057	4258584
4	279856	4259563	9	279961	4258353

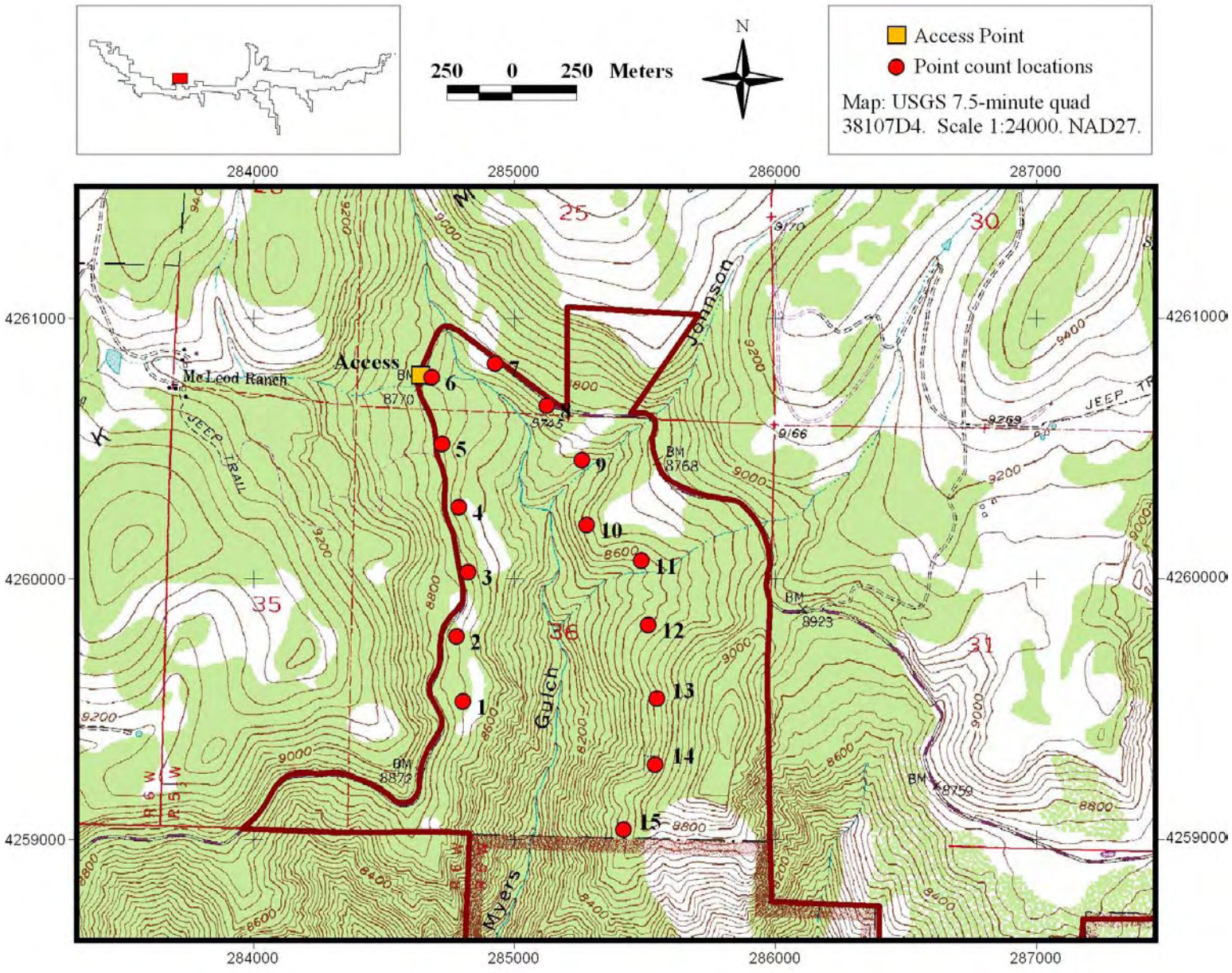
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	104	281	5	6	250	166
1	2	250	217	6	7	250	172
2	3	250	285	7	8	250	173
3	4	250	127	8	9	250	203
4	5	250	162				



Transect CURE-04 (Points CURE-04-01 through CURE-04-15).
Access is from Hwy. 92 at Meyers Gulch. Park at a small parking area south of Meyers Gulch; this is the access point. From the access point, walk south along the road 1262 meters to point 1. The transect travels north and parallels the road through point 8, and then travels south through the aspen forest. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-04 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	284641	4260779	8	285126	4260665
1	284804	4259528	9	285260	4260454
2	284778	4259777	10	285277	4260205
3	284822	4260024	11	285488	4260069
4	284787	4260274	12	285514	4259821
5	284724	4260517	13	285534	4259545
6	284683	4260773	14	285527	4259291
7	284927	4260826	15	285407	4259030

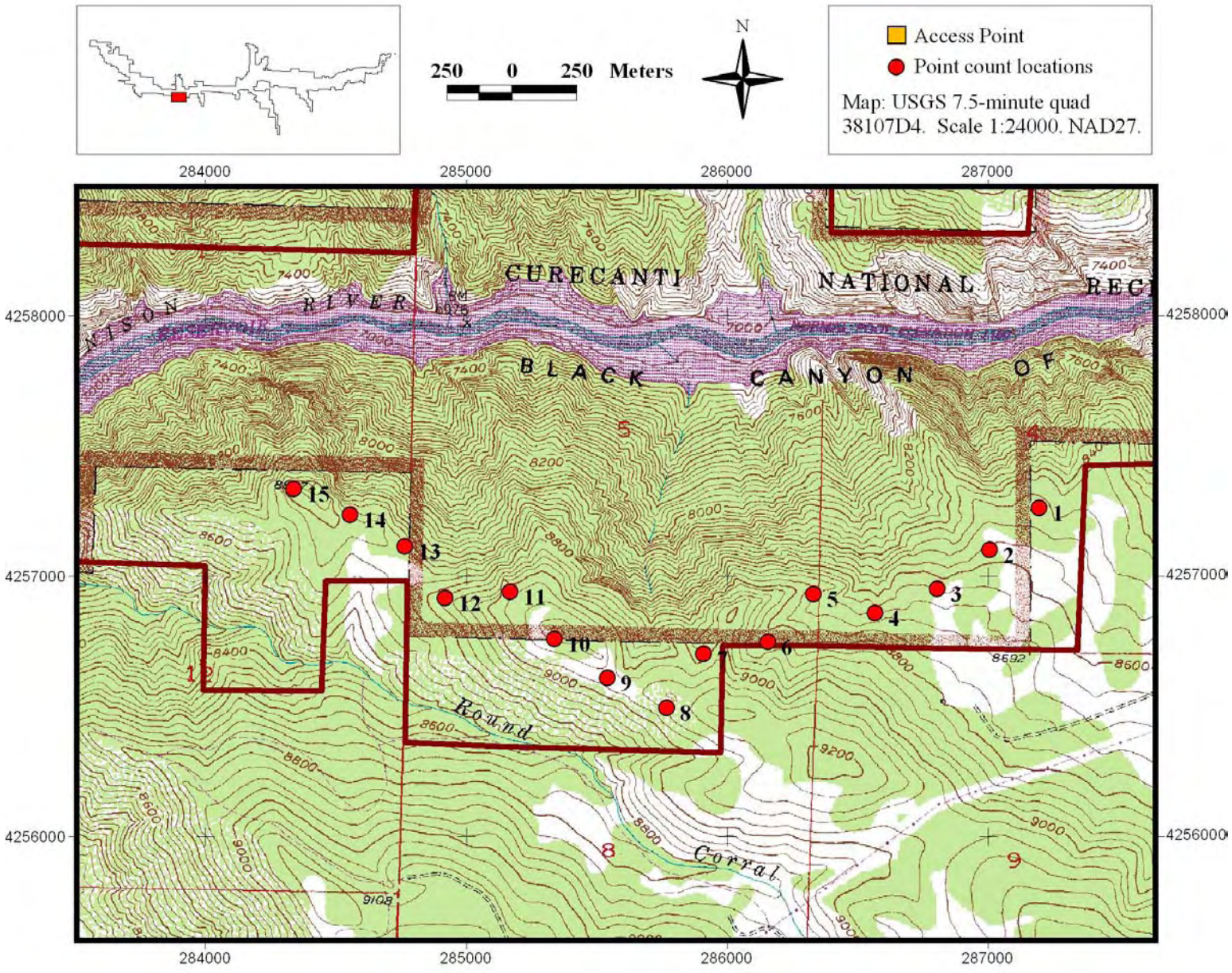
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	1262	173	8	9	250	148
1	2	250	354	9	10	250	176
2	3	250	010	10	11	250	123
3	4	250	352	11	12	250	174
4	5	250	345	12	13	250	175
5	6	250	351	13	14	250	178
6	7	250	078	14	15	250	190
7	8	250	129				



Transect CURE-05 (Points CURE-05-01 through CURE-05-15).
Access is from Hwy. 50 at Blue Creek. Park at a small parking area at Blue Creek; this is the access point. From the access point, drop down into the creek and cross to the west side as soon as possible. Climb west up the steep slope, contour north along the Blue Creek Canyon, and then west along the Black Canyon to point 1 (see transect CURE-07 for access point and more detail about finding point 1). The transect travels west through the aspen / Douglas fir forest. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-05 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	290036	4254585	8	285768	4256495
1	287196	4257261	9	285542	4256609
2	287005	4257100	10	285339	4256758
3	286805	4256950	11	285168	4256940
4	286568	4256858	12	284918	4256915
5	286330	4256931	13	284765	4257114
6	286156	4256747	14	284554	4257236
7	285910	4256701	15	284338	4257334

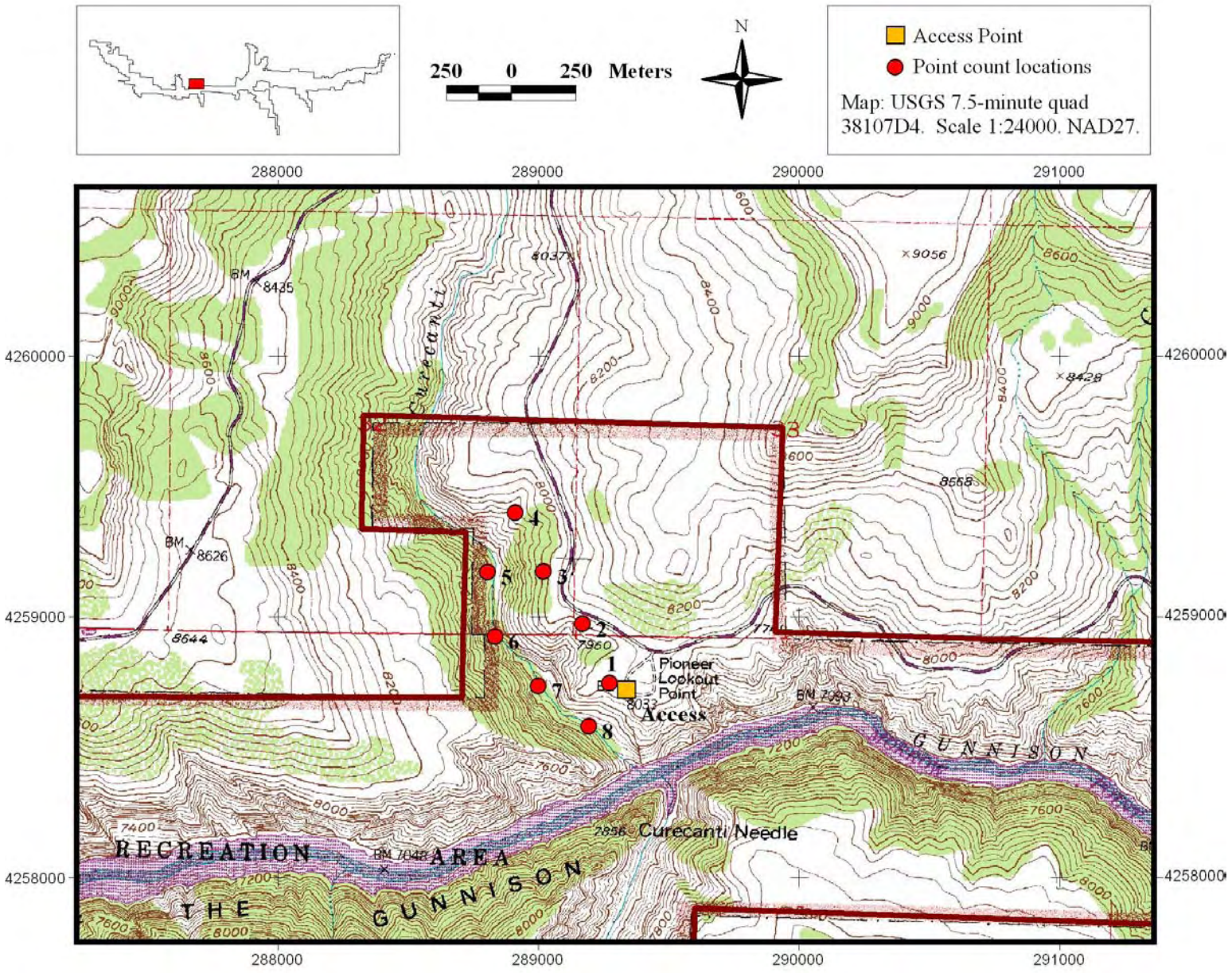
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	3902	NA	8	9	250	297
1	2	250	230	9	10	250	306
2	3	250	233	10	11	250	317
3	4	250	249	11	12	250	264
4	5	250	287	12	13	250	322
5	6	250	223	13	14	250	300
6	7	250	259	14	15	250	294
7	8	250	215				



Transect CURE-06 (Points CURE-06-01 through CURE-06-08).
Access is from Hwy. 92 at Pioneer Point Overlook. Park at the Pioneer Point parking lot; this is the access point. From the access point, walk 70 meters along a bearing of 293 degrees to point 1. The transect follows the Curecanti Creek Trail to Morrow Point Reservoir. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-06 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	289338	4258719	5	288806	4259173
1	289273	4258746	6	288835	4258925
2	289170	4258974	7	288999	4258736
3	289019	4259174	8	289194	4258581
4	288912	4259400			

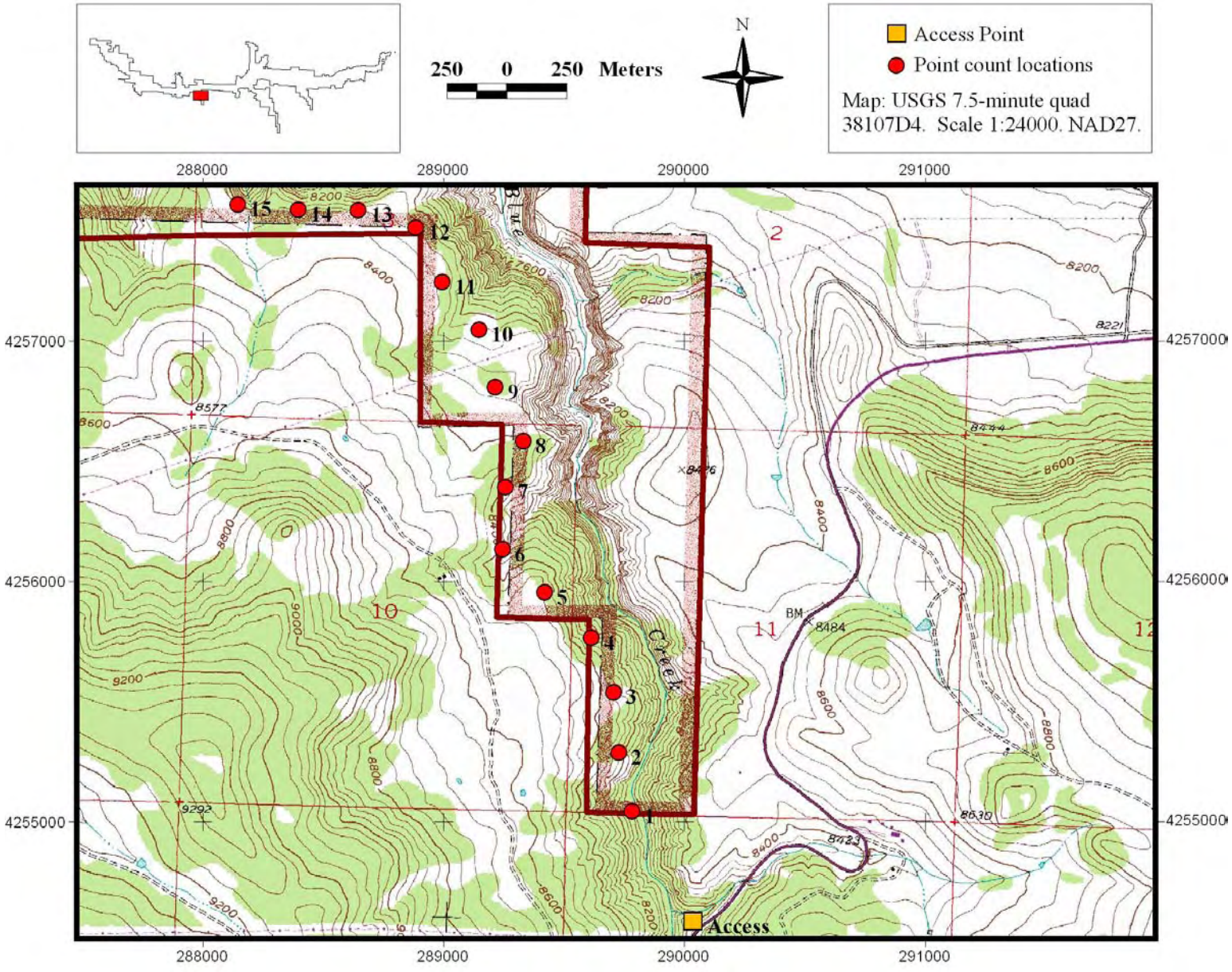
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	70	293	5	6	250	173
1	2	250	336	6	7	250	139
2	3	250	323	7	8	250	128
3	4	250	335				
4	5	250	205				



Transect CURE-07 (Points CURE-07-01 through CURE-07-15).
Access is from Hwy. 50 at Blue Creek. Park at a small parking area at Blue Creek; this is the access point. From the access point, drop down into the creek and cross to the west side as soon as possible. Hike downstream 525 meters to point 1. Begin climbing west up the steep slope to points 2-4, and reach the plateau top at point 5. Points 6-12 are along the Blue Creek cliff edge. Points 13-15 are along the Black Canyon cliff edge. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-07 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	290036	4254585	8	289332	4256583
1	289783	4255045	9	289216	4256807
2	289728	4255289	10	289147	4257048
3	289707	4255539	11	288996	4257246
4	289615	4255765	12	288886	4257472
5	289420	4255954	13	288647	4257545
6	289245	4256133	14	288397	4257546
7	289257	4256393	15	288147	4257569

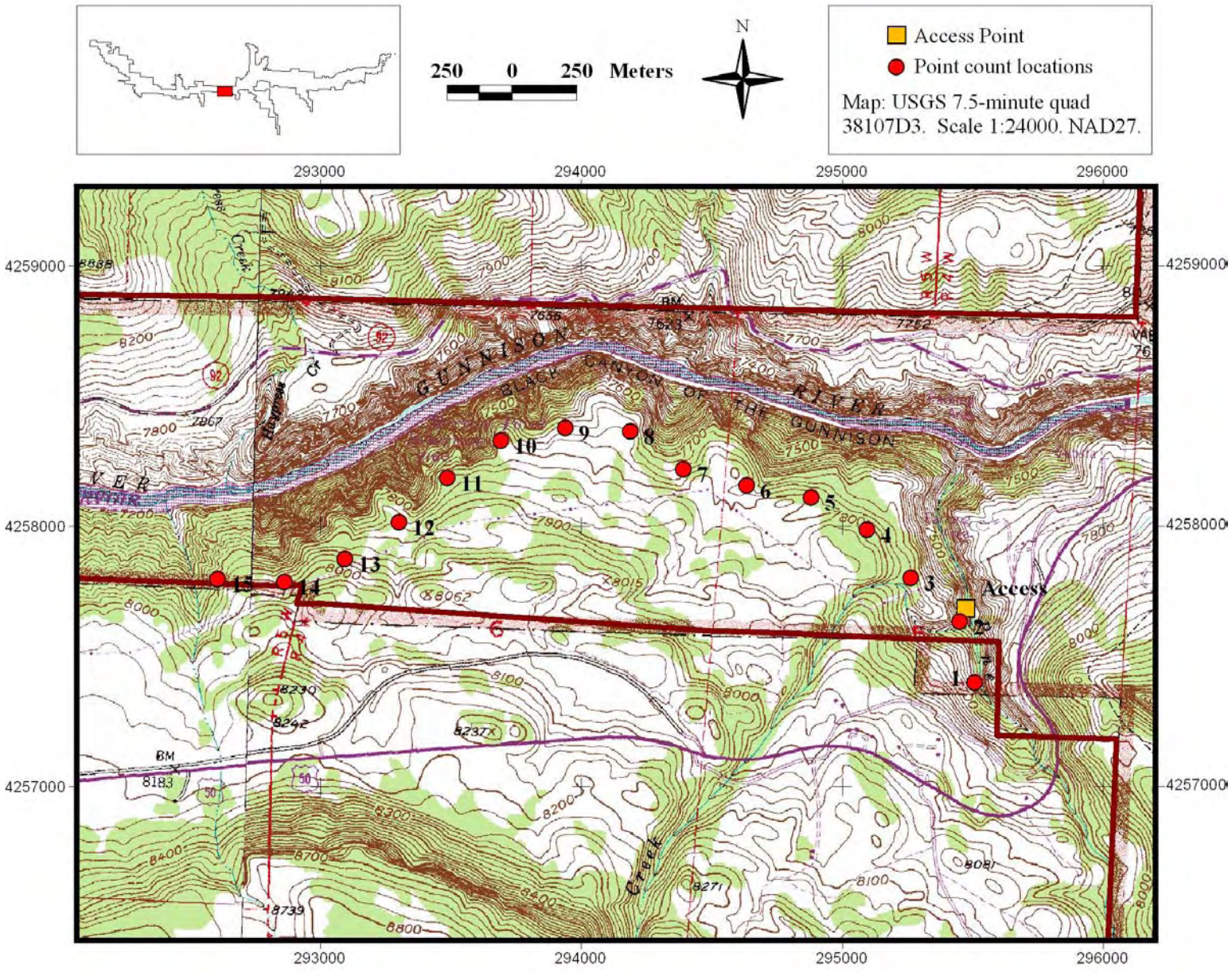
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	525	331	8	9	250	333
1	2	250	347	9	10	250	344
2	3	250	355	10	11	250	323
3	4	250	338	11	12	250	334
4	5	250	314	12	13	250	287
5	6	250	316	13	14	250	270
6	7	250	003	14	15	250	275
7	8	250	022				



Transect CURE-08 (Points CURE-08-01 through CURE-08-15).
Access is from Hwy. 50 at the Pine Creek Road. Park on the Pine Creek Road near a small draw heading west; this is the access point. From the access point walk 285 meters along a bearing of 173 degrees to point 1. Climb north up the steep hill to points 2-3. Points 4-15 are along the south rim of the Black Canyon. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-08 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	295474	4257682	8	294190	4258364
1	295508	4257399	9	293939	4258376
2	295451	4257634	10	293693	4258328
3	295264	4257800	11	293488	4258185
4	295096	4257986	12	293302	4258015
5	294881	4258109	13	293095	4257874
6	294634	4258156	14	292862	4257786
7	294392	4258218	15	292608	4257796

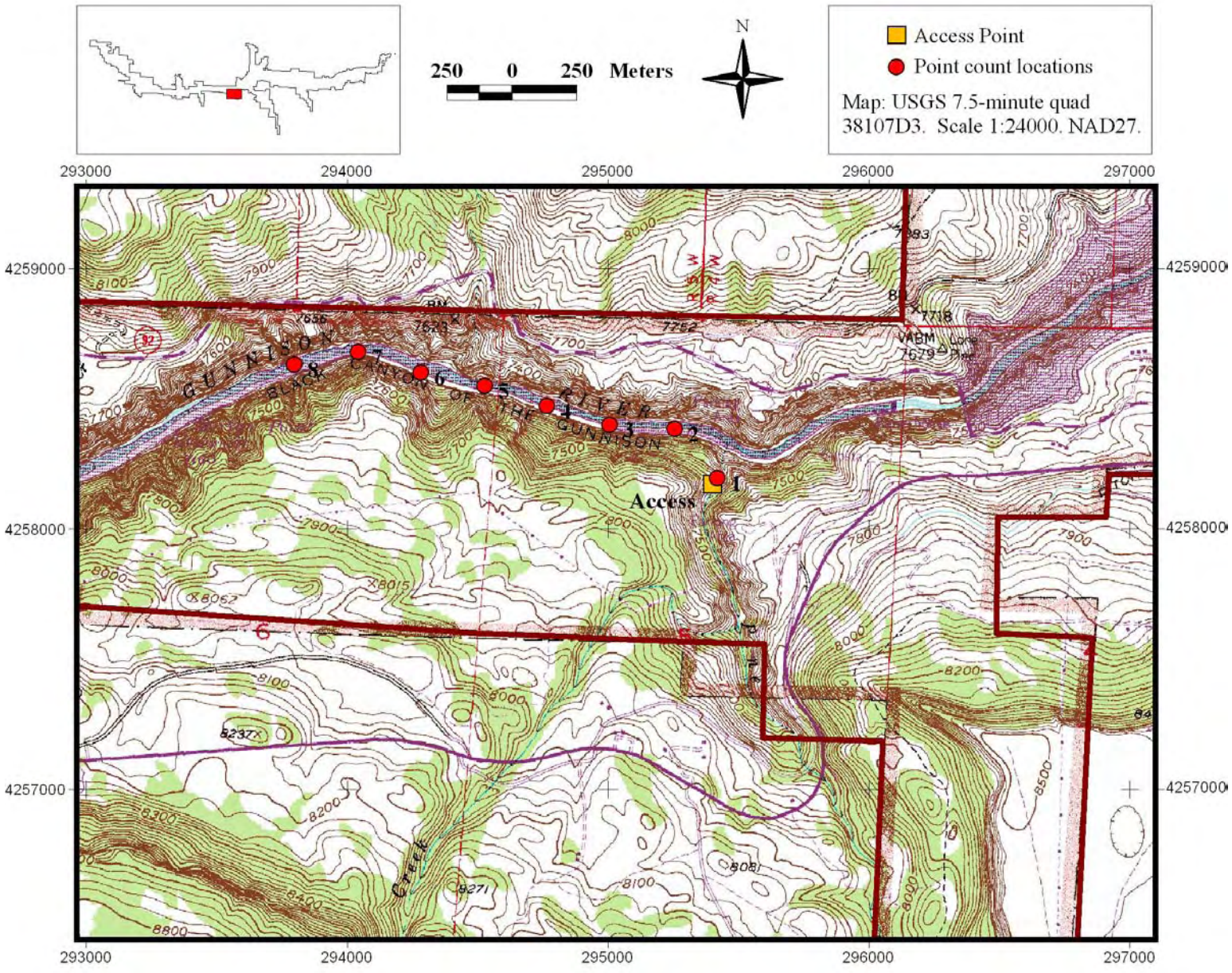
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	285	173	8	9	250	272
1	2	250	346	9	10	250	258
2	3	250	311	10	11	250	235
3	4	250	317	11	12	250	227
4	5	250	299	12	13	250	235
5	6	250	280	13	14	250	249
6	7	250	284	14	15	250	272
7	8	250	305				



Transect CURE-09 (Points CURE-09-01 through CURE-09-08).
Access is from Hwy. 50 at the Pine Creek Trailhead. Park at the trailhead; this is the access point. From the access point, hike the Pine Creek Trail 31 meters to point 1. The transect follows the trail along Morrow Point Reservoir. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-09 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	295400	4258170	5	294527	4258550
1	295419	4258194	6	294283	4258601
2	295256	4258385	7	294043	4258681
3	295006	4258400	8	293798	4258632
4	294767	4258472			

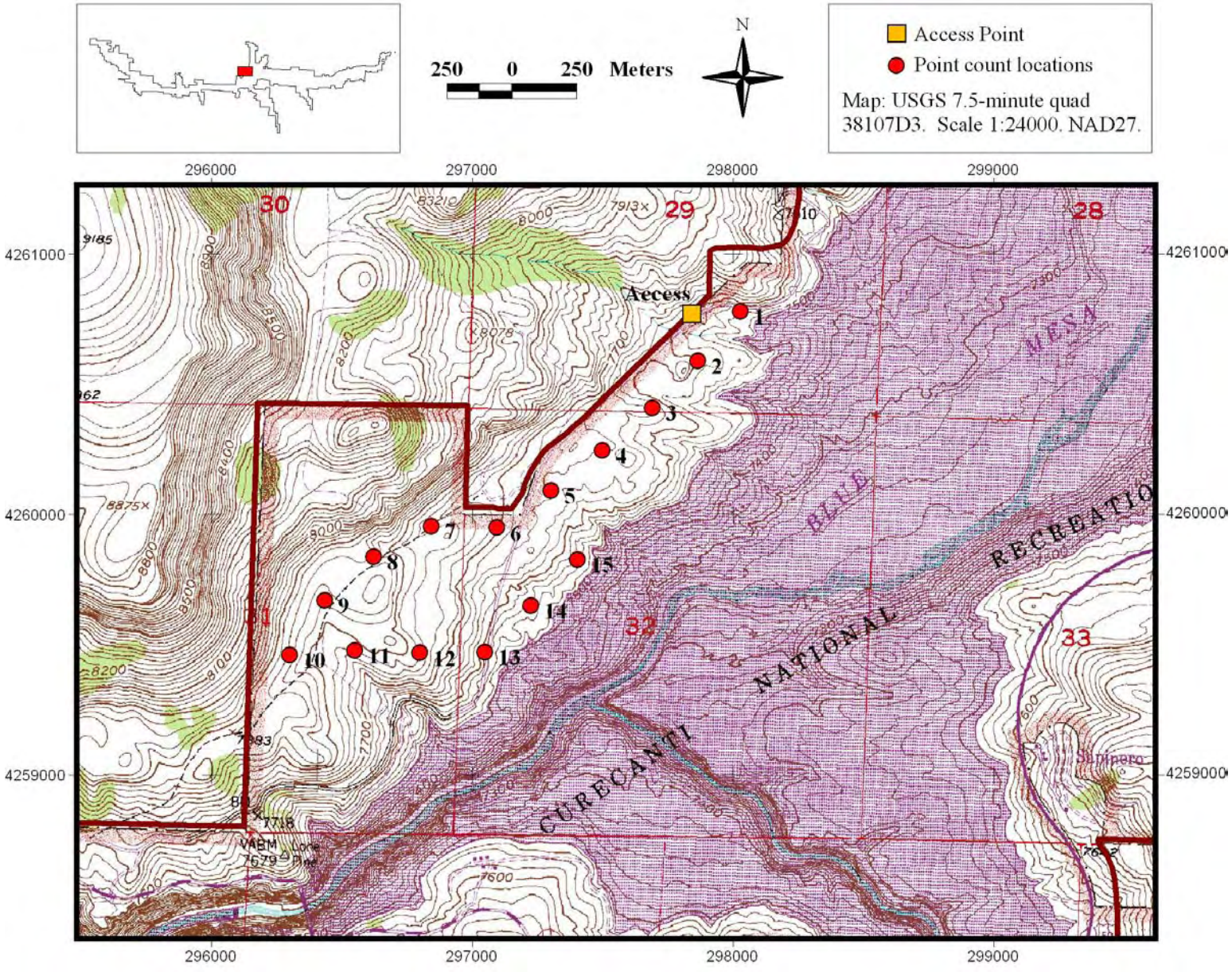
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	31	038	5	6	250	282
1	2	250	320	6	7	250	288
2	3	250	273	7	8	250	259
3	4	250	287				
4	5	250	288				



Transect CURE-10 (Points CURE-10-01 through CURE-10-15).
Access is from Hwy. 92 on the Soap Creek Road. Park at a small parking area on the east side of the Soap Creek Road; this is the access point. From the access point, hike 188 meters along a bearing of 087 degrees to point 1. The transect travels south to points 1-10, east to points 11-13, and north to points 14-15. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-10 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	297841	4260768	8	296623	4259837
1	298029	4260779	9	296436	4259670
2	297865	4260590	10	296300	4259461
3	297690	4260410	11	296550	4259477
4	297499	4260246	12	296800	4259468
5	297303	4260091	13	297049	4259472
6	297096	4259949	14	297225	4259649
7	296843	4259955	15	297403	4259826

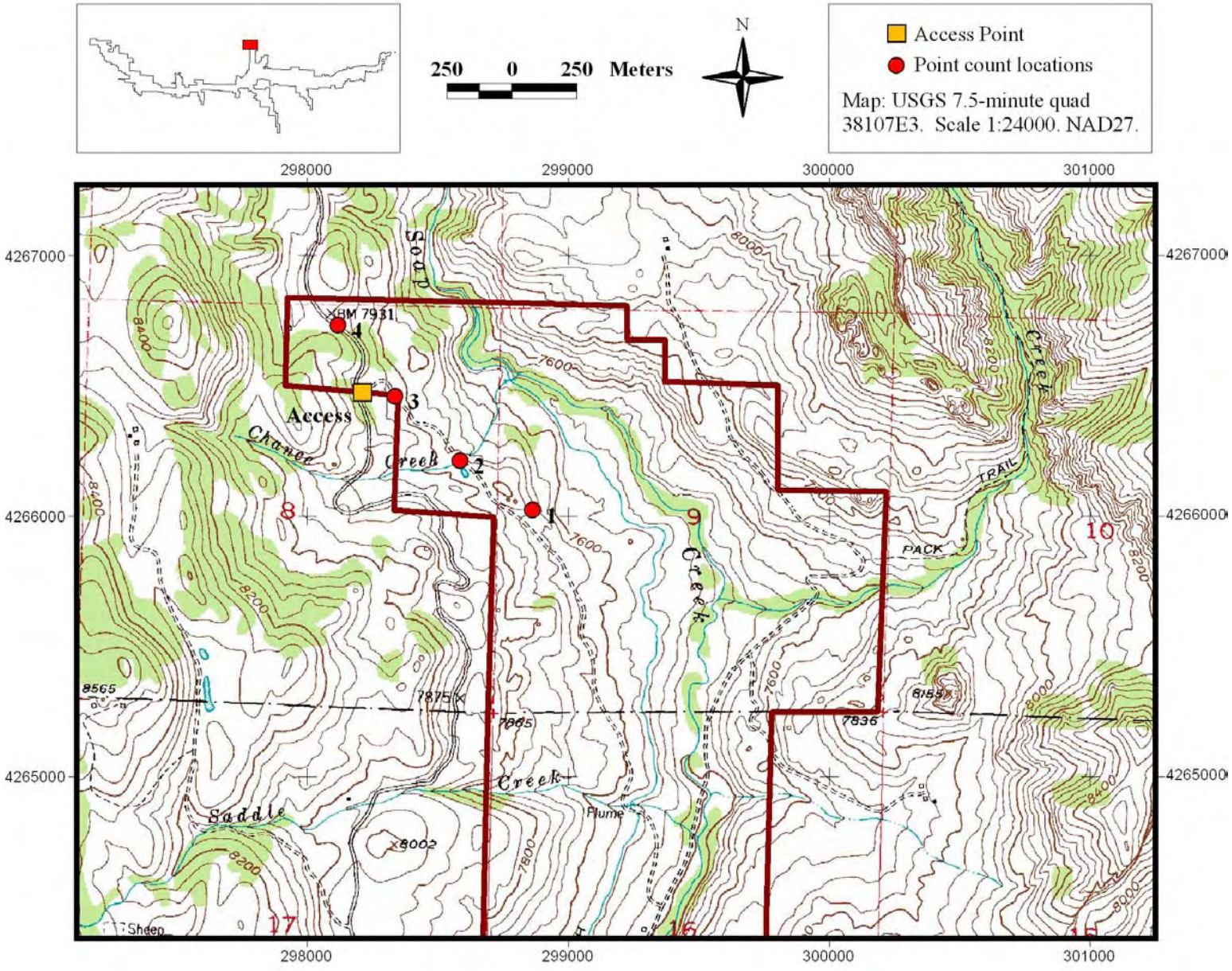
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	188	087	8	9	250	228
1	2	250	221	9	10	250	213
2	3	250	224	10	11	250	086
3	4	250	229	11	12	250	092
4	5	250	232	12	13	250	089
5	6	250	236	13	14	250	045
6	7	250	271	14	15	250	045
7	8	250	242				



Transect CURE-11 (Points CURE-11-01 through CURE-11-04).
Access is from Hwy. 92 on the Soap Creek Road. Take the Soap Creek Road north to the Ponderosa Campground. The entrance to the campground is the access point. From the access point, walk down the campground road to point 1. The transect follows the road uphill. All bearings are true north, and points are spaced at 350-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-11 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	298203	4266486	3	298336	4266460
1	298863	4266024	4	298119	4266734
2	298585	4266214			

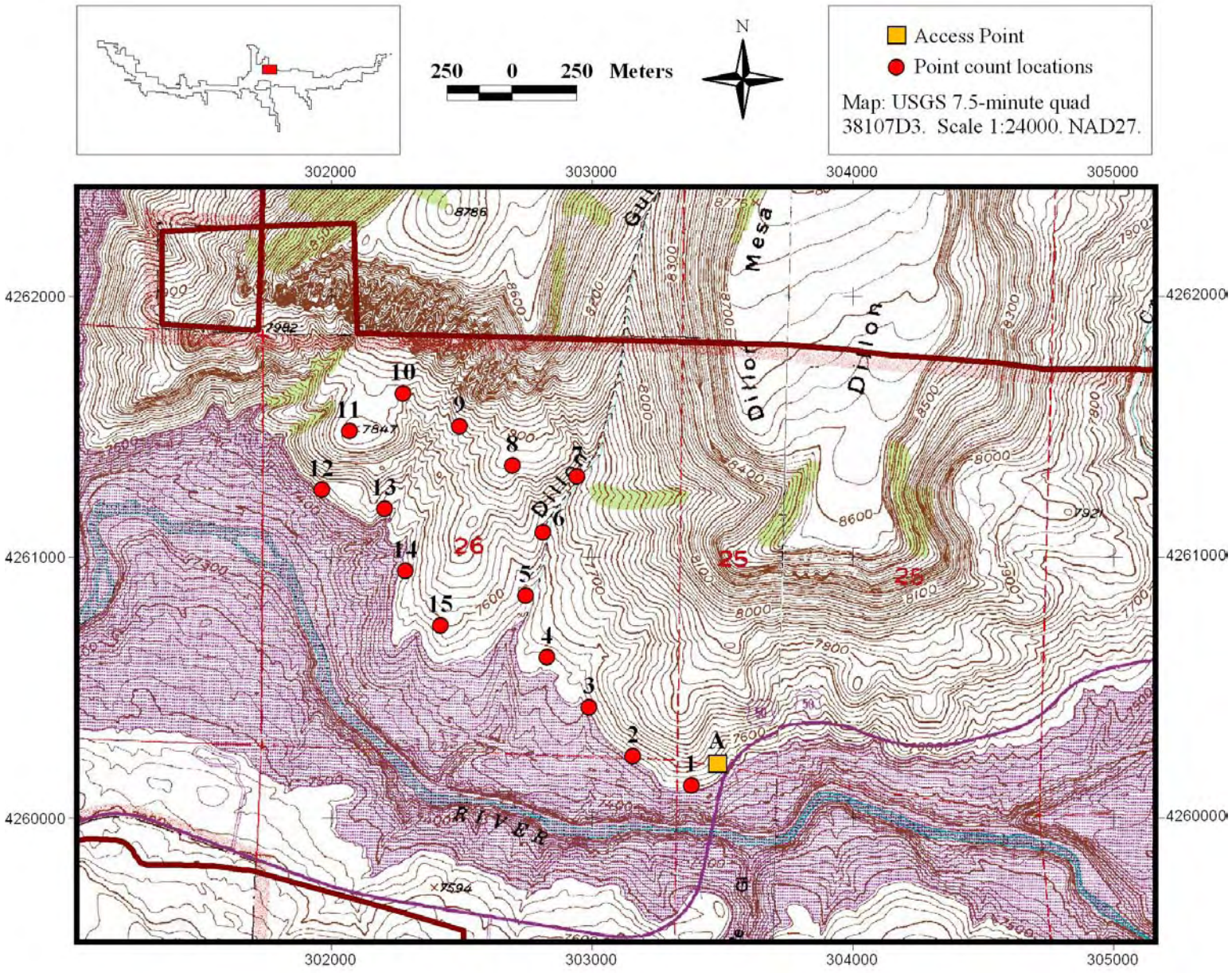
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	NA	NA	3	4	350	322
1	2	350	304				
2	3	350	315				



Transect CURE-12 (Points CURE-12-01 through CURE-12-15).
Access is from Hwy. 50 at the Dillon Pinnacles trailhead. Park at the trailhead and walk 127 meters along a bearing of 230 degrees to point 1. Points 1-11 are along the Dillon Pinnacles trail. Point 11 is at the end of the trail at the top of the hill. Drop down the hill at 205 degrees to point 12 at the shore of the lake. Contour southeast to points 13-15. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-12 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	303481	4260206	8	302696	4261350
1	303383	4260125	9	302494	4261501
2	303158	4260236	10	302277	4261627
3	302989	4260423	11	302071	4261484
4	302829	4260616	12	301965	4261257
5	302746	4260851	13	302206	4261185
6	302812	4261094	14	302286	4260947
7	302944	4261309	15	302421	4260737

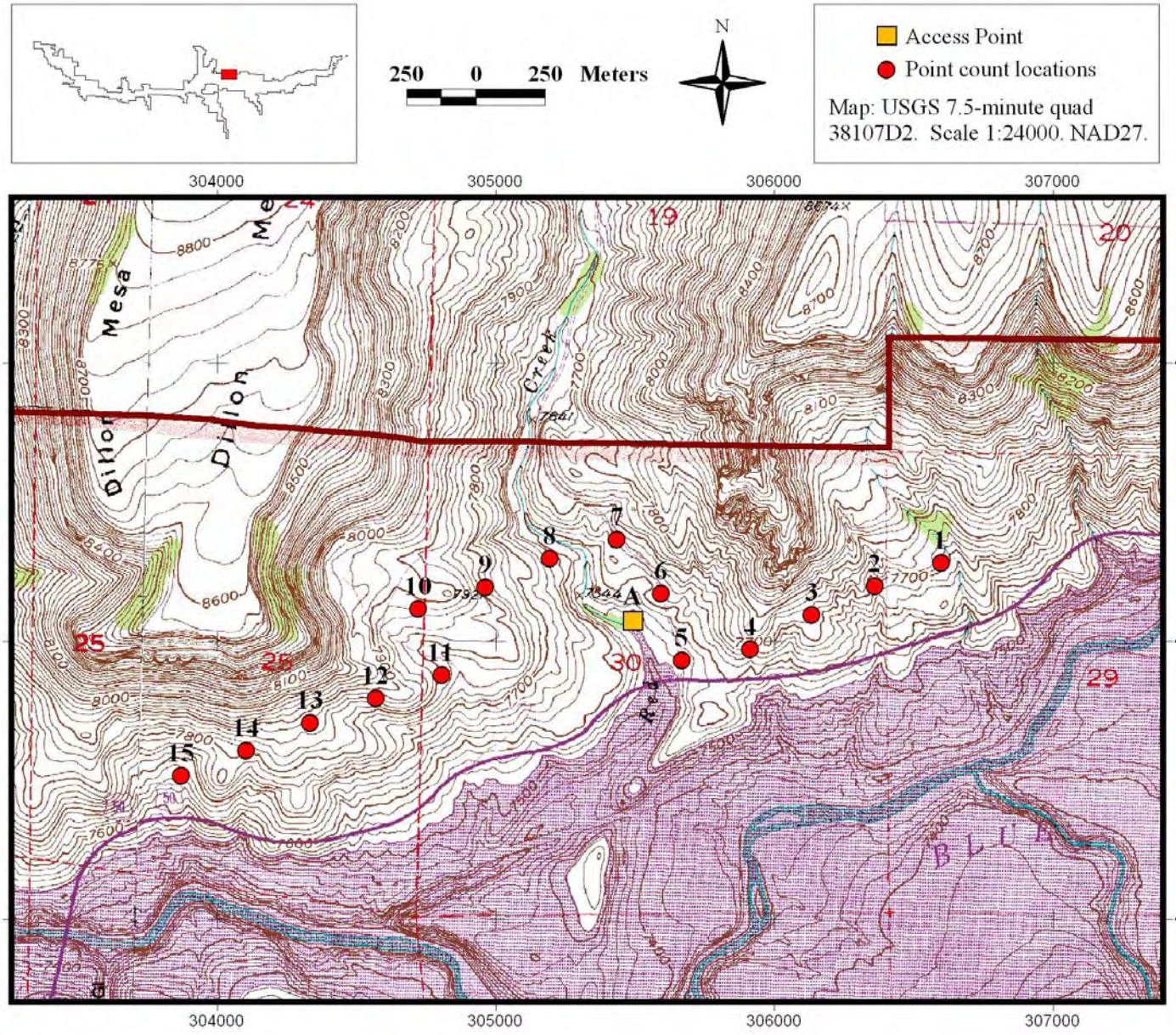
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	127	230	8	9	250	307
1	2	250	296	9	10	250	300
2	3	250	318	10	11	250	235
3	4	250	320	11	12	250	205
4	5	250	341	12	13	250	107
5	6	250	015	13	14	250	161
6	7	250	032	14	15	250	147
7	8	250	279				



Transect CURE-13 (Points CURE-13-01 through CURE-13-15).
Access is from Hwy. 50 at the Red Creek Campground. Park at the campground and walk 1126 meters along a bearing of 079 degrees to point 1. The transect travels west along the north shore of Blue Mesa Lake. See the table below for point count locations and bearings between points.

UTM locations of CURE-13 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	305492	4261071	8	305194	4261296
1	306598	4261281	9	304963	4261193
2	306360	4261198	10	304722	4261116
3	306133	4261093	11	304805	4260878
4	305913	4260971	12	304569	4260794
5	305667	4260930	13	304334	4260705
6	305593	4261172	14	304104	4260607
7	305434	4261366	15	303870	4260515

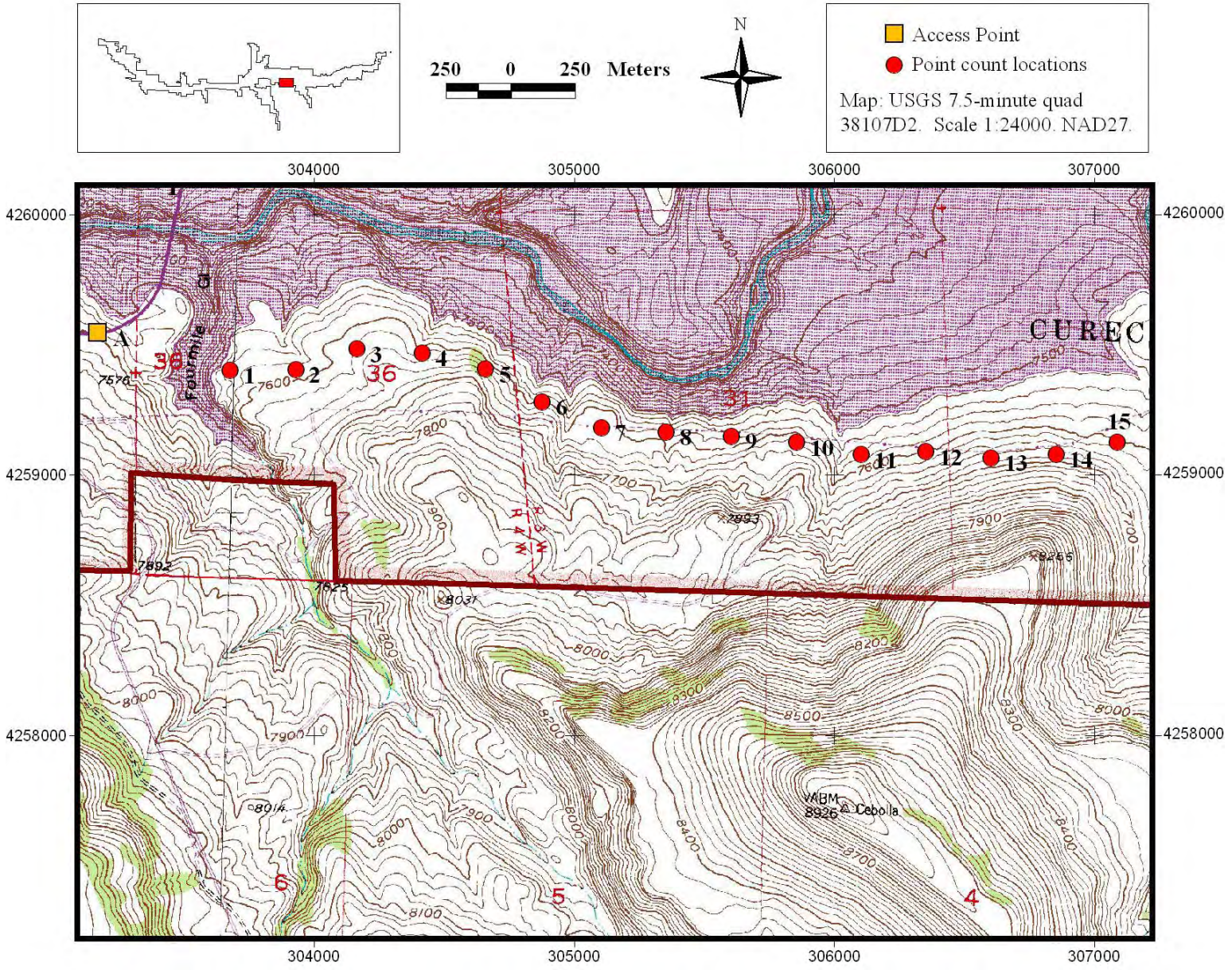
Distances (meters) & Bearings (degrees true north) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	1126	079	8	9	250	246
1	2	250	251	9	10	250	252
2	3	250	245	10	11	250	161
3	4	250	241	11	12	250	250
4	5	250	261	12	13	250	249
5	6	250	343	13	14	250	247
6	7	250	321	14	15	250	249
7	8	250	254				



Transect CURE-14 (Points CURE-14-01 through CURE-14-15).
Access is from Hwy. 50 south of Middle Bridge. Park in a small pullout immediately south of the Bridge. From the parking area, walk 531 meters along a bearing of 106 degrees to point 1. In 2003 the reservoir was low, so it will be necessary to skirt Fourmile Gulch during normal water years to reach point 1. Follow the contours east along the reservoir's edge to Points 1-7. At point 7, find a two-track dirt road under the power lines, and follow this road east to points 8-15. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-14 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	303167	4259546	8	305355	4259164
1	303678	4259400	9	305605	4259147
2	303930	4259403	10	305856	4259124
3	304166	4259482	11	306103	4259077
4	304415	4259467	12	306353	4259088
5	304660	4259405	13	306604	4259064
6	304878	4259280	14	306853	4259078
7	305105	4259180	15	307089	4259124

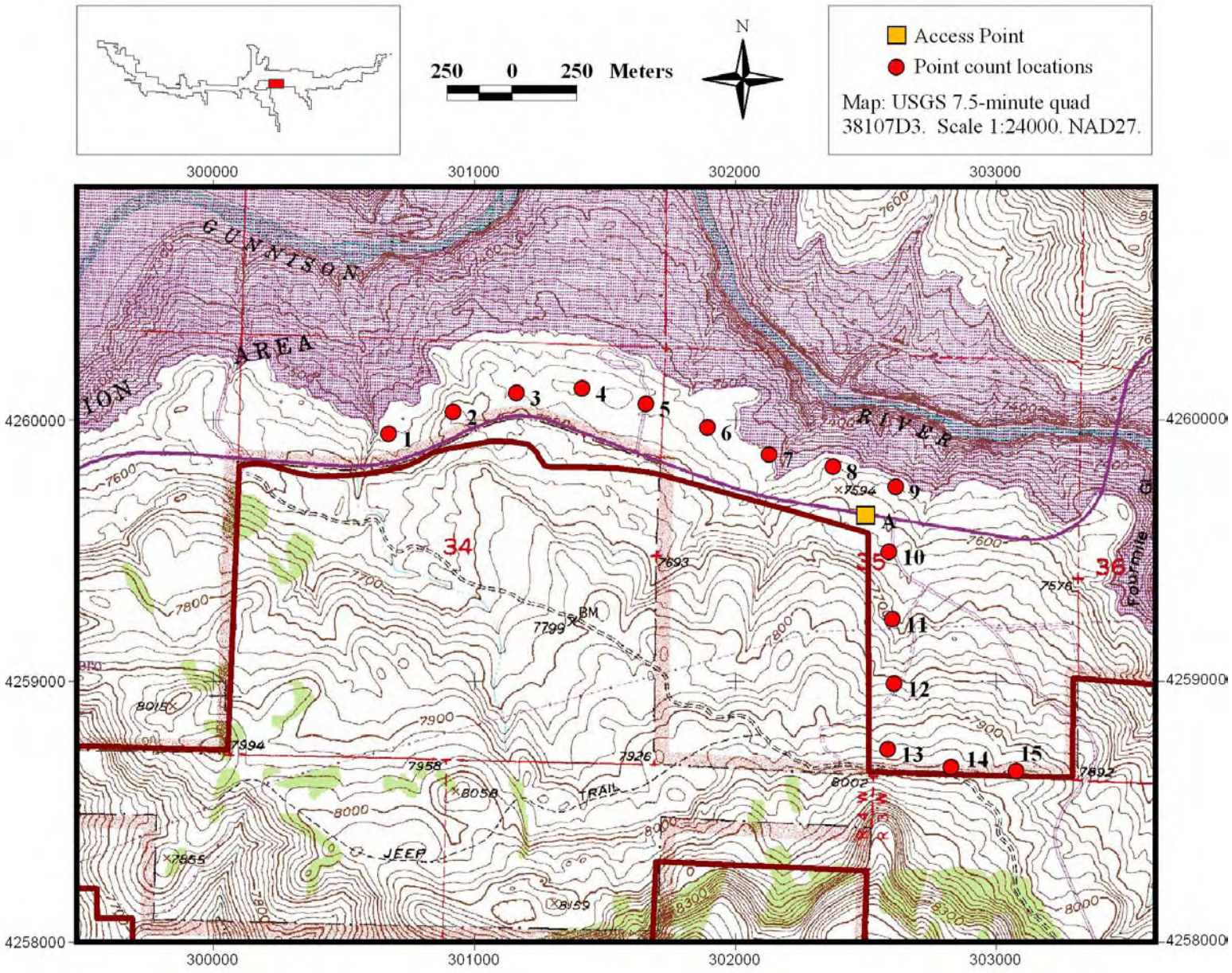
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	531	106	8	9	250	094
1	2	250	089	9	10	250	095
2	3	250	071	10	11	250	101
3	4	250	093	11	12	250	087
4	5	250	104	12	13	250	095
5	6	250	120	13	14	250	087
6	7	250	114	14	15	250	079
7	8	250	094				



Transect CURE-15 (Points CURE-15-01 through CURE-15-15).
Access is from Hwy. 50 at the Dillon overlook, just west of Middle Bridge. Park at the overlook and walk 1854 meters along a bearing of 280 degrees to point 1. Points 1-9 contour east along Hwy. 50. Turn south to reach points 9-13. Turn east to reach points 14-15. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-15 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	302499	4259635	8	302375	4259823
1	300672	4259948	9	302616	4259746
2	300920	4260031	10	302590	4259496
3	301162	4260104	11	302603	4259238
4	301413	4260123	12	302610	4258990
5	301659	4260062	13	302586	4258739
6	301895	4259972	14	302827	4258670
7	302130	4259869	15	303078	4258655

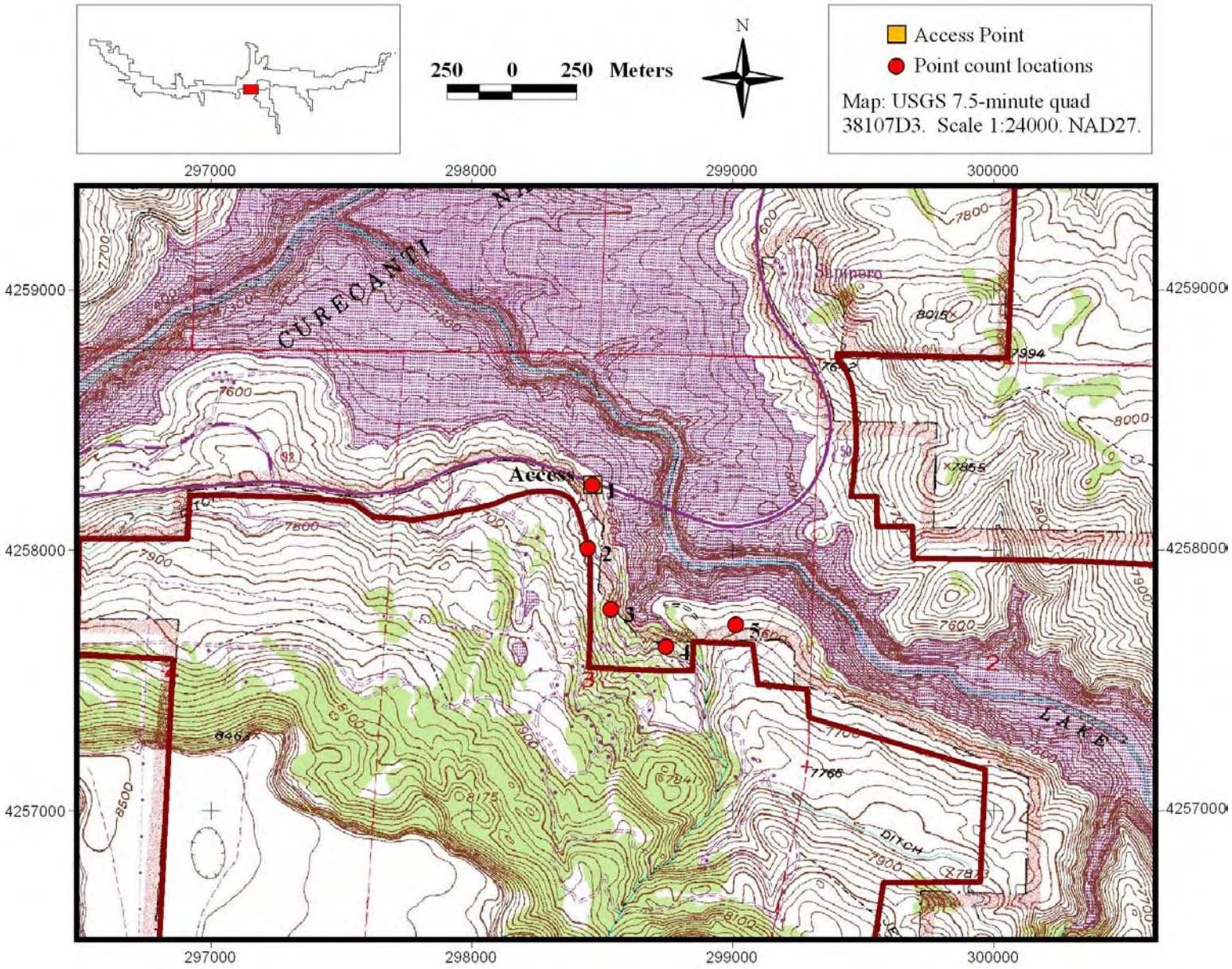
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	1854	280	8	9	250	108
1	2	250	071	9	10	250	186
2	3	250	073	10	11	250	177
3	4	250	086	11	12	250	178
4	5	250	104	12	13	250	185
5	6	250	111	13	14	250	106
6	7	250	114	14	15	250	093
7	8	250	101				



Transect CURE-16 (Points CURE-16-01 through CURE-16-05).
Access is from Hwy. 50 at Cove Road. Park at the beginning of Cove Road; this is the access point and point 1. The transect travels south and east along the shore of Blue Mesa Lake. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-16 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	298462	4258249	3	298533	4257773
1	298462	4258249	4	298745	4257630
2	298445	4258006	5	299012	4257712

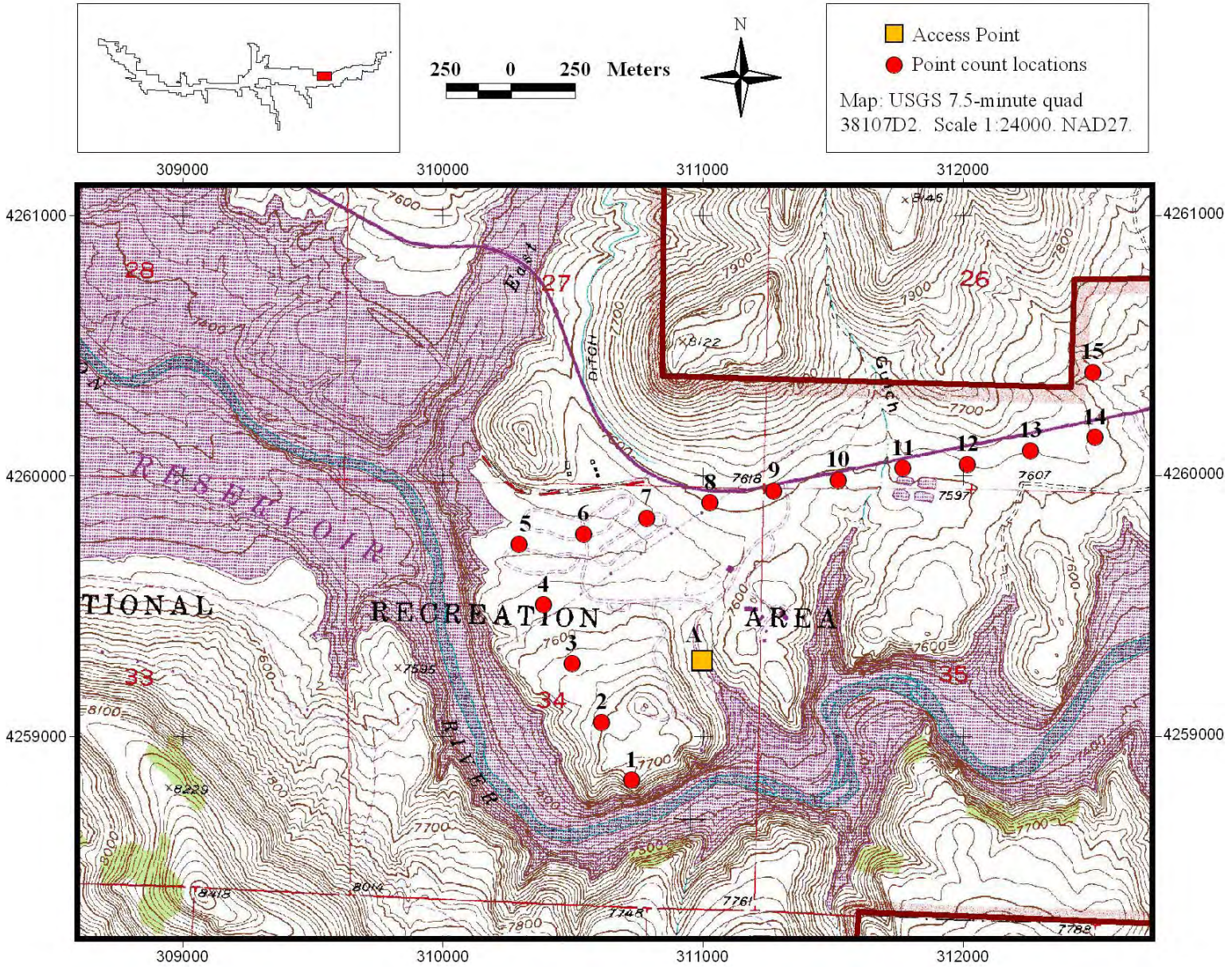
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	0	NA	3	4	250	124
1	2	250	184	4	5	250	072
2	3	250	159				



Transect CURE-17 (Points CURE-17-01 through CURE-17-15).
Access is from the Elk Creek marina. From the parking lot at the marina, walk 537 meters along a bearing of 211 degrees up the hill to point 1. The transect travels north and east along the shore of Blue Mesa Lake and along Hwy. 50. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-17 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	311004	4259290	8	311027	4259896
1	310726	4258831	9	311274	4259939
2	310611	4259053	10	311521	4259982
3	310497	4259278	11	311770	4260028
4	310387	4259504	12	312018	4260043
5	310293	4259736	13	312261	4260096
6	310541	4259776	14	312507	4260146
7	310784	4259836	15	312500	4260396

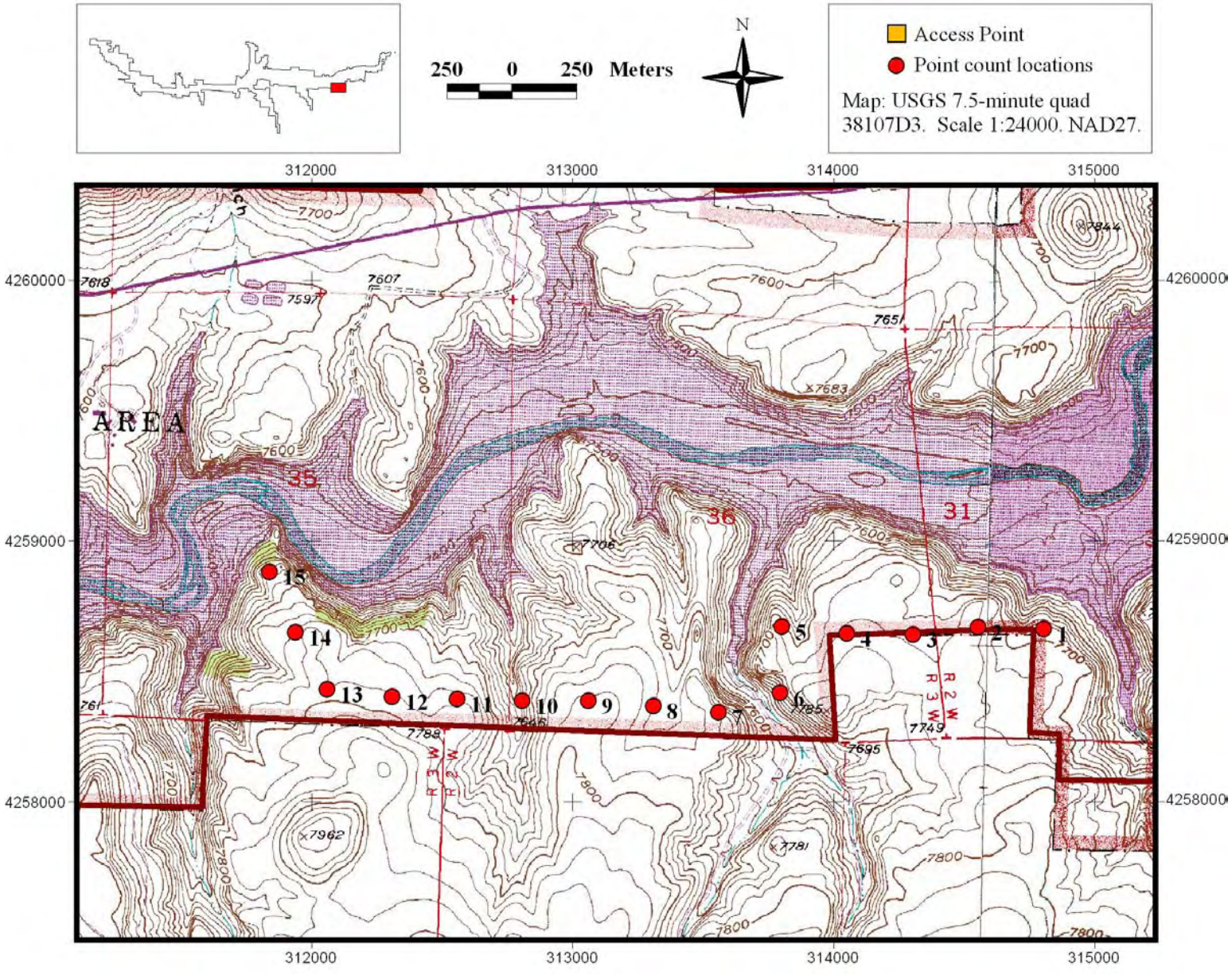
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	537	211	8	9	250	080
1	2	250	333	9	10	250	080
2	3	250	333	10	11	250	080
3	4	250	334	11	12	250	087
4	5	250	338	12	13	250	078
5	6	250	081	13	14	250	079
6	7	250	076	14	15	250	358
7	8	250	076				



Transect CURE-18 (Points CURE-18-01 through CURE-18-15).
Access is from Hwy. 149 at the Iola Picnic Area; the picnic area is the access point (see transect CURE-20 for detail on the access point). From the access point, hike cross-country 2.8 kilometers along a bearing of 240 degrees to point 1 (it may be easiest to follow the route of transect CURE-20 to get to point 1). The transect travels west along the shore of Blue Mesa Lake. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-18 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	317279	4260065	8	313309	4258366
1	314806	4258663	9	313061	4258386
2	314554	4258669	10	312807	4258387
3	314304	4258640	11	312557	4258393
4	314051	4258644	12	312308	4258403
5	313802	4258670	13	312060	4258431
6	313796	4258418	14	311938	4258648
7	313559	4258343	15	311839	4258880

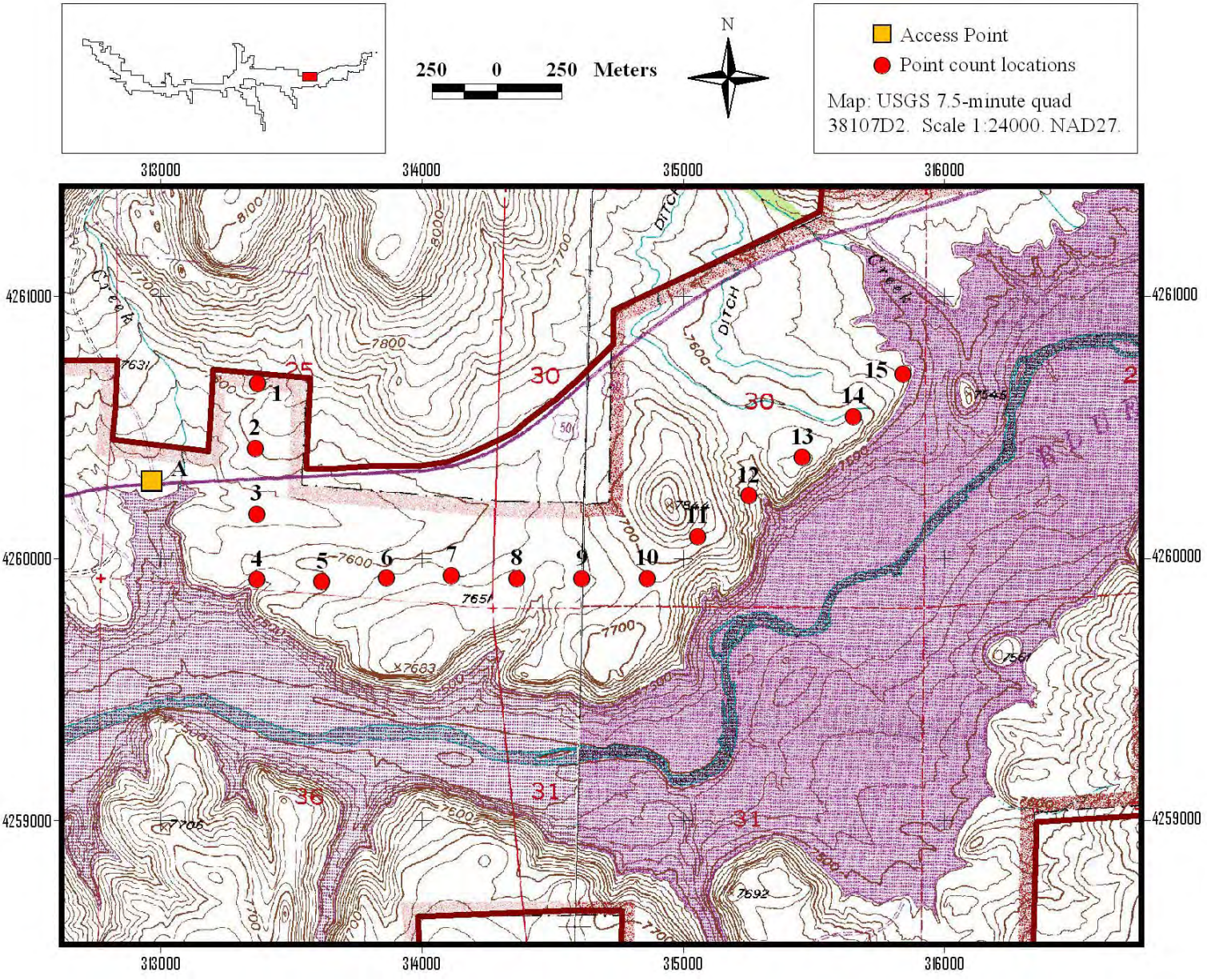
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	2843	240	8	9	250	275
1	2	250	271	9	10	250	270
2	3	250	263	10	11	250	271
3	4	250	271	11	12	250	272
4	5	250	276	12	13	250	276
5	6	250	181	13	14	250	331
6	7	250	252	14	15	250	337
7	8	250	275				



Transect CURE-19 (Points CURE-19-01 through CURE-19-15).
Access is from the Rainbow Lake Road (Gunnison County 724 Road). Park north of the cattle guard immediately after turning onto 724 Road. Walk 554 meters along a bearing of 048 degrees to point 1. The transect travels south and east along the shore of Blue Mesa Lake. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-19 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	312958	4260300	8	314363	4259923
1	313372	4260668	9	314612	4259922
2	313362	4260419	10	314862	4259923
3	313367	4260168	11	315055	4260083
4	313367	4259919	12	315252	4260239
5	313617	4259911	13	315457	4260385
6	313866	4259925	14	315651	4260541
7	314114	4259934	15	315842	4260703

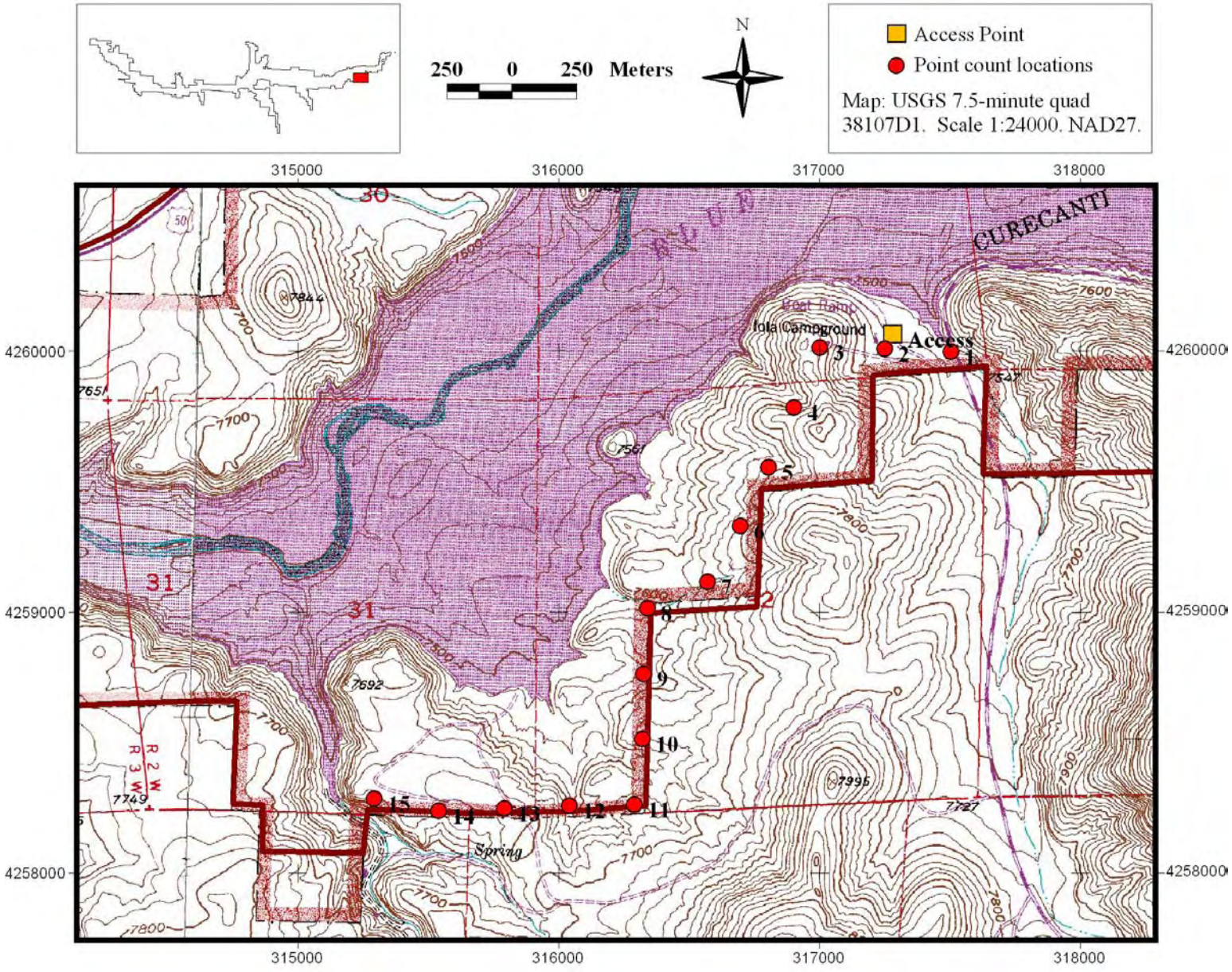
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	554	048	8	9	250	090
1	2	250	182	9	10	250	090
2	3	250	179	10	11	250	050
3	4	250	180	11	12	250	052
4	5	250	092	12	13	250	055
5	6	250	087	13	14	250	051
6	7	250	088	14	15	250	050
7	8	250	093				



Transect CURE-20 (Points CURE-20-01 through CURE-20-15).
Access is from Hwy. 149 at the Iola Picnic Area; the picnic area is the access point. From the access point, hike 235 meters along a bearing of 107 degrees to point 1. The transect travels south and west along the shore of Blue Mesa Lake. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-20 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	317279	4260065	8	316342	4259014
1	317504	4259998	9	316327	4258763
2	317252	4260009	10	316323	4258513
3	317002	4260014	11	316292	4258263
4	316902	4259784	12	316042	4258257
5	316806	4259555	13	315792	4258247
6	316698	4259331	14	315541	4258239
7	316571	4259117	15	315294	4258285

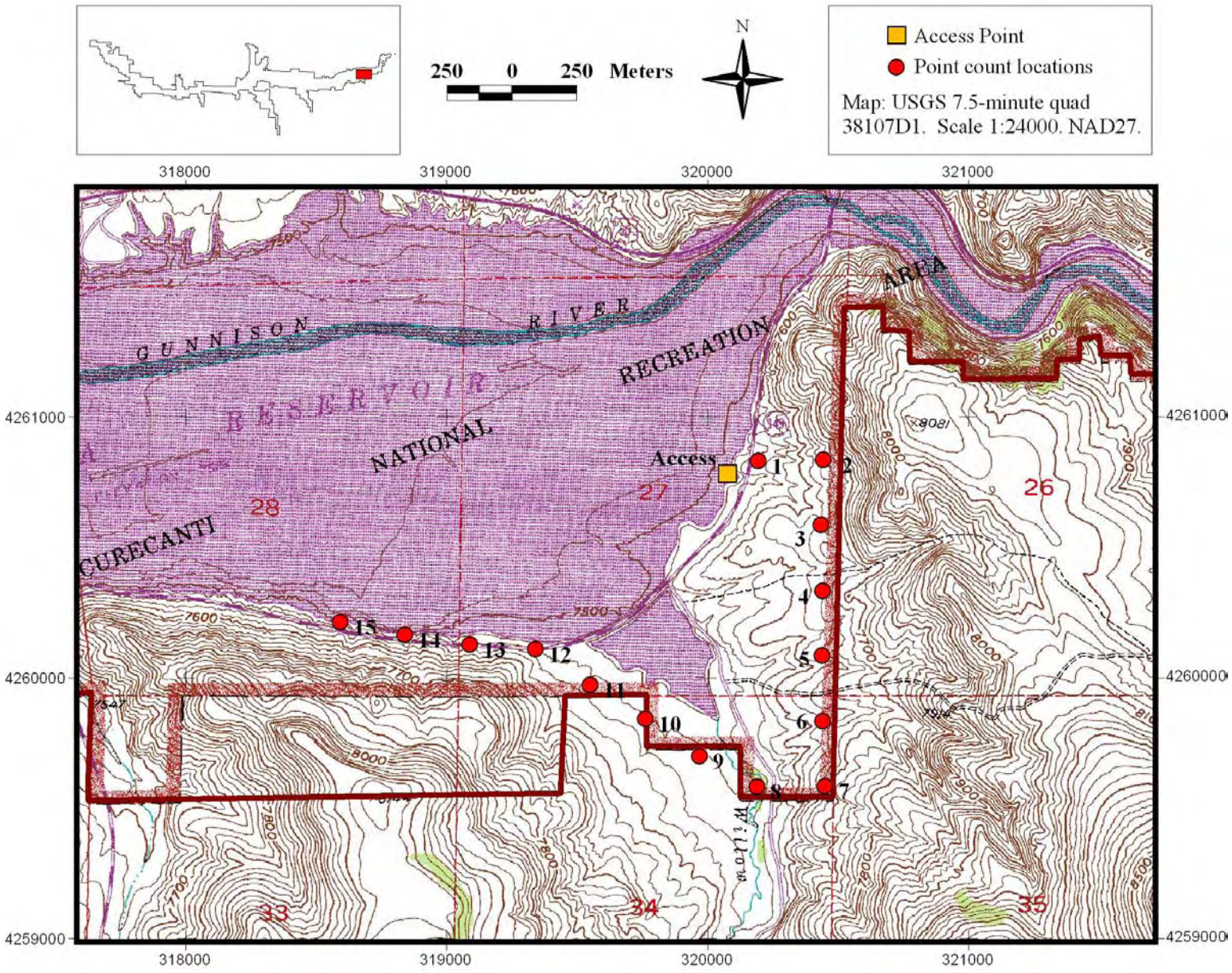
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	235	107	8	9	250	183
1	2	250	272	9	10	250	181
2	3	250	271	10	11	250	187
3	4	250	203	11	12	250	269
4	5	250	203	12	13	250	268
5	6	250	206	13	14	250	268
6	7	250	211	14	15	250	281
7	8	250	246				



Transect CURE-21 (Points CURE-21-01 through CURE-21-15).
Access is from Hwy. 149 east of the Iola Picnic Area. Park at a small turn-off west of the Hwy; this is the access point. From the access point, hike 129 meters along a bearing of 068 degrees to point 1. The transect travels south and west along the shore of Blue Mesa Lake. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-21 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	320076	4260781	8	320191	4259583
1	320195	4260830	9	319969	4259700
2	320444	4260835	10	319763	4259842
3	320435	4260585	11	319551	4259973
4	320443	4260333	12	319340	4260109
5	320439	4260084	13	319090	4260127
6	320442	4259834	14	318841	4260164
7	320450	4259584	15	318594	4260212

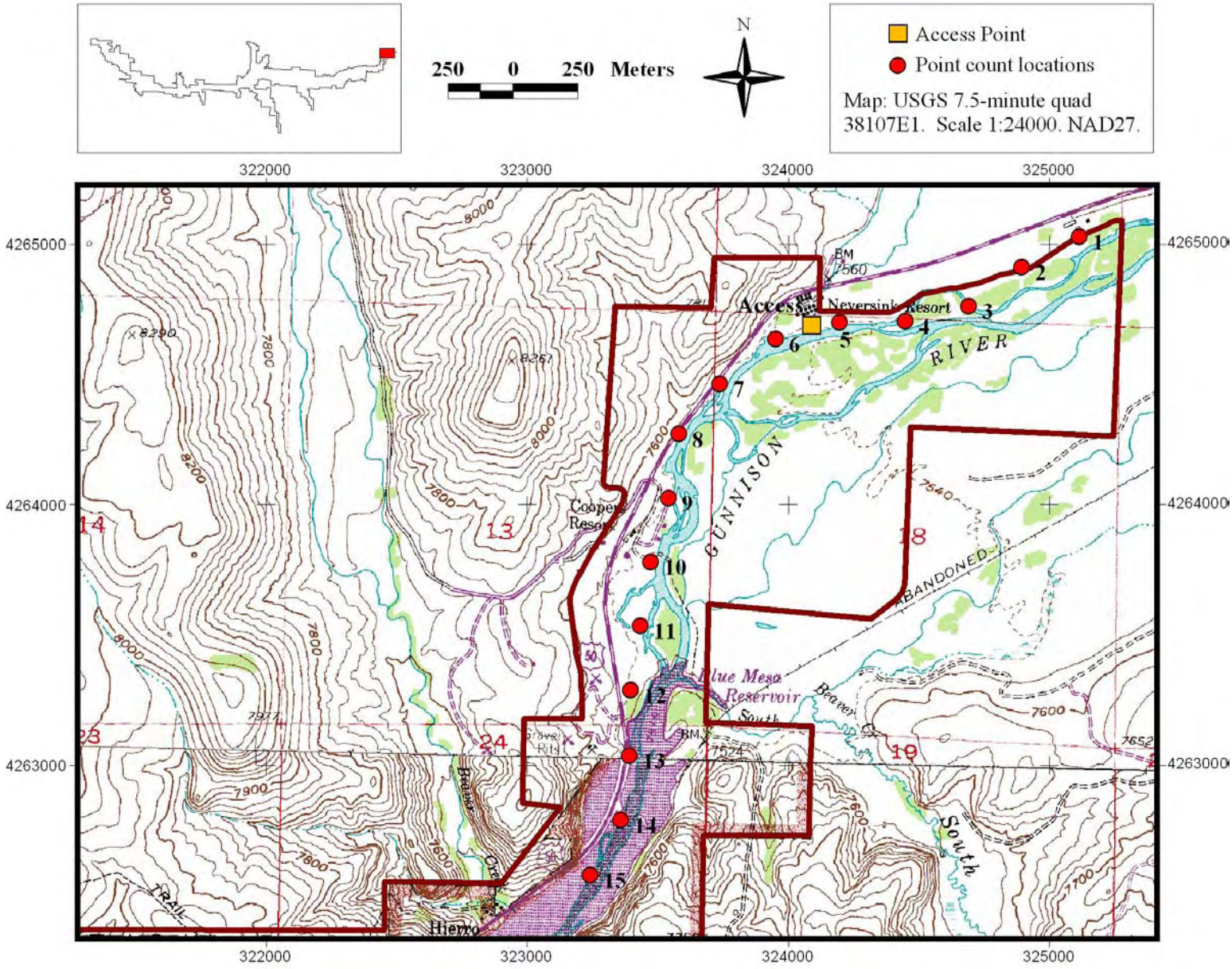
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	129	068	8	9	250	298
1	2	250	089	9	10	250	305
2	3	250	182	10	11	250	302
3	4	250	178	11	12	250	303
4	5	250	181	12	13	250	274
5	6	250	179	13	14	250	278
6	7	250	178	14	15	250	281
7	8	250	270				



Transect CURE-22 (Points CURE-22-01 through CURE-22-15).
Access is from Hwy. 50 at the Neversink Picnic Area. Park at the Neversink trailhead; this is the access point. From the access point, follow the Neversink trail 1082 meters to the park boundary and point 1. The transect follows the Gunnison River downstream. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-22 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	324089	4264687	8	323581	4264271
1	325116	4265028	9	323541	4264025
2	324894	4264912	10	323474	4263781
3	324692	4264762	11	323434	4263535
4	324448	4264704	12	323397	4263288
5	324198	4264699	13	323393	4263037
6	323953	4264637	14	323358	4262789
7	323739	4264464	15	323242	4262578

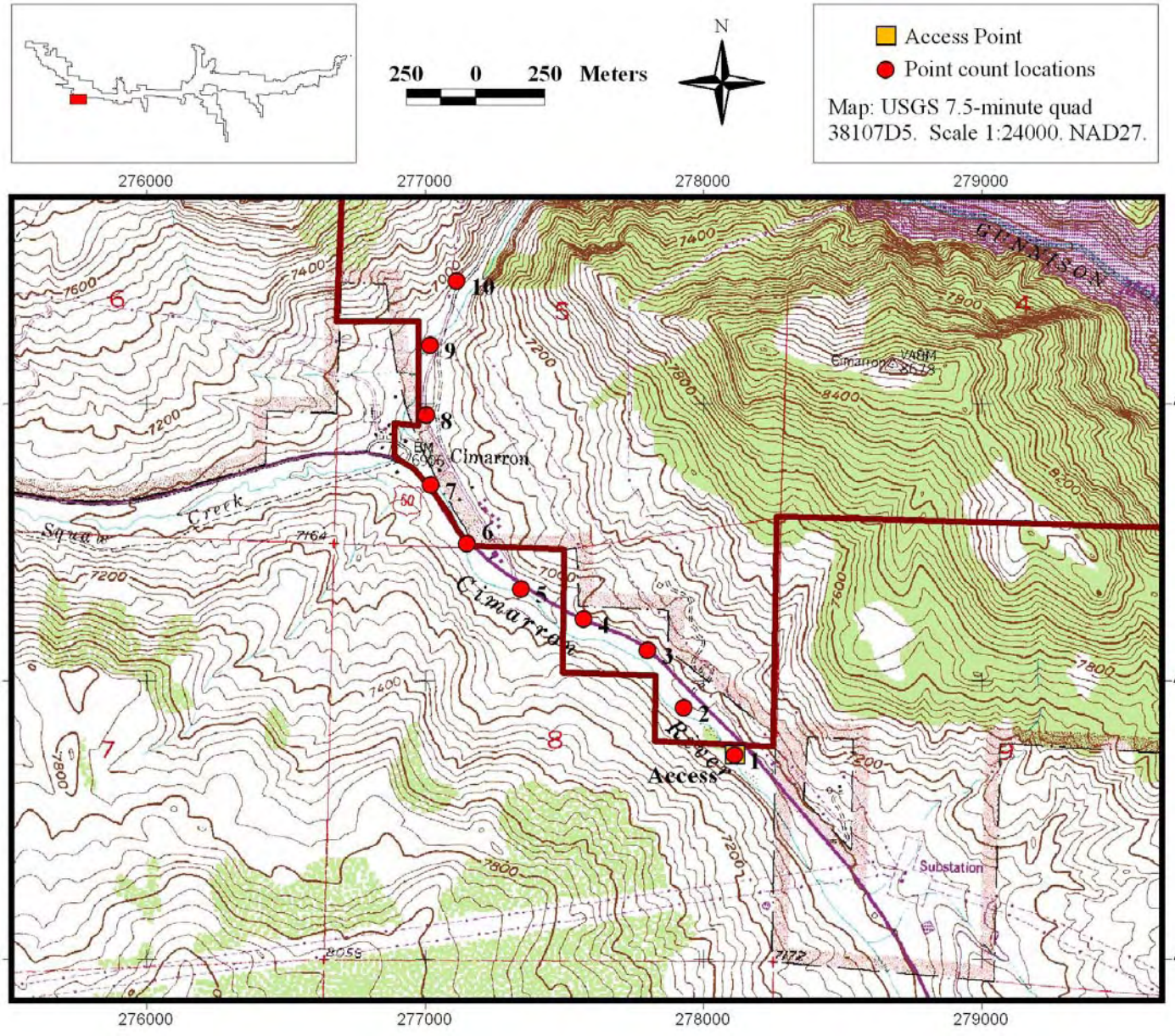
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	1082	072	8	9	250	189
1	2	250	242	9	10	250	195
2	3	250	233	10	11	250	189
3	4	250	257	11	12	250	189
4	5	250	269	12	13	250	181
5	6	250	256	13	14	250	188
6	7	250	231	14	15	250	209
7	8	250	219				



Transect CURE-23 (Points CURE-23-01 through CURE-23-10).
Access is from Hwy. 50 at the east Cimarron Picnic Area. Park at the picnic area; this is the access point and point 1. The transect follows the Cimarron River downstream. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-23 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	278113	4256734	8	277152	4257495
1	278113	4256734	9	277020	4257706
2	277929	4256904	10	277006	4257959
3	277800	4257112	11	277018	4258211
4	277570	4257225	12	277114	4258441
5	277345	4257333	13		

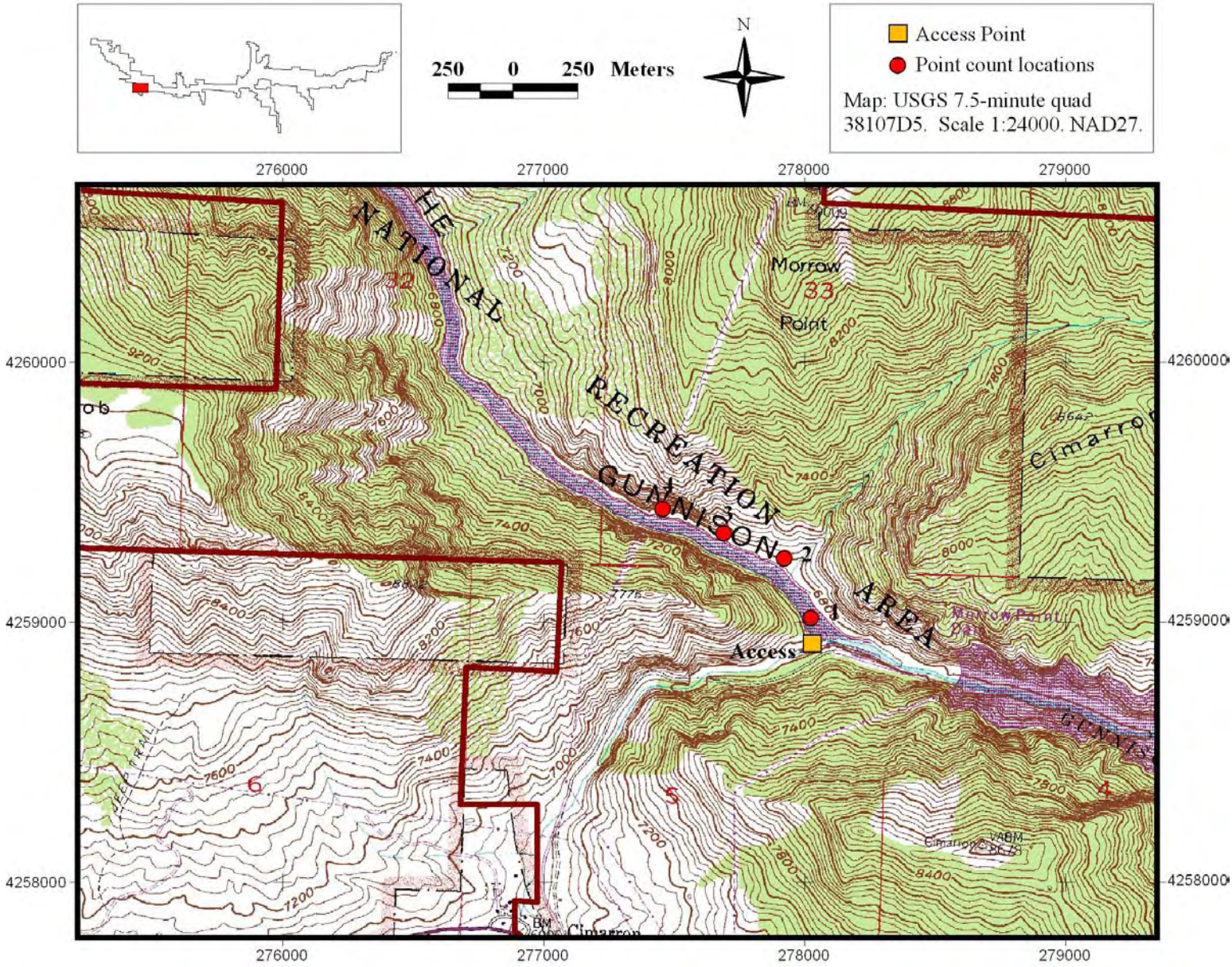
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	0	NA	6	7	250	328
1	2	250	313	7	8	250	357
2	3	250	328	8	9	250	003
3	4	250	296	9	10	250	023
4	5	250	296				
5	6	250	310				



Transect CURE-24 (Points CURE-24-01 through CURE-24-04).
Access is from Hwy. 50 at the Morrow Point Dam Overlook. Park at the overlook and the Mesa Creek trailhead; this is the access point. From the access point, hike down the Mesa Creek Trail 100 meters to the footbridge crossing Morrow Point Reservoir; this is point 1. The transect follows the Mesa Creek Trail to its end. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-24 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	278028	4258916	3	277690	4259342
1	278024	4259016	4	277457	4259435
2	277922	4259245			

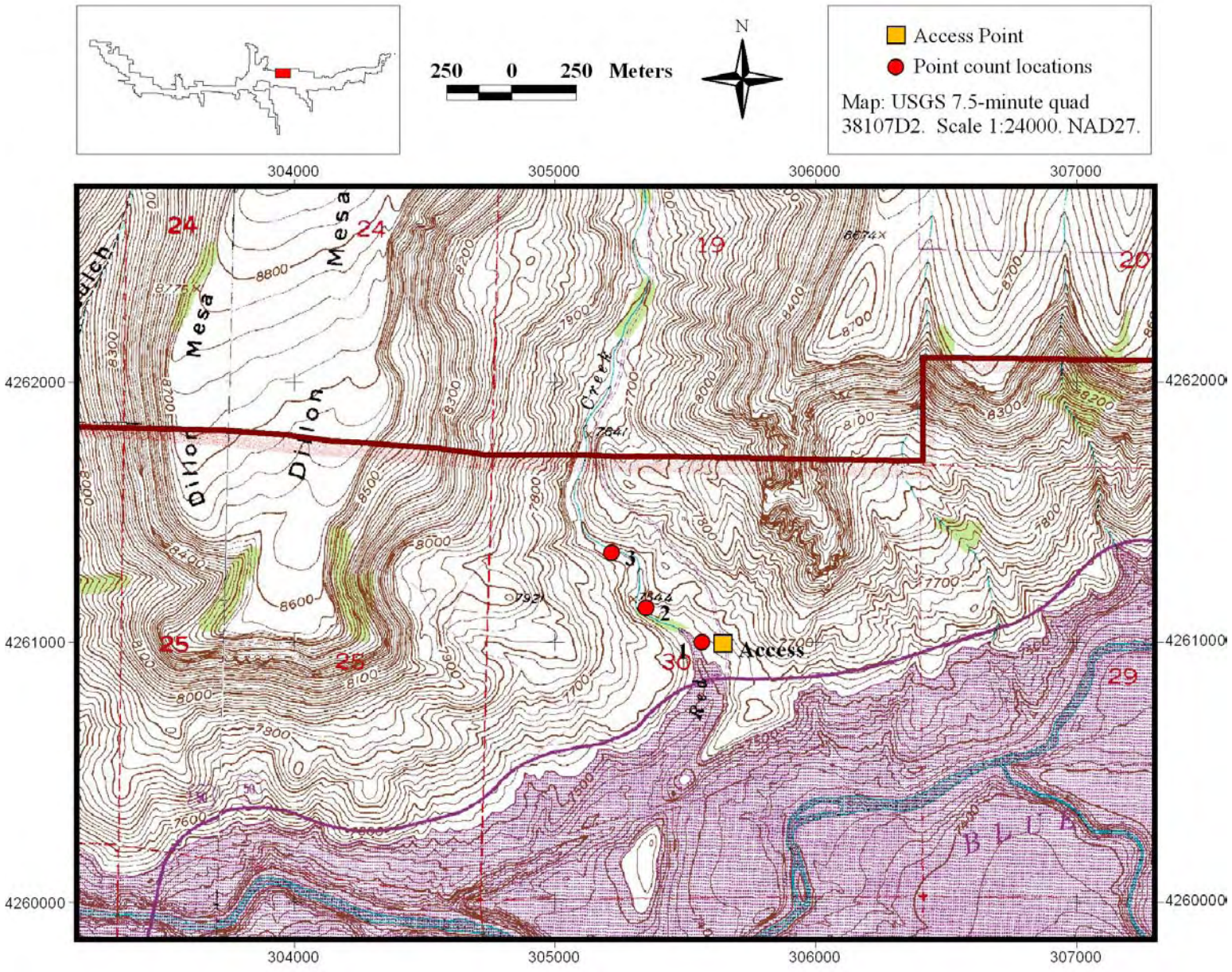
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	100	358	3	4	250	292
1	2	250	336				
2	3	250	293				



Transect CURE-25.
Access is from Hwy. 50 at the Red Creek Campground. Park where the dirt road turns west to enter the campground. Follow the campground road downhill 79 meters to point 1. The transect follows the creek upstream to points 2-3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-25 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	305644	4260993	2	305350	4261131
1	305565	4261000	3	305218	4261344

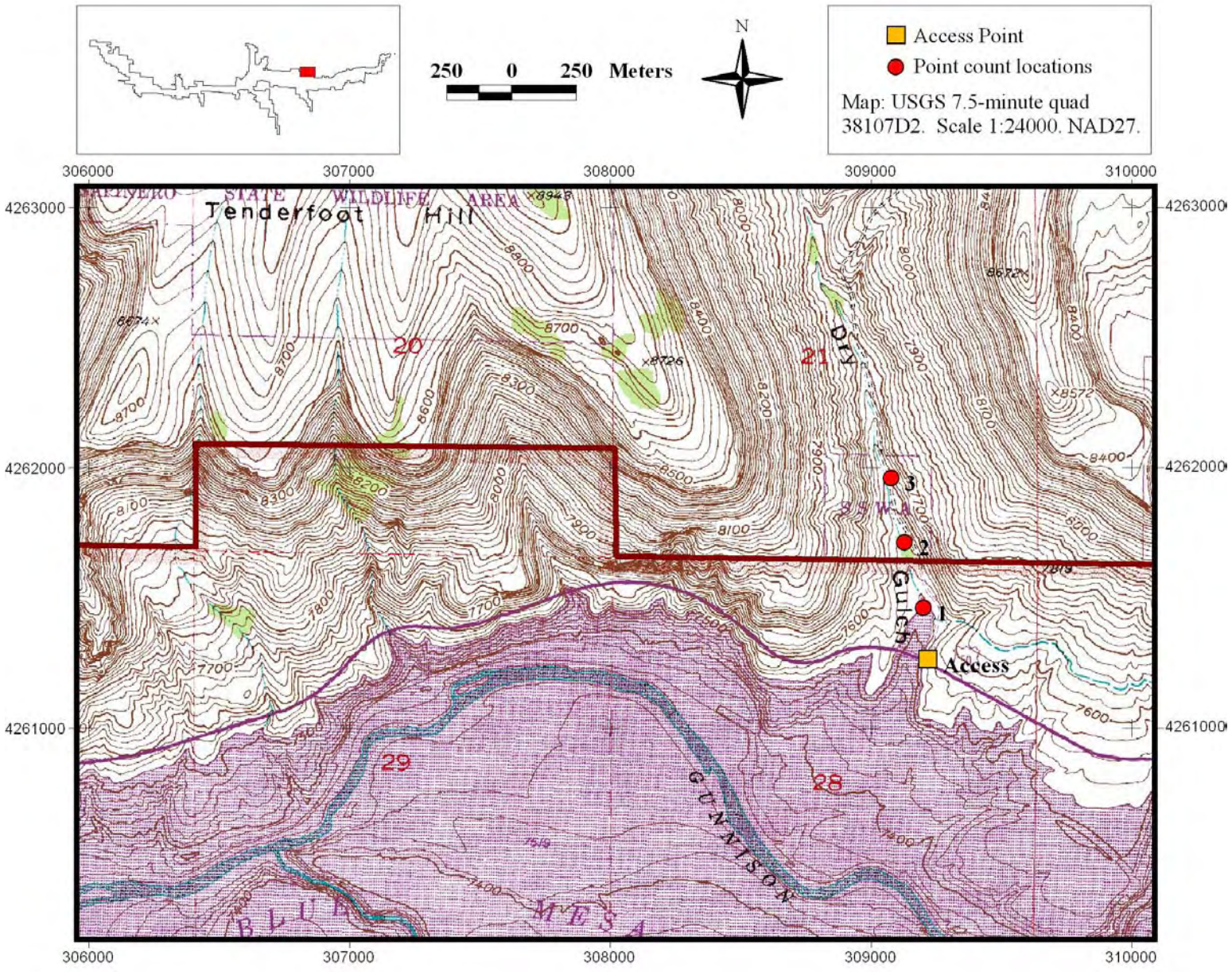
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	79	275	2	3	250	328
1	2	250	301				



Transect CURE-26 (Points CURE-26-01 through CURE-26-03).
Access is from Hwy. 50 at the Dry Gulch Campground. Park at the turnoff to the campground, off of Hwy. 50. Follow the campground road 200 meters to point 1. The transect follows the creek upstream to points 2-3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-26 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	309217	4261263	2	309130	4261714
1	309202	4261462	3	309078	4261960

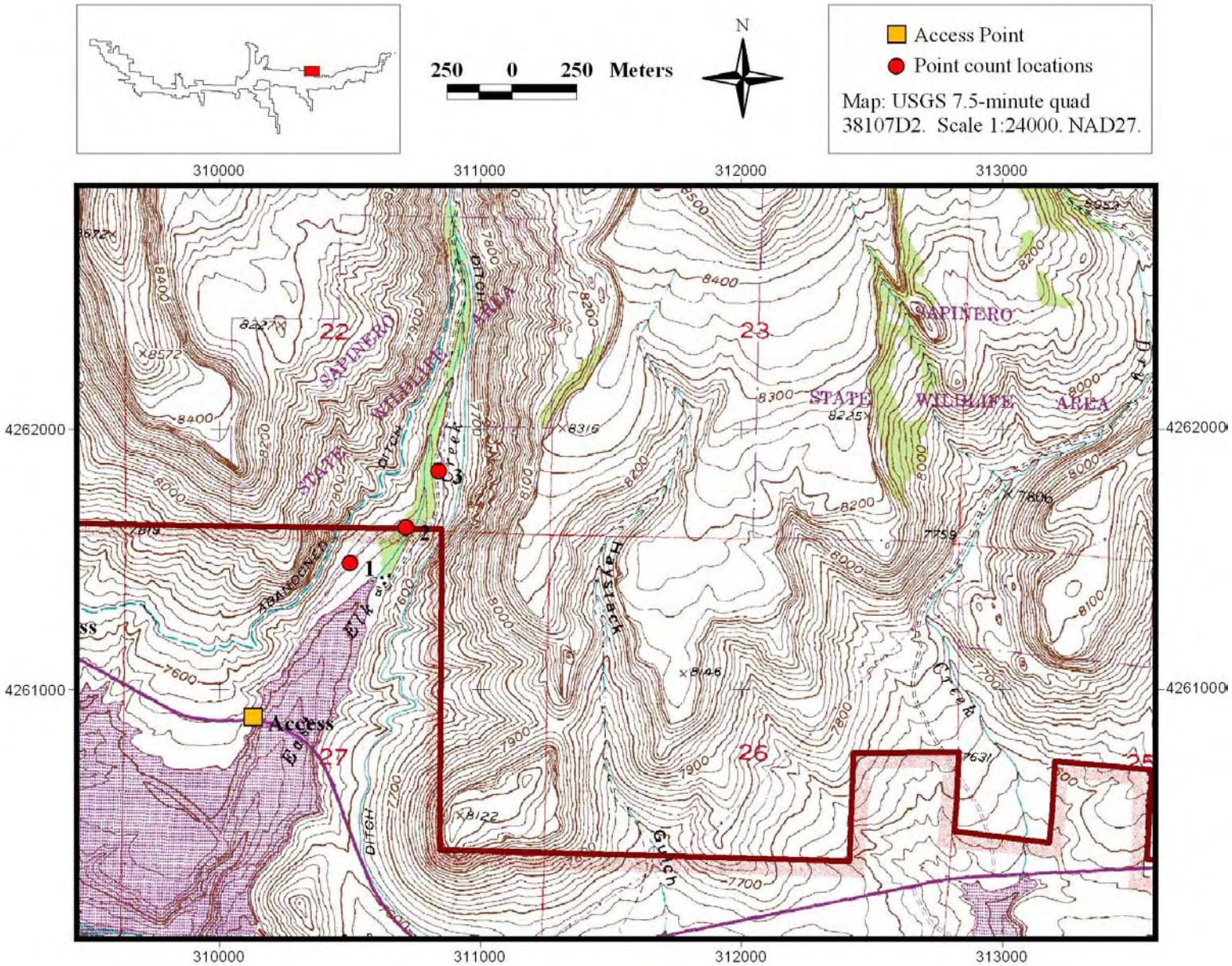
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	200	355	2	3	250	348
1	2	250	344				



Transect CURE-27 (Points CURE-27-01 through CURE-27-03).
Access is from Hwy. 50 at the East Elk Creek Campground. Park at the turnoff to the campground, off of Hwy. 50. Follow the campground road 700 meters to point 1. The transect follows the creek upstream to points 2-3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-27 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	310127	4260893	2	310716	4261623
1	310502	4261487	3	310840	4261839

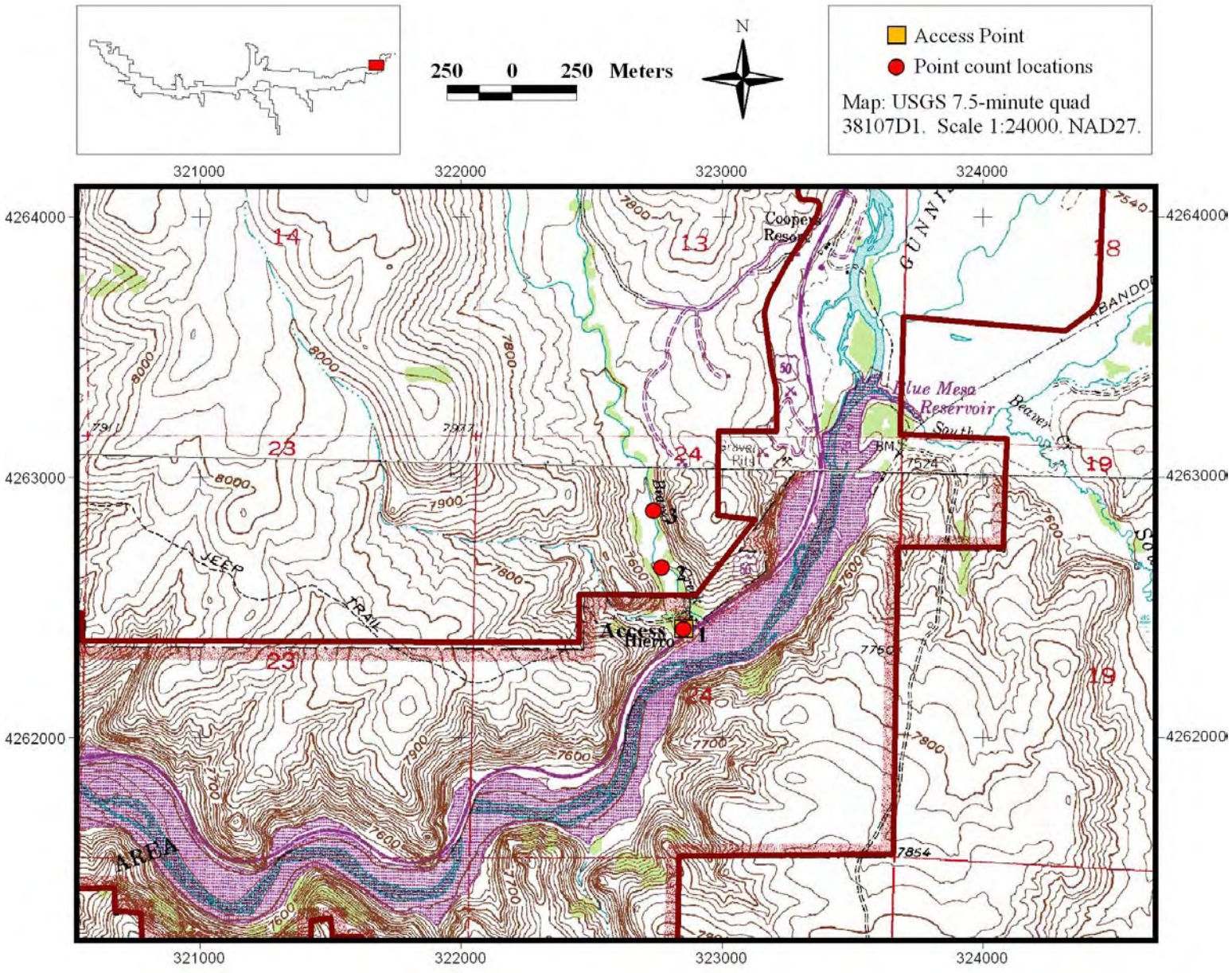
Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	700	032	2	3	250	029
1	2	250	057				



Transect CURE-28 (Points CURE-28-01 through CURE-28-03).
Access is from Hwy. 50 at the Beaver Creek Picnic Area. Park at the picnic area, off of Hwy. 50; this is the access point and point 1. The transect follows the creek upstream to points 2-3. All bearings are true north, and points are spaced at 250-meter intervals. See the table below for point locations and bearings between points.

UTM locations of CURE-28 points (Zone 13S, NAD27).					
Point	Easting	Northing	Point	Easting	Northing
A	322853	4262417	2	322770	4262655
1	322853	4262417	3	322737	4262872

Distances (meters) and Bearings (degrees) between points.							
From	To	Dist.	Bearing	From	To	Dist.	Bearing
A	1	0	NA	2	3	250	219
1	2	250	252				



Appendix C. Revised Black Canyon National Park Bird Checklist.

Field	Definition and Values
Park Status	Status of each species in each park. Values are: ***Present in Park*** : Species' occurrence in park is documented and assumed to be extant. ***Historic:*** Species' historical occurrence in the park is documented, but recent investigations indicate that the species is now probably absent. ***Probably Present*** : Park is within species' range and contains appropriate habitat. Documented occurrences of the species in the adjoining region of the park give reason to suspect that it probably occurs within the park. The degree of probability may vary within this category, including species that range from common to rare. ***Unconfirmed*** : Included for the park based on weak ("unconfirmed record") or no evidence, giving minimal indication of the species' occurrence in the park. ***False Report*** *:* Species previously reported to occur within the park, but current evidence indicates that the report was based on a misidentification, a taxonomic concept no longer accepted, or some other similar problem of interpretation. ***Encroaching*** *:* The species is known to be adjacent to, but not in the park, and has a great potential to enter the park.
Status Notes	**A** – Species was detected and positively identified by RMBO during General Avian Inventory and is documented in that report (Giroir 2004); **B** – Species was detected and positively identified during the Long-term Bird Monitoring Project at BLCA and CURE (Chase 2000); **C** – Species occurance is doccumented in Field Observation Cards on file at BLCA or CURE; **D** – Species historical occurance is doccumented in Colorado Birds; a Reference to Their Distribution and Habitat (Andrews and Righter 1992); **E** – Species occurance or probable occurance is documented in Colorado Birds; a Reference to Their Distribution and Habitat (Andrews and Righter 1992);
Abundance	***Abundant*** *:* Animals: May be seen daily, in suitable habitat and season, and counted in relatively large numbers. Plants: Large number of individuals; wide ecological amplitude or occurring in habitats covering a large portion of the park. ***Common*** *:* Animals: May be seen daily, in suitable habitat and season, but not in large numbers. Plants: Large numbers of individuals predictably occurring in commonly encountered habitats but not those covering a large portion of the park. ***Uncommon*** *:* Animals: Likely to be seen monthly in appropriate season/habitat. May be locally common. Plants: Few to moderate numbers of individuals; occurring either sporadically in commonly encountered habitats or in uncommon habitats. ***Rare*** *:* Animals: Present, but usually seen only a few times each year. Plants: Few individuals, usually restricted to small areas of rare habitat. ***Occasional*** *:* Occurs in the park at least once every few years, but not necessarily every year. Applicable to animals only. ***Unknown*** *:* Abundance unknown.
Residency	Current residency classification for each animal species in each park. Park Status as above must be either "Present" or "Probably Present". ***Breeder*** *:* Population reproduces in the park. ***Resident*** *:* A significant population is maintained in the park for more than two months each year, but it is not known to breed there. ***Migratory*** *:* Migratory species that occurs in park approximately two months or less each year and does not breed there. ***Vagrant*** *:* Park is outside of the species' usual range. ***Unknown*** *:* Residency status in park is unknown.
Nativity	Nativity classification for each species in each park. Park Status as defined above must be either "Present" or "Probably Present". ***Native*** *:* The species is native to the park (either endemic or indigenous), or if the Park Status is "Probably Present" as defined above, the species would be native to the park if it were eventually confirmed in the park. ***Non-Native*** *:* The species is not native to the park (neither endemic nor indigenous), or if the Park Status is "Probably Present" as defined above, the species would not be native to the park if it were eventually confirmed in the park. Persistent plant populations (as defined below) that reproduce are also considered non-native. ***Unknown*** *:* Nativity classification in park is unknown.

Appendix C. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
176292	Rallidae	Fulica americana	American Coot	Probably Present	E	Migrant	Native	Uncommon
179731	Corvidae	Corvus brachyrhynchos	American Crow	Present in Park	A	Breeder	Native	Rare
178536	Cinclidae	Cinclus mexicanus	American Dipper	Present in Park	A	Breeder	Native	Uncommon
179236	Fringillidae	Carduelis tristis	American Goldfinch	Present in Park	C	Breeder	Native	Uncommon
175622	Falconidae	Falco sparverius	American Kestrel	Present in Park	A,B	Breeder	Native	Uncommon
554127	Motacillidae	Anthus rubescens	American Pipit	Probably Present	E	Migrant	Native	Rare
179759	Muscicapidae	Turdus migratorius	American Robin	Present in Park	A,B	Breeder	Native	Common
179432	Fringillidae	Spizella arborea	American Tree Sparrow	Probably Present	E	Resident	Native	Uncommon
175094	Anatidae	Anas americana	American Wigeon	Present in Park	C	Migrant	Native	Uncommon
178316	Tyrannidae	Myiarchus cinerascens	Ash-throated Flycatcher	Present in Park	A	Breeder	Native	Uncommon
175420	Accipitridae	Haliaeetus leucocephalus	Bald Eagle	Present in Park	A	Resident	Native	Uncommon
177065	Columbidae	Columba fasciata	Band-tailed Pigeon	Present in Park	C	Breeder	Native	Rare
177851	Tytonidae	Tyto alba	Barn Owl	Present in Park	B	Migrant	Native	Occasional
178448	Hirundinidae	Hirundo rustica	Barn Swallow	Present in Park	B	Migrant	Native	Uncommon
175144	Anatidae	Bucephala islandica	Barrow's Goldeneye	Present in Park	C	Migrant	Native	Occasional
178119	Cerylidae	Ceryle alcyon	Belted Kingfisher	Present in Park	A	Migrant	Native	Rare
178562	Certhiidae	Thryomanes bewickii	Bewick's Wren	Present in Park	A	Breeder	Native	Uncommon
179222	Fringillidae	Leucosticte atrata	Black Rosy-Finch	Present in Park	C	Migrant	Native	Rare
177997	Apodidae	Cypseloides niger	Black Swift	Present in Park	A	Breeder	Native	Rare
179720	Corvidae	Pica pica	Black-billed Magpie	Present in Park	A,B	Breeder	Native	Common
178699	Paridae	Poecile atricapillus	Black-capped Chickadee	Present in Park	A,B	Breeder	Native	Uncommon
178033	Trochilidae	Archilochus alexandri	Black-chinned Hummingbird	Present in Park	A,B	Breeder	Native	Rare
174832	Ardeidae	Nycticorax nycticorax	Black-crowned Night-Heron	Probably Present	E	Migrant	Native	Rare
179140	Fringillidae	Pheucticus melanocephalus	Black-headed Grosbeak	Present in Park	A,B	Breeder	Native	Common
178896	Fringillidae	Dendroica nigrescens	Black-throated Gray Warbler	Present in Park	A,B	Breeder	Native	Common
179395	Fringillidae	Amphispiza bilineata	Black-throated Sparrow	Present in Park	C	Breeder	Native	Rare
175860	Phasianidae	Dendragapus obscurus	Blue Grouse	Present in Park	B	Breeder	Native	Uncommon
179853	Certhiidae	Polioptila caerulea	Blue-gray Gnatcatcher	Present in Park	A,B	Breeder	Native	Common
175086	Anatidae	Anas discors	Blue-winged Teal	Probably Present	E	Migrant	Native	Uncommon
178529	Bombycillidae	Bombycilla garrulus	Bohemian Waxwing	Probably Present	E	Migrant	Native	Occasional
179094	Fringillidae	Euphagus cyanocephalus	Brewer's Blackbird	Present in Park	B	Breeder	Native	Uncommon
179440	Fringillidae	Spizella breweri	Brewer's Sparrow	Present in Park	A,B	Breeder	Native	Uncommon
178038	Trochilidae	Selasphorus platycercus	Broad-tailed Hummingbird	Present in Park	A,B	Breeder	Native	Uncommon
178803	Certhiidae	Certhia americana	Brown Creeper	Present in Park	B	Breeder	Native	Rare
178627	Sturnidae	Toxostoma rufum	Brown Thrasher	Present in Park	B	Vagrant	Native	Occasional
179224	Fringillidae	Leucosticte australis	Brown-capped Rosy-Finch	Probably Present	E	Migrant	Native	Rare
179112	Fringillidae	Molothrus ater	Brown-headed Cowbird	Present in Park	A,B	Breeder	Native	Uncommon
554267	Fringillidae	Icterus bullockii	Bullock's Oriole	Present in Park	A	Breeder	Native	Rare
178764	Aegithalidae	Psaltriparus minimus	Bushtit	Present in Park	A,B	Breeder	Native	Uncommon

Appendix C. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
176829	Laridae	Larus californicus	California Gull	Probably Present	E	Migrant	Native	Rare
178048	Trochilidae	Stellula calliope	Calliope Hummingbird	Probably Present	E	Migrant	Native	Rare
174999	Anatidae	Branta canadensis	Canada Goose	Present in Park	A	Breeder	Native	Uncommon
178610	Certhiidae	Catherpes mexicanus	Canyon Wren	Present in Park	A,B	Breeder	Native	Uncommon
179190	Fringillidae	Carpodacus cassinii	Cassin's Finch	Present in Park	A,B	Breeder	Native	Rare
178532	Bombycillidae	Bombycilla cedrorum	Cedar Waxwing	Probably Present	E	Migrant	Native	Rare
179435	Fringillidae	Spizella passerina	Chipping Sparrow	Present in Park	A,B	Breeder	Native	Uncommon
175908	Phasianidae	Alectoris chukar	Chukar	Present in Park	C	Breeder	Non-native	Rare
175089	Anatidae	Anas cyanoptera	Cinnamon Teal	Probably Present	E	Migrant	Native	Uncommon
179750	Corvidae	Nucifraga columbiana	Clark's Nutcracker	Present in Park	A,B	Breeder	Native	Uncommon
178453	Hirundinidae	Petrochelidon pyrrhonota	Cliff Swallow	Present in Park	B	Breeder	Native	Common
175141	Anatidae	Bucephala clangula	Common Goldeneye	Present in Park	C	Migrant	Native	Uncommon
175185	Anatidae	Mergus merganser	Common Merganser	Present in Park	A	Breeder	Native	Uncommon
177979	Caprimulgidae	Chordeiles minor	Common Nighthawk	Present in Park	B	Breeder	Native	Common
555544	Caprimulgidae	Phalaenoptilus nuttallii	Common Poorwill	Present in Park	B	Breeder	Native	Uncommon
179725	Corvidae	Corvus corax	Common Raven	Present in Park	A,B	Breeder	Native	Common
176586	Scolopacidae	Gallinago gallinago	Common Snipe	Probably Present	E	Migrant	Native	Uncommon
175309	Accipitridae	Accipiter cooperii	Cooper's Hawk	Present in Park	A,B	Breeder	Native	Uncommon
554255	Tyrannidae	Empidonax occidentalis	Cordilleran Flycatcher	Present in Park	A,B	Breeder	Native	Uncommon
179410	Fringillidae	Junco hyemalis	Dark-eyed Junco (Gray-headed)	Present in Park	A,B	Breeder	Native	Uncommon
178259	Picidae	Picoides pubescens	Downy Woodpecker	Present in Park	B	Breeder	Native	Rare
178346	Tyrannidae	Empidonax oberholseri	Dusky Flycatcher	Present in Park	A,B	Breeder	Native	Common
179637	Sturnidae	Sturnus vulgaris	European Starling	Present in Park	A	Breeder	Non-nativ	Uncommon
179173	Fringillidae	Coccothraustes vespertinus	Evening Grosbeak	Present in Park	C	Breeder	Native	Rare
175377	Accipitridae	Buteo regalis	Ferruginous Hawk	Probably Present	E	Migrant	Native	Occasional
177878	Strigidae	Otus flammeolus	Flammulated Owl	Present in Park	C	Migrant	Native	Occasional
176838	Laridae	Larus pipixcan	Franklin's Gull	Probably Present	E	Migrant	Native	Rare
175073	Anatidae	Anas strepera	Gadwall	Probably Present	E	Migrant	Native	Uncommon
175877	Odontophoridae	Callipepla gambelii	Gambel's Quail	Probably Present	E	Resident	Native	Occasional
175407	Accipitridae	Aquila chrysaetos	Golden Eagle	Present in Park	A,B	Breeder	Native	Uncommon
179865	Regulidae	Regulus satrapa	Golden-crowned Kinglet	Probably Present	E	Vagrant	Native	Occasional
178625	Sturnidae	Dumetella carolinensis	Gray Catbird	Present in Park	B	Migrant	Native	Occasional
178347	Tyrannidae	Empidonax wrightii	Gray Flycatcher	Present in Park	A,B	Breeder	Native	Uncommon
179667	Corvidae	Perisoreus canadensis	Gray Jay	Probably Present	E	Migrant	Native	Occasional
179008	Vireonidae	Vireo vicinior	Gray Vireo	Present in Park	A	Breeder	Native	Rare
179215	Fringillidae	Leucosticte tephrocotis	Gray-crowned Rosy-Finch	Present in Park	C	Migrant	Native	Rare
174773	Ardeidae	Ardea herodias	Great Blue Heron	Present in Park	A	Resident	Native	Uncommon
177884	Strigidae	Bubo virginianus	Great Horned Owl	Present in Park	A	Breeder	Native	Uncommon
179310	Fringillidae	Pipilo chlorurus	Green-tailed Towhee	Present in Park	A,B	Breeder	Native	Abundant

Appendix C. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
175081	Anatidae	Anas crecca	Green-winged Teal	Probably Present	E	Migrant	Native	Uncommon
175855	Phasianidae	Centrocercus urophasianus	Gunnison Sage-Grouse	Present in Park	C	Breeder	Native	Rare
178262	Picidae	Picoides villosus	Hairy Woodpecker	Present in Park	A,B	Breeder	Native	Rare
554254	Tyrannidae	Empidonax hammondii	Hammond's Flycatcher	Present in Park	A,B	Breeder	Native	Rare
179779	Muscicapidae	Catharus guttatus	Hermit Thrush	Present in Park	A,B	Breeder	Native	Uncommon
175182	Anatidae	Lophodytes cucullatus	Hooded Merganser	Present in Park	C	Migrant	Native	Occasional
554256	Alaudidae	Eremophila alpestris	Horned Lark	Present in Park	A	Breeder	Native	Rare
179191	Fringillidae	Carpodacus mexicanus	House Finch	Present in Park	A	Breeder	Native	Rare
179628	Passeridae	Passer domesticus	House Sparrow	Present in Park	A	Breeder	Non-nativ	Rare
178541	Certhiidae	Troglodytes aedon	House Wren	Present in Park	A,B	Breeder	Native	Common
179150	Fringillidae	Passerina cyanea	Indigo Bunting	Present in Park	A	Breeder	Native	Occasional
178744	Paridae	Baeolophus griseus	Juniper Titmouse	Present in Park	A,B	Breeder	Native	Uncommon
176520	Charadriidae	Charadrius vociferus	Killdeer	Present in Park	A	Breeder	Native	Uncommon
179371	Fringillidae	Chondestes grammacus	Lark Sparrow	Present in Park	C	Breeder	Native	Rare
179151	Fringillidae	Passerina amoena	Lazuli Bunting	Present in Park	A,B	Breeder	Native	Uncommon
179234	Fringillidae	Carduelis psaltria	Lesser Goldfinch	Present in Park	C	Breeder	Native	Uncommon
175134	Anatidae	Aythya affinis	Lesser Scaup	Probably Present	E	Migrant	Native	Uncommon
178196	Picidae	Melanerpes lewis	Lewis's Woodpecker	Present in Park	C	Breeder	Native	Rare
179484	Fringillidae	Melospiza lincolnii	Lincoln's Sparrow	Probably Present	E	Migrant	Native	Rare
178515	Laniidae	Lanius ludovicianus	Loggerhead Shrike	Present in Park	B	Migrant	Native	Rare
177932	Strigidae	Asio otus	Long-eared Owl	Present in Park	C	Breeder	Native	Rare
178940	Fringillidae	Oporornis tolmiei	MacGillivray's Warbler	Present in Park	A,B	Breeder	Native	Uncommon
175063	Anatidae	Anas platyrhynchos	Mallard	Present in Park	B	Breeder	Native	Uncommon
175613	Falconidae	Falco columbarius	Merlin	Present in Park	C	Migrant	Native	Occasional
179811	Muscicapidae	Sialia currucoides	Mountain Bluebird	Present in Park	A,B	Breeder	Native	Uncommon
178718	Paridae	Poecile gambelii	Mountain Chickadee	Present in Park	A,B	Breeder	Native	Uncommon
177125	Columbidae	Zenaida macroura	Mourning Dove	Present in Park	A,B	Breeder	Native	Common
178154	Picidae	Colaptes auratus	Northern Flicker (Red-shafted)	Present in Park	A,B	Breeder	Native	Common
175300	Accipitridae	Accipiter gentilis	Northern Goshawk	Present in Park	A	Breeder	Native	Rare
175430	Accipitridae	Circus cyaneus	Northern Harrier	Present in Park	A	Breeder	Native	Uncommon
175074	Anatidae	Anas acuta	Northern Pintail	Probably Present	E	Migrant	Native	Uncommon
177902	Strigidae	Glaucidium gnoma	Northern Pygmy-Owl	Present in Park	B	Breeder	Native	Rare
177942	Strigidae	Aegolius acadicus	Northern Saw-whet Owl	Present in Park	A	Breeder	Native	Rare
175096	Anatidae	Anas clypeata	Northern Shoveler	Probably Present	E	Migrant	Native	Uncommon
178511	Laniidae	Lanius excubitor	Northern Shrike	Probably Present	E	Resident	Native	Rare
178365	Tyrannidae	Contopus cooperi	Olive-sided Flycatcher	Present in Park	B	Breeder	Native	Rare
178856	Fringillidae	Vermivora celata	Orange-crowned Warbler	Present in Park	A,B	Breeder	Native	Common
175590	Accipitridae	Pandion haliaetus	Osprey	Present in Park	C	Migrant	Native	Rare
175604	Falconidae	Falco peregrinus	Peregrine Falcon	Present in Park	A,B	Breeder	Native	Uncommon

Appendix C. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
174505	Podicipedidae	Podilymbus podiceps	Pied-billed Grebe	Probably Present	E	Migrant	Native	Rare
179205	Fringillidae	Pinicola enucleator	Pine Grosbeak	Probably Present	E	Migrant	Native	Rare
179233	Fringillidae	Carduelis pinus	Pine Siskin	Present in Park	A,B	Breeder	Native	Uncommon
179748	Corvidae	Gymnorhinus cyanocephalus	Pinyon Jay	Present in Park	A,B	Breeder	Native	Uncommon
179010	Vireonidae	Vireo plumbeous	Plumbeous Vireo	Present in Park	A,B	Breeder	Native	Common
175603	Falconidae	Falco mexicanus	Prairie Falcon	Present in Park	B	Breeder	Native	Uncommon
178788	Sittidae	Sitta pygmaea	Pygmy Nuthatch	Present in Park	C	Migrant	Native	Occasional
179259	Fringillidae	Loxia curvirostra	Red Crossbill	Present in Park	C	Migrant	Native	Rare
178784	Sittidae	Sitta canadensis	Red-breasted Nuthatch	Present in Park	B	Breeder	Native	Rare
178211	Picidae	Sphyrapicus nuchalis	Red-naped Sapsucker	Present in Park	A,B	Breeder	Native	Rare
175350	Accipitridae	Buteo jamaicensis	Red-tailed Hawk	Present in Park	B	Breeder	Native	Uncommon
179045	Fringillidae	Agelaius phoeniceus	Red-winged Blackbird	Present in Park	A	Breeder	Native	Uncommon
175125	Anatidae	Aythya americana	Redhead	Probably Present	E	Migrant	Native	Uncommon
176830	Laridae	Larus delawarensis	Ring-billed Gull	Probably Present	E	Migrant	Native	Rare
175905	Phasianidae	Phasianus colchicus	Ring-necked Pheasant	Present in Park	C	Vagrant	Non-nativ	Occasional
177071	Columbidae	Columba livia	Rock Dove	Present in Park	A,B	Breeder	Native	Uncommon
178614	Certhiidae	Salpinctes obsoletus	Rock Wren	Present in Park	A,B	Breeder	Native	Common
175373	Accipitridae	Buteo lagopus	Rough-legged Hawk	Probably Present	E	Migrant	Native	Rare
179870	Regulidae	Regulus calendula	Ruby-crowned Kinglet	Present in Park	A	Breeder	Native	Uncommon
175175	Anatidae	Oxyura jamaicensis	Ruddy Duck	Probably Present	E	Migrant	Native	Rare
178040	Trochilidae	Selasphorus rufus	Rufous Hummingbird	Present in Park	B	Migrant	Native	Uncommon
178654	Sturnidae	Oreoscoptes montanus	Sage Thrasher	Present in Park	A,B	Breeder	Native	Rare
176177	Gruidae	Grus canadensis	Sandhill Crane	Present in Park	C	Migrant	Native	Uncommon
178333	Tyrannidae	Sayornis saya	Say's Phoebe	Present in Park	A,B	Breeder	Native	Uncommon
175304	Accipitridae	Accipiter striatus	Sharp-shinned Hawk	Present in Park	B	Breeder	Native	Uncommon
175840	Tetraonidae	Tynpanuchus phasianellus	Sharp-tailed Grouse	Historical	D	Resident	Native	Occasional
179492	Fringillidae	Melospiza melodia	Song Sparrow	Present in Park	A	Breeder	Native	Uncommon
176612	Scolopacidae	Actitis macularia	Spotted Sandpiper	Present in Park	A	Breeder	Native	Uncommon
179276	Fringillidae	Pipilo maculatus	Spotted Towhee	Present in Park	A,B	Breeder	Native	Common
179685	Corvidae	Cyanocitta stelleri	Steller's Jay	Present in Park	A,B	Breeder	Native	Uncommon
175367	Accipitridae	Buteo swainsoni	Swainson's Hawk	Present in Park	A	Migrant	Native	Rare
179788	Muscicapidae	Catharus ustulatus	Swainson's Thrush	Probably Present	E	Migrant	Native	Rare
179824	Muscicapidae	Myadestes townsendi	Townsend's Solitaire	Present in Park	A,B	Breeder	Native	Uncommon
178897	Fringillidae	Dendroica townsendi	Townsend's Warbler	Present in Park	B	Migrant	Native	Rare
178431	Hirundinidae	Tachycineta bicolor	Tree Swallow	Present in Park	A	Migrant	Native	Uncommon
175265	Ciconiidae	Cathartes aura	Turkey Vulture	Present in Park	A,B	Breeder	Native	Uncommon
179366	Fringillidae	Pooecetes gramineus	Vesper Sparrow	Present in Park	A,B	Breeder	Native	Uncommon
178427	Hirundinidae	Tachycineta thalassina	Violet-green Swallow	Present in Park	A,B	Breeder	Native	Abundant
178864	Fringillidae	Vermivora virginiae	Virginia's Warbler	Present in Park	A,B	Breeder	Native	Common

Appendix C. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
179023	Vireonidae	Vireo gilvus	Warbling Vireo	Present in Park	A,B	Breeder	Native	Common
179806	Muscicapidae	Sialia mexicana	Western Bluebird	Present in Park	B	Migrant	Native	Rare
178287	Tyrannidae	Tyrannus verticalis	Western Kingbird	Present in Park	A	Breeder	Native	Rare
179039	Fringillidae	Sturnella neglecta	Western Meadowlark	Present in Park	A	Breeder	Native	Uncommon
179693	Corvidae	Aphelocoma californica	Western Scrub-Jay	Present in Park	A,B	Breeder	Native	Uncommon
179882	Fringillidae	Piranga ludoviciana	Western Tanager	Present in Park	A,B	Breeder	Native	Common
178360	Tyrannidae	Contopus sordidulus	Western Wood-Pewee	Present in Park	A,B	Breeder	Native	Uncommon
178775	Sittidae	Sitta carolinensis	White-breasted Nuthatch	Present in Park	A,B	Breeder	Native	Uncommon
179455	Fringillidae	Zonotrichia leucophrys	White-crowned Sparrow	Present in Park	A	Resident	Native	Uncommon
178014	Apodidae	Aeronautes saxatalis	White-throated Swift	Present in Park	A,B	Breeder	Native	Abundant
176136	Phasianidae	Meleagris gallopavo	Wild Turkey	Present in Park	A	Breeder	Native	Occasional
178208	Picidae	Sphyrapicus thyroideus	Williamson's Sapsucker	Present in Park	B	Breeder	Native	Rare
178341	Tyrannidae	Empidonax traillii	Willow Flycatcher	Probably Present	E	Migrant	Native	Rare
178973	Fringillidae	Wilsonia pusilla	Wilson's Warbler	Present in Park	B	Migrant	Native	Uncommon
178878	Fringillidae	Dendroica petechia	Yellow Warbler	Present in Park	A,B	Breeder	Native	Common
178964	Fringillidae	Icteria virens	Yellow-breasted Chat	Present in Park	B	Breeder	Native	Rare
178891	Fringillidae	Dendroica coronata	Yellow-rumped Warbler (Audubon's)	Present in Park	A,B	Breeder	Native	Uncommon

Appendix D. Revised Curecanti National Recreation Area Bird Checklist.

Field	Definition and Values
Park Status	Status of each species in each park. Values are: ***Present in Park***: Species' occurrence in park is documented and assumed to be extant. ***Historic:*** Species' historical occurrence in the park is documented, but recent investigations indicate that the species now probably absent. ***Probably Present***: Park is within species' range and contains appropriate habitat. Documented occurrences of the species in the adjoining region of the park give reason to suspect that it probably occurs within the park. The degree of probability may vary within this category, including species that range from common to rare. ***Unconfirmed***: Included for the park based on weak ("unconfirmed record") or no evidence, giving minimal indication of the species' occurrence in the park. ***False Report***: Species previously reported to occur within the park, but current evidence indicates that the report was based on a misidentification, a taxonomic concept no longer accepted, or some other similar problem of interpretation. ***Encroaching***: The species is known to be adjacent to, but not in the park, and has a great potential to enter the park.
Status Notes	**A** – Species was detected and positively identified by RMBO during General Avian Inventory and is documented in that report (Giroir 2004); **B** – Species was detected and positively identified during the Long-term Bird Monitoring Project at BLCA and CURE (Chase 2000); **C** – Species was detected and positively identified by local National Audubon Society members or other local bird experts in Gunnison and Montrose Counties; **D** – Species occurance is documented in Birds of Colorado's Gunnison Country (Hyde 1979); **E** – Species occurance or probable occurance is documented in Colorado Birds; a Reference to Their Distribution and Habitat (Andrews and Righter 1992); **F** – Species occurance is doccumented in Field Observation Cards on file at BLCA or CURE.
Abundance	***Abundant***: Animals: May be seen daily, in suitable habitat and season, and counted in relatively large numbers. Plants: Large number of individuals; wide ecological amplitude or occurring in habitats covering a large portion of the park. ***Common***: Animals: May be seen daily, in suitable habitat and season, but not in large numbers. Plants: Large numbers of individuals predictably occurring in commonly encountered habitats but not those covering a large portion of the park. ***Uncommon***: Animals: Likely to be seen monthly in appropriate season/habitat. May be locally common. Plants: Few to moderate numbers of individuals; occurring either sporadically in commonly encountered habitats or in uncommon habitats. ***Rare***: Animals: Present, but usually seen only a few times each year. Plants: Few individuals, usually restricted to small areas of rare habitat. ***Occasional***: Occurs in the park at least once every few years, but not necessarily every year. Applicable to animals only. ***Unknown***: Abundance unknown.
Residency	Current residency classification for each animal species in each park. Park Status as above must be either "Present" or "Probably Present". ***Breeder***: Population reproduces in the park. ***Resident***: A significant population is maintained in the park for more than two months each year, but it is not known to breed there. ***Migratory***: Migratory species that occurs in park approximately two months or less each year and does not breed there. ***Vagrant***: Park is outside of the species' usual range. ***Unknown***: Residency status in park is unknown.
Nativity	Nativity classification for each species in each park. Park Status as defined above must be either "Present" or "Probably Present". ***Native***: The species is native to the park (either endemic or indigenous), or if the Park Status is "Probably Present" as defined above, the species would be native to the park if it were eventually confirmed in the park. ***Non-Native***: The species is not native to the park (neither endemic nor indigenous), or if the Park Status is "Probably Present" as defined above, the species would not be native to the park if it were eventually confirmed in the park. Persistent plant populations (as defined below) that reproduce are also considered non-native. ***Unknown***: Nativity classification in park is unknown.

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
176721	Charadriidae	Recurvirostra americana	American Avocet	Present in Park	C,F	Migrant	Native	Uncommon
174856	Ardeidae	Botaurus lentiginosus	American Bittern	Probably Present	D	Migrant	Native	Occasional
176292	Rallidae	Fulica americana	American Coot	Present in Park	C,F	Migrant	Native	Uncommon
179731	Corvidae	Corvus brachyrhynchos	American Crow	Present in Park	A,F	Breeder	Native	Rare
178536	Cinclidae	Cinclus mexicanus	American Dipper	Present in Park	A,F	Breeder	Native	Rare
179236	Fringillidae	Carduelis tristis	American Goldfinch	Present in Park	B	Resident	Native	Uncommon
175622	Falconidae	Falco sparverius	American Kestrel	Present in Park	A,B,F	Breeder	Native	Uncommon
554127	Motacillidae	Anthus rubescens	American Pipit	Present in Park	C,F	Migrant	Native	Rare
178979	Emberizidae	Setophaga ruticilla	American Redstart	Present in Park	A	Breeder	Native	Occasional
179759	Muscicapidae	Turdus migratorius	American Robin	Present in Park	A,B,F	Breeder	Native	Common
179432	Fringillidae	Spizella arborea	American Tree Sparrow	Present in Park	C	Migrant	Native	Uncommon
174684	Pelecanidae	Pelecanus erythrorhynchos	American White Pelican	Present in Park	C,F	Migrant	Native	Occasional
175094	Anatidae	Anas americana	American Wigeon	Present in Park	C,F	Migrant	Native	Uncommon
178316	Tyrannidae	Myiarchus cinerascens	Ash-throated Flycatcher	Present in Park	A	Breeder	Native	Rare
176655	Scolopacidae	Calidris bairdii	Baird's Sandpiper	Present in Park	C,F	Migrant	Native	Rare
175420	Accipitridae	Haliaeetus leucocephalus	Bald Eagle	Present in Park	A,F	Resident	Native	Uncommon
177065	Columbidae	Columba fasciata	Band-tailed Pigeon	Probably Present	E	Migrant	Native	Rare
178436	Hirundinidae	Riparia riparia	Bank Swallow	Present in Park	A,B,F	Breeder	Native	Uncommon
177851	Tytonidae	Tyto alba	Barn Owl	Present in Park	C	Resident	Native	Occasional
178448	Hirundinidae	Hirundo rustica	Barn Swallow	Present in Park	A,B,F	Breeder	Native	Uncommon
175144	Anatidae	Bucephala islandica	Barrow's Goldeneye	Present in Park	C,F	Migrant	Native	Rare
178120	Alcedinidae	Ceryle alcyon	Belted Kingfisher	Present in Park	A,B,F	Breeder	Native	Rare
178562	Certhiidae	Thryomanes bewickii	Bewick's Wren	Present in Park	A	Breeder	Native	Rare
179215	Fringillidae	Leucosticte atrata	Black Rosy-Finch	Present in Park	C,F	Migrant	Native	Rare
175171	Anatidae	Melanitta nigra	Black Scoter	Present in Park	D	Vagrant	Native	Occasional
177997	Apodidae	Cypseloides niger	Black Swift	Present in Park	E,F	Breeder	Native	Rare
176959	Laridae	Chlidonias niger	Black Tern	Present in Park	D	Migrant	Native	Occasional
178844	Emberizidae	Mniotilta varia	Black-and-white Warbler	Present in Park	C	Vagrant	Native	Occasional
176567	Charadriidae	Pluvialis squatarola	Black-bellied Plover	Present in Park	C	Migrant	Native	Occasional
179720	Corvidae	Pica pica	Black-billed Magpie	Present in Park	A,B,F	Breeder	Native	Common
178699	Paridae	Poecile atricapillus	Black-capped Chickadee	Present in Park	A,B,F	Breeder	Native	Uncommon
178033	Trochilidae	Archilochus alexandri	Black-chinned Hummingbird	Present in Park	B,F	Breeder	Native	Rare
174832	Ardeidae	Nycticorax nycticorax	Black-crowned Night-Heron	Present in Park	B,F	Breeder	Native	Rare
179140	Fringillidae	Pheucticus melanocephalus	Black-headed Grosbeak	Present in Park	A,B	Breeder	Native	Uncommon
176726	Recurvirostridae	Himantopus mexicanus	Black-necked Stilt	Present in Park	C	Migrant	Native	Rare
178896	Fringillidae	Dendroica nigrescens	Black-throated Gray Warbler	Present in Park	A	Breeder	Native	Rare
179145	Fringillidae	Guiraca caerulea	Blue Grosbeak	Present in Park	A,F	Breeder	Native	Rare
175860	Phasianidae	Dendragapus obscurus	Blue Grouse	Present in Park	A,B	Breeder	Native	Uncommon
179853	Certhiidae	Polioptila caerulea	Blue-gray Gnatcatcher	Present in Park	A,B	Breeder	Native	Rare

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
175086	Anatidae	Anas discors	Blue-winged Teal	Present in Park	B,F	Breeder	Native	Rare
179032	Fringillidae	Dolichonyx oryzivorus	Bobolink	Probably Present	E	Migrant	Native	Occasional
178529	Bombycillidae	Bombycilla garrulus	Bohemian Waxwing	Present in Park	C	Migrant	Native	Occasional
176839	Laridae	Larus philadelphia	Bonaparte's Gull	Present in Park	C,F	Migrant	Native	Occasional
179094	Fringillidae	Euphagus cyanocephalus	Brewer's Blackbird	Present in Park	A,B,F	Breeder	Native	Common
179440	Fringillidae	Spizella breweri	Brewer's Sparrow	Present in Park	A,B,F	Breeder	Native	Abundant
178038	Trochilidae	Selasphorus platycercus	Broad-tailed Hummingbird	Present in Park	A,B,F	Breeder	Native	Uncommon
178803	Certhiidae	Certhia americana	Brown Creeper	Present in Park	B,F	Migrant	Native	Rare
178627	Sturnidae	Toxostoma rufum	Brown Thrasher	Present in Park	D,F	Migrant	Native	Occasional
179224	Fringillidae	Leucosticte australis	Brown-capped Rosy-Finch	Present in Park	C	Migrant	Native	Rare
179112	Fringillidae	Molothrus ater	Brown-headed Cowbird	Present in Park	A,B,F	Breeder	Native	Rare
175145	Anatidae	Bucephala albeola	Bufflehead	Present in Park	C,F	Migrant	Native	Uncommon
554267	Fringillidae	Icterus bullockii	Bullock's Oriole	Present in Park	A,B,F	Breeder	Native	Rare
177946	Strigidae	Athene cunicularia	Burrowing Owl	Present in Park	C,F	Migrant	Native	Occasional
178764	Aegithalidae	Psaltriparus minimus	Bushtit	Present in Park	A	Breeder	Native	Rare
176829	Laridae	Larus californicus	California Gull	Present in Park	B,F	Migrant	Native	Rare
178048	Trochilidae	Stellula calliope	Calliope Hummingbird	Probably Present	E	Migrant	Native	Rare
174999	Anatidae	Branta canadensis	Canada Goose	Present in Park	A,B,F	Breeder	Native	Common
175129	Anatidae	Aythya valisineria	Canvasback	Present in Park	C,F	Migrant	Native	Uncommon
178610	Certhiidae	Catherpes mexicanus	Canyon Wren	Present in Park	A	Breeder	Native	Uncommon
176924	Laridae	Sterna caspia	Caspian Tern	Present in Park	C,F	Migrant	Native	Occasional
179190	Fringillidae	Carpodacus cassinii	Cassin's Finch	Present in Park	A	Breeder	Native	Rare
179008	Vireonidae	Vireo cassini	Cassin's Vireo	Present in Park	C	Migrant	Native	Occasional
174803	Ardeidae	Bubulcus ibis	Cattle Egret	Probably Present	D	Migrant	Native	Occasional
178532	Bombycillidae	Bombycilla cedrorum	Cedar Waxwing	Present in Park	B,F	Migrant	Native	Rare
179530	Fringillidae	Calcarius ornatus	Chestnut-collared Longspur	Present in Park	D	Migrant	Native	Occasional
179435	Fringillidae	Spizella passerina	Chipping Sparrow	Present in Park	A,B,F	Breeder	Native	Uncommon
175908	Phasianidae	Alectoris chukar	Chukar	Probably Present	E,F	Resident	Native	Occasional
175089	Anatidae	Anas cyanoptera	Cinnamon Teal	Present in Park	B	Breeder	Native	Uncommon
554027	Podicipedidae	Aechmophorus clarkii	Clark's Grebe	Present in Park	C	Migrant	Native	Rare
179750	Corvidae	Nucifraga columbiana	Clark's Nutcracker	Present in Park	A,B	Breeder	Native	Rare
178453	Hirundinidae	Petrochelidon pyrrhonota	Cliff Swallow	Present in Park	A,B,F	Breeder	Native	Common
175141	Anatidae	Bucephala clangula	Common Goldeneye	Present in Park	C,F	Migrant	Native	Uncommon
179104	Fringillidae	Quiscalus quiscula	Common Grackle	Present in Park	C	Migrant	Native	Rare
174469	Gaviidae	Gavia immer	Common Loon	Present in Park	C,F	Migrant	Native	Occasional
175185	Anatidae	Mergus merganser	Common Merganser	Present in Park	A,B,F	Breeder	Native	Uncommon
177979	Caprimulgidae	Chordeiles minor	Common Nighthawk	Present in Park	B,F	Breeder	Native	Common
555544	Caprimulgidae	Phalaenoptilus nuttallii	Common Poorwill	Present in Park	A,F	Breeder	Native	Uncommon
179725	Corvidae	Corvus corax	Common Raven	Present in Park	A,B,F	Breeder	Native	Common

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
176700	Scolopacidae	Gallinago gallinago	Common Snipe	Present in Park	B,F	Breeder	Native	Uncommon
178944	Fringillidae	Geothlypis trichas	Common Yellowthroat	Present in Park	B	Migrant	Native	Rare
175309	Accipitridae	Accipiter cooperii	Cooper's Hawk	Present in Park	A,B,F	Breeder	Native	Uncommon
554255	Tyrannidae	Empidonax occidentalis	Cordilleran Flycatcher	Present in Park	A,B	Breeder	Native	Uncommon
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Gray-headed)	Present in Park	A,B,F	Breeder	Native	Uncommon
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Oregon)	Present in Park	A	Resident	Native	Common
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Pink-sided)	Present in Park	D	Resident	Native	Uncommon
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Slate-colored)	Present in Park	D	Resident	Native	Rare
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (White-winged)	Present in Park	D	Migrant	Native	Occasional
174717	Phalacrocoracida	Phalacrocorax auritus	Double-crested Cormorant	Present in Park	C,F	Migrant	Native	Rare
178259	Picidae	Picoides pubescens	Downy Woodpecker	Present in Park	B,F	Breeder	Native	Rare
176661	Scolopacidae	Calidris alpina	Dunlin	Present in Park	D	Migrant	Native	Occasional
178346	Tyrannidae	Empidonax oberholseri	Dusky Flycatcher	Present in Park	A,B,F	Breeder	Native	Common
174485	Podicipedidae	Podiceps nigricollis	Eared Grebe	Present in Park	C,F	Migrant	Native	Rare
178279	Tyrannidae	Tyrannus tyrannus	Eastern Kingbird	Present in Park	C	Migrant	Native	Rare
178329	Tyrannidae	Sayornis phoebe	Eastern Phoebe	Present in Park	B	Vagrant	Native	Occasional
179637	Sturnidae	Sturnus vulgaris	European Starling	Present in Park	A,B,F	Breeder	Non-native	Uncommon
179173	Fringillidae	Coccothraustes vespertinus	Evening Grosbeak	Present in Park	B	Migrant	Native	Uncommon
175377	Accipitridae	Buteo regalis	Ferruginous Hawk	Probably Present	E,F	Migrant	Native	Occasional
177878	Strigidae	Otus flammeolus	Flammulated Owl	Probably Present	D	Breeder	Native	Rare
176887	Laridae	Sterna forsteri	Forster's Tern	Present in Park	C,F	Migrant	Native	Rare
179464	Fringillidae	Passerella iliaca	Fox Sparrow	Present in Park	C,F	Migrant	Native	Rare
176838	Laridae	Larus pipixcan	Franklin's Gull	Present in Park	C,F	Migrant	Native	Rare
175073	Anatidae	Anas strepera	Gadwall	Present in Park	C,F	Migrant	Native	Uncommon
175877	Odontophoridae	Callipepla gambelii	Gambel's Quail	Present in Park	E,F	Resident	Native	Occasional
175407	Accipitridae	Aquila chrysaetos	Golden Eagle	Present in Park	A,B,F	Resident	Native	Uncommon
179865	Regulidae	Regulus satrapa	Golden-crowned Kinglet	Present in Park	B	Migrant	Native	Occasional
179461	Fringillidae	Zonotrichia atricapilla	Golden-crowned Sparrow	Present in Park	D	Migrant	Native	Occasional
179333	Fringillidae	Ammodramus savannarum	Grasshopper Sparrow	Present in Park	B	Vagrant	Native	Occasional
178625	Sturnidae	Dumetella carolinensis	Gray Catbird	Present in Park	B	Breeder	Native	Occasional
178347	Tyrannidae	Empidonax wrightii	Gray Flycatcher	Present in Park	B	Migrant	Native	Rare
179667	Corvidae	Perisoreus canadensis	Gray Jay	Present in Park	A,B,F	Migrant	Native	Occasional
179224	Fringillidae	Leucosticte tephrocotis	Gray-crowned Rosy-Finch	Present in Park	C	Migrant	Native	Rare
174773	Ardeidae	Ardea herodias	Great Blue Heron	Present in Park	A,B,F	Breeder	Native	Uncommon
174810	Ardeidae	Ardea alba	Great Egret	Present in Park	D	Migrant	Native	Occasional
177884	Strigidae	Bubo virginianus	Great Horned Owl	Present in Park	B,F	Breeder	Native	Uncommon
175020	Anatidae	Anser albifrons	Greater White-fronted Goose	Present in Park	F	Migrant	Native	Ocassional
176619	Scolopacidae	Tringa melanoleuca	Greater Yellowlegs	Present in Park	C	Migrant	Native	Uncommon
174798	Ardeidae	Butorides virescens	Green Heron	Present in Park	C,F	Migrant	Native	Occasional

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
179310	Fringillidae	Pipilo chlorurus	Green-tailed Towhee	Present in Park	A,B,F	Breeder	Native	Abundant
175081	Anatidae	Anas crecca	Green-winged Teal	Present in Park	C,F	Migrant	Native	Uncommon
175855	Phasianidae	Centrocercus urophasianus	Gunnison Sage-Grouse	Present in Park	B,F	Breeder	Native	Rare
178262	Picidae	Picoides villosus	Hairy Woodpecker	Present in Park	A,B	Breeder	Native	Rare
554254	Tyrannidae	Empidonax hammondii	Hammond's Flycatcher	Present in Park	A,B	Breeder	Native	Rare
179454	Emberizidae	Zonotrichia querula	Harris's Sparrow	Present in Park	D	Migrant	Native	Occasional
179884	Fringillidae	Piranga flava	Hepatic Tanager	Present in Park	C	Vagrant	Native	Occasional
179779	Muscicapidae	Catharus guttatus	Hermit Thrush	Present in Park	A,B,F	Breeder	Native	Uncommon
176824	Laridae	Larus argentatus	Herring Gull	Present in Park	B,F	Migrant	Native	Occasional
175182	Anatidae	Lophodytes cucullatus	Hooded Merganser	Present in Park	C,F	Migrant	Native	Occasional
174482	Podicipedidae	Podiceps auritus	Horned Grebe	Present in Park	C,F	Migrant	Native	Occasional
554256	Alaudidae	Eremophila alpestris	Horned Lark	Present in Park	A,F	Breeder	Native	Common
179191	Fringillidae	Carpodacus mexicanus	House Finch	Present in Park	A	Breeder	Native	Rare
179628	Passeridae	Passer domesticus	House Sparrow	Present in Park	A	Resident	Non-native	Rare
178541	Certhiidae	Troglodytes aedon	House Wren	Present in Park	A,B	Breeder	Native	Common
179150	Fringillidae	Passerina cyanea	Indigo Bunting	Present in Park	D	Migrant	Native	Occasional
178744	Paridae	Baeolophus griseus	Juniper Titmouse	Present in Park	B	Migrant	Native	Rare
176520	Charadriidae	Charadrius vociferus	Killdeer	Present in Park	A,B,F	Breeder	Native	Common
179526	Emberizidae	Calcarius lapponicus	Lapland Longspur	Present in Park	D	Migrant	Native	Occasional
179312	Fringillidae	Calamospiza melanocorys	Lark Bunting	Probably Present	E	Migrant	Native	Occasional
179371	Fringillidae	Chondestes grammacus	Lark Sparrow	Present in Park	A,F	Breeder	Native	Rare
179151	Fringillidae	Passerina amoena	Lazuli Bunting	Present in Park	A,B	Breeder	Native	Uncommon
176656	Scolopacidae	Calidris minutilla	Least Sandpiper	Present in Park	D	Migrant	Native	Occasional
179234	Fringillidae	Carduelis psaltria	Lesser Goldfinch	Present in Park	B,F	Resident	Native	Uncommon
175134	Anatidae	Aythya affinis	Lesser Scaup	Present in Park	C,F	Migrant	Native	Uncommon
176620	Scolopacidae	Tringa flavipes	Lesser Yellowlegs	Present in Park	C,F	Migrant	Native	Uncommon
179484	Fringillidae	Melospiza lincolnii	Lincoln's Sparrow	Present in Park	C	Migrant	Native	Rare
174827	Ardeidae	Egretta caerulea	Little Blue Heron	Present in Park	C	Migrant	Native	Occasional
178515	Laniidae	Lanius ludovicianus	Loggerhead Shrike	Present in Park	B,F	Breeder	Native	Rare
176593	Scolopacidae	Numenius americanus	Long-billed Curlew	Present in Park	C,F	Migrant	Native	Occasional
176679	Scolopacidae	Limnodromus scolopaceus	Long-billed Dowitcher	Present in Park	C	Migrant	Native	Occasional
177932	Strigidae	Asio otus	Long-eared Owl	Present in Park	D,F	Migrant	Native	Rare
178940	Fringillidae	Oporornis tolmiei	MacGillivray's Warbler	Present in Park	A,B,F	Breeder	Native	Uncommon
178050	Trochilidae	Eugenes fulgens	Magnificent Hummingbird	Present in Park	D,F	Migrant	Native	Occasional
175063	Anatidae	Anas platyrhynchos	Mallard	Present in Park	A,B,F	Breeder	Native	Common
176686	Scolopacidae	Limosa fedoa	Marbled Godwit	Present in Park	D,F	Migrant	Native	Rare
178608	Troglodytidae	Cistothorus palustris	Marsh Wren	Probably Present	E	Migrant	Native	Rare
175613	Falconidae	Falco columbarius	Merlin	Present in Park	C	Migrant	Native	Occasional
179811	Muscicapidae	Sialia currucoides	Mountain Bluebird	Present in Park	A,B,F	Breeder	Native	Common

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
178718	Paridae	Poecile gambelii	Mountain Chickadee	Present in Park	A,B,F	Breeder	Native	Uncommon
177125	Columbidae	Zenaida macroura	Mourning Dove	Present in Park	A,B,F	Breeder	Native	Common
178861	Emberizidae	Vermivora ruficapilla	Nashville Warbler	Present in Park	C	Vagrant	Native	Occasional
178154	Picidae	Colaptes auratus	Northern Flicker (Red-shafted)	Present in Park	A,B,F	Breeder	Native	Common
175300	Accipitridae	Accipiter gentilis	Northern Goshawk	Present in Park	D,F	Migrant	Native	Rare
175430	Accipitridae	Circus cyaneus	Northern Harrier	Present in Park	A,B,F	Breeder	Native	Uncommon
178620	Sturnidae	Mimus polyglottos	Northern Mockingbird	Present in Park	B	Breeder	Native	Occasional
175074	Anatidae	Anas acuta	Northern Pintail	Present in Park	C,F	Migrant	Native	Uncommon
177902	Strigidae	Glaucidium gnoma	Northern Pygmy-Owl	Present in Park	C,F	Breeder	Native	Rare
178443	Hirundinidae	Stelgidopteryx serripennis	Northern Rough-winged Swallow	Present in Park	A	Breeder	Native	Uncommon
177942	Strigidae	Aegolius acadicus	Northern Saw-whet Owl	Present in Park	A	Breeder	Native	Rare
175096	Anatidae	Anas clypeata	Northern Shoveler	Present in Park	C	Migrant	Native	Uncommon
178511	Laniidae	Lanius excubitor	Northern Shrike	Present in Park	C,F	Migrant	Native	Rare
178931	Emberizidae	Seiurus noveboracensis	Northern Waterthrush	Present in Park	C	Migrant	Native	Occasional
175147	Anatidae	Clangula hyemalis	Oldsquaw	Present in Park	E	Vagrant	Native	Occasional
178365	Tyrannidae	Contopus cooperi	Olive-sided Flycatcher	Present in Park	B	Breeder	Native	Rare
178856	Fringillidae	Vermivora celata	Orange-crowned Warbler	Present in Park	A,B	Breeder	Native	Uncommon
175590	Accipitridae	Pandion haliaetus	Osprey	Present in Park	B,F	Migrant	Native	Rare
174471	Gaviidae	Gavia arctica	Pacific Loon	Present in Park	D	Vagrant	Native	Occasional
176793	Laridae	Stercorarius parasiticus	Parasitic Jaeger	Present in Park	C	Vagrant	Native	Occasional
176653	Scolopacidae	Calidris melanotos	Pectoral Sandpiper	Present in Park	D	Migrant	Native	Occasional
175604	Falconidae	Falco peregrinus	Peregrine Falcon	Present in Park	A,B,F	Breeder	Native	Rare
179022	Vireonidae	Vireo philadelphicus	Philadelphia Vireo	Present in Park	B	Vagrant	Native	Occasional
174505	Podicipedidae	Podilymbus podiceps	Pied-billed Grebe	Present in Park	C,F	Migrant	Native	Rare
179205	Fringillidae	Pinicola enucleator	Pine Grosbeak	Present in Park	B	Migrant	Native	Rare
179233	Fringillidae	Carduelis pinus	Pine Siskin	Present in Park	A,B,F	Breeder	Native	Uncommon
179748	Corvidae	Gymnorhinus cyanocephalus	Pinyon Jay	Present in Park	B,F	Migrant	Native	Rare
179010	Vireonidae	Vireo plumbeous	Plumbeous Vireo	Present in Park	A,B,F	Breeder	Native	Rare
175603	Falconidae	Falco mexicanus	Prairie Falcon	Present in Park	A,B,F	Breeder	Native	Uncommon
178788	Sittidae	Sitta pygmaea	Pygmy Nuthatch	Present in Park	D	Breeder	Native	Rare
179259	Fringillidae	Loxia curvirostra	Red Crossbill	Present in Park	B	Migrant	Native	Rare
175187	Anatidae	Mergus serrator	Red-breasted Merganser	Present in Park	C	Migrant	Native	Occasional
178784	Sittidae	Sitta canadensis	Red-breasted Nuthatch	Present in Park	A,B	Breeder	Native	Rare
179021	Vireonidae	Vireo olivaceus	Red-eyed Vireo	Probably Present	E	Migrant	Native	Occasional
178211	Picidae	Sphyrapicus nuchalis	Red-naped Sapsucker	Present in Park	A,B	Breeder	Native	Rare
176735	Scolopacidae	Phalaropus lobatus	Red-necked Phalarope	Present in Park	D,F	Migrant	Native	Occasional
175350	Accipitridae	Buteo jamaicensis	Red-tailed Hawk	Present in Park	A,B,F	Breeder	Native	Uncommon
179045	Fringillidae	Agelaius phoeniceus	Red-winged Blackbird	Present in Park	A,B,F	Breeder	Native	Common
175125	Anatidae	Aythya americana	Redhead	Present in Park	C	Migrant	Native	Uncommon

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
176830	Laridae	Larus delawarensis	Ring-billed Gull	Present in Park	C,F	Migrant	Native	Uncommon
175128	Anatidae	Aythya collaris	Ring-necked Duck	Present in Park	C,F	Migrant	Native	Uncommon
175905	Phasianidae	Phasianus colchicus	Ring-necked Pheasant	Probably Present	D	Resident	Non-native	Occasional
177071	Columbidae	Columba livia	Rock Dove	Present in Park	B,F	Resident	Native	Uncommon
178614	Certhiidae	Salpinctes obsoletus	Rock Wren	Present in Park	A,B	Breeder	Native	Common
175373	Accipitridae	Buteo lagopus	Rough-legged Hawk	Present in Park	D,F	Migrant	Native	Rare
179870	Regulidae	Regulus calendula	Ruby-crowned Kinglet	Present in Park	A,B,F	Breeder	Native	Common
175175	Anatidae	Oxyura jamaicensis	Ruddy Duck	Present in Park	C,F	Migrant	Native	Rare
178040	Trochilidae	Selasphorus rufus	Rufous Hummingbird	Present in Park	B,F	Migrant	Native	Uncommon
176865	Laridae	Yema sabini	Sabine's Gull	Probably Present	D	Vagrant	Native	Occasional
179402	Fringillidae	Amphispiza belli	Sage Sparrow	Present in Park	C	Migrant	Native	Rare
178654	Sturnidae	Oreoscoptes montanus	Sage Thrasher	Present in Park	A,B,F	Breeder	Native	Common
176669	Scolopacidae	Calidris alba	Sanderling	Present in Park	D	Migrant	Native	Occasional
176177	Gruidae	Grus canadensis	Sandhill Crane	Present in Park	B,F	Migrant	Native	Uncommon
179314	Fringillidae	Passerculus sandwichensis	Savannah Sparrow	Present in Park	B,F	Breeder	Native	Uncommon
178333	Tyrannidae	Sayornis saya	Say's Phoebe	Present in Park	A,F	Breeder	Native	Uncommon
176506	Charadriidae	Charadrius semipalmatus	Semipalmated Plover	Present in Park	C,F	Migrant	Native	Occasional
176667	Scolopacidae	Calidris pusilla	Semipalmated Sandpiper	Present in Park	D	Migrant	Native	Occasional
175304	Accipitridae	Accipiter striatus	Sharp-shinned Hawk	Present in Park	B,F	Breeder	Native	Uncommon
175840	Tetraonidae	Tynpanuchus phasianellus	Sharp-tailed Grouse	Historical	D	Resident	Native	Occasional
177935	Strigidae	Asio flammeus	Short-eared Owl	Present in Park	C,F	Migrant	Native	Occasional
179532	Fringillidae	Plectrophenax nivalis	Snow Bunting	Present in Park	D	Migrant	Native	Occasional
175038	Anatidae	Chen caerulescens	Snow Goose	Present in Park	C,F	Migrant	Native	Occasional
174813	Ardeidae	Egretta thula	Snowy Egret	Present in Park	C,F	Migrant	Native	Rare
176510	Charadriidae	Charadrius alexandrinus	Snowy Plover	Probably Present	D,F	Migrant	Native	Occasional
176615	Scolopacidae	Tringa solitaria	Solitary Sandpiper	Present in Park	C	Migrant	Native	Rare
179492	Fringillidae	Melospiza melodia	Song Sparrow	Present in Park	A,B,F	Breeder	Native	Common
176242	Rallidae	Porzana carolina	Sora	Present in Park	C	Migrant	Native	Occasional
176612	Scolopacidae	Actitis macularia	Spotted Sandpiper	Present in Park	B,F	Breeder	Native	Common
179276	Fringillidae	Pipilo maculatus	Spotted Towhee	Present in Park	A,B,F	Breeder	Native	Uncommon
179685	Corvidae	Cyanocitta stelleri	Steller's Jay	Present in Park	A,B,F	Breeder	Native	Uncommon
554145	Scolopacidae	Calidris himantopus	Stilt Sandpiper	Present in Park	D	Migrant	Native	Occasional
175170	Anatidae	Melanitta perspicillata	Surf Scoter	Present in Park	D,F	Vagrant	Native	Occasional
175367	Accipitridae	Buteo swainsoni	Swainson's Hawk	Present in Park	B	Migrant	Native	Rare
179788	Muscicapidae	Catharus ustulatus	Swainson's Thrush	Probably Present	E	Migrant	Native	Rare
178855	Fringillidae	Vermivora peregrina	Tennessee Warbler	Present in Park	B	Vagrant	Native	Occasional
176828	Laridae	Larus thayeri	Thayer's Gull	Present in Park	C	Vagrant	Native	Occasional
178251	Picidae	Picoides tridactylus	Three-toed Woodpecker	Present in Park	B	Migrant	Native	Occasional
179824	Muscicapidae	Myadestes townsendi	Townsend's Solitaire	Present in Park	A,B,F	Breeder	Native	Uncommon

Appendix D. continued

Tsn	Family Name	Preferred Latin Name	Common Name	Park Status	Status Notes	Residency	Nativity	Abundance
178897	Emberizidae	Dendroica townsendi	Townsend's Warbler	Present in Park	C	Migrant	Native	Rare
178431	Hirundinidae	Tachycineta bicolor	Tree Swallow	Present in Park	A,B,F	Breeder	Native	Uncommon
174987	Anatidae	Cygnus columbianus	Tundra Swan	Present in Park	C,F	Migrant	Native	Occasional
175265	Ciconiidae	Cathartes aura	Turkey Vulture	Present in Park	A,B,F	Breeder	Native	Uncommon
179773	Muscicapidae	Ixoreus naevius	Varied Thrush	Present in Park	F	Migrant	Native	Ocassional
179796	Muscicapidae	Catharus fuscescens	Veery	Present in Park	B	Vagrant	Native	Occasional
179366	Fringillidae	Pooecetes gramineus	Vesper Sparrow	Present in Park	A,B,F	Breeder	Native	Common
178427	Hirundinidae	Tachycineta thalassina	Violet-green Swallow	Present in Park	A,B,F	Breeder	Native	Abundant
176221	Rallidae	Rallus limicola	Virginia Rail	Probably Present	E	Migrant	Native	Occasional
178864	Fringillidae	Vermivora virginiae	Virginia's Warbler	Present in Park	A,B,F	Breeder	Native	Common
179023	Vireonidae	Vireo gilvus	Warbling Vireo	Present in Park	A,B	Breeder	Native	Common
179806	Muscicapidae	Sialia mexicana	Western Bluebird	Present in Park	D	Breeder	Native	Rare
174503	Podicipedidae	Aechmophorus occidentalis	Western Grebe	Present in Park	C,F	Migrant	Native	Rare
178287	Tyrannidae	Tyrannus verticalis	Western Kingbird	Present in Park	A,B,F	Breeder	Native	Rare
179039	Fringillidae	Sturnella neglecta	Western Meadowlark	Present in Park	A,B,F	Breeder	Native	Uncommon
176668	Scolopacidae	Calidris mauri	Western Sandpiper	Present in Park	C,F	Migrant	Native	Rare
555388	Strigidae	Otus kennicottii	Western Screech-Owl	Probably Present	E,F	Resident	Native	Occasional
554128	Corvidae	Aphelocoma californica	Western Scrub-Jay	Present in Park	A	Breeder	Native	Rare
179882	Fringillidae	Piranga ludoviciana	Western Tanager	Present in Park	A,B,F	Breeder	Native	Common
178360	Tyrannidae	Contopus sordidulus	Western Wood-Pewee	Present in Park	A,B,F	Breeder	Native	Uncommon
178775	Sittidae	Sitta carolinensis	White-breasted Nuthatch	Present in Park	B,F	Migrant	Native	Rare
179455	Fringillidae	Zonotrichia leucophrys	White-crowned Sparrow	Present in Park	B,F	Resident	Native	Uncommon
174926	Threskiornithida	Plegadis chihi	White-faced Ibis	Present in Park	B,F	Migrant	Native	Uncommon
176654	Scolopacidae	Calidris fuscicollis	White-rumped Sandpiper	Present in Park	D	Migrant	Native	Occasional
179462	Fringillidae	Zonotrichia albicollis	White-throated Sparrow	Present in Park	D	Migrant	Native	Occasional
178014	Apodidae	Aeronautes saxatalis	White-throated Swift	Present in Park	A,B	Breeder	Native	Abundant
175163	Anatidae	Melanitta fusca	White-winged Scoter	Present in Park	A	Vagrant	Native	Occasional
176176	Gruidae	Grus americana	Whooping Crane	Historical	D,F	Migrant	Native	Occasional
176136	Phasianidae	Meleagris gallopavo	Wild Turkey	Probably Present	E,F	Resident	Native	Occasional
176638	Scolopacidae	Catoptrophorus semipalmatus	Willet	Present in Park	C,F	Migrant	Native	Rare
178208	Picidae	Sphyrapicus thyroideus	Williamson's Sapsucker	Probably Present	E	Migrant	Native	Rare
178341	Tyrannidae	Empidonax traillii	Willow Flycatcher	Present in Park	C	Migrant	Native	Rare
176736	Scolopacidae	Phalaropus tricolor	Wilson's Phalarope	Present in Park	B,F	Migrant	Native	Uncommon
178973	Fringillidae	Wilsonia pusilla	Wilson's Warbler	Present in Park	B,F	Migrant	Native	Uncommon
175122	Anatidae	Aix sponsa	Wood Duck	Present in Park	D	Migrant	Native	Occasional
178878	Fringillidae	Dendroica petechia	Yellow Warbler	Present in Park	A,B,F	Breeder	Native	Common
178964	Emberizidae	Icteria virens	Yellow-breasted Chat	Present in Park	C	Migrant	Native	Rare
179043	Fringillidae	Xanthocephalus xanthocephalus	Yellow-headed Blackbird	Present in Park	B,F	Migrant	Native	Rare
178891	Fringillidae	Dendroica coronata	Yellow-rumped Warbler (Audubon's)	Present in Park	A,B,F	Breeder	Native	Uncommon
178891	Fringillidae	Dendroica coronata	Yellow-rumped Warbler (Myrtle)	Present in Park	C	Migrant	Native	Occasional

Appendix E. Management recommendations for Black Canyon National Park and Curecanti national Recreation Area birds listed as "High Priority" in The Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000).

Cliff/Rock Habitat

Peregrine Falcon – This species nests on cliffs on the Colorado Plateau. Restriction of recreational activities near nest sites during the nesting period may be necessary. Recommendations include the establishment of buffer zones to minimize disturbances around nesting sites. Also, since Peregrine Falcons are vulnerable to herbicides and pesticides, their food sources should be monitored for these chemicals.

White-throated Swift – This species also nests on cliffs, and are vulnerable to disturbances due to recreational activities including hiking and rock climbing. Since this species diet consists almost entirely of insects, pesticide use should be monitored carefully.

Montane Forest Habitat

Blue Grouse – This species prefers forests that are not dense, so maintaining open areas in forests may be important.

Band-tailed Pigeon – Needs of the species include good fruit crops. The most productive oak, serviceberry, and chokecherry stands should be identified and protected. Retain large pines for nesting and roosting.

Broad-tailed Hummingbird – This species is dependent upon flowering plants, forbs, and shrubs. Recommendations include managing livestock grazing to assure healthy populations of forbs and shrubs. Also, creation of small forest openings that stimulate forb and shrub development should benefit this species. Aspen stand invasion by conifers may result in declines in habitat quality by reducing abundance and diversity of flowering plants and reducing density of low shrubs and forbs.

Red-naped Sapsucker – These birds are dependent upon snags, and respond well to natural disturbances (fire, insect infestation) in forests. Recommendations include retaining aspen snags in forests, especially near riparian zones, water sources, and habitat edges, and maintaining at least 15 snags per 4 hectares.

Williamson's Sapsucker – These sapsuckers require large-diameter trees for nesting. Fire can create snags for nesting. Large snags created by fire should be retained.

Violet-green Swallow – Populations of these birds depend directly upon the availability of nest cavities. Decayed trees located in open areas, along forest edges, or in open-structured stands are beneficial. Recommendations include retaining all live cavity-bearing trees and all large diameter snags, and maintaining a minimum of 8-12 snags or live cavity-bearing trees per 4 hectares, especially those near water, riparian corridors, or stand edges. Broken trees are also valuable.

Western Bluebird – As with all cavity-nesting species, loss of large trees and snags reduces nesting opportunities. Western Bluebirds and other bird species of open ponderosa pine forest also lose habitat as fire suppression practices allow the development of dense stands.

Appendix E continued.

Recommendations include restoring ponderosa pine forests to more historic conditions of large trees and snags, in clusters, with open, grassy understory.

Montane Shrubland Habitat

Common Poorwill – Although little is known about this species' habitat requirements, restricting the clearing of shrubs and managing for dense stands of trees may be beneficial.

Virginia's Warbler – Recommendations include maintaining larger shrubs, especially Gambel's oak.

Piñon-Juniper Habitat

Black-chinned Hummingbird – Recommendations include maintaining healthy forb components in nesting and adjacent habitats to contribute to healthy nectar and insect food supplies. Hummingbirds are susceptible to pesticides and herbicides; chemical pest control programs should be avoided whenever possible.

Gray Flycatcher – Gray Flycatchers have relatively high tolerance for habitat disturbance; however, they require fairly large stands of woodland (greater than 1 hectare). Avoid management practices that result in fragmenting Piñon-Juniper stands into small patches.

Gray Vireo – Gray Vireo nests are susceptible to predation by jays, squirrels, and chipmunks, and to Brown-headed Cowbird parasitism. Recommendations include reducing predation and parasitism by limiting livestock grazing activities.

Pinyon Jay – These birds are dependent upon piñon seeds and juniper berries, of which most are produced by old trees. Recommendations include managing for large and old age-class trees for high piñon nut and juniper berry production. Also, since Pinyon Jays are secretive during the nesting season and will not nest near human activity, their nesting sites should be considered sensitive to human disturbances.

Juniper Titmouse – Titmice require mature piñon and juniper trees for foraging and nesting cover. Recommendations include managing for large size piñons and junipers.

Riparian Habitat

Lewis's Woodpecker – Lewis's Woodpeckers depend upon large trees and snags and are sensitive to disturbance at nest sites. Recommendations include reducing or eliminating activities that degrade the structure and quality of the riparian systems. Recreational facilities such as roads, trails and campgrounds should be located away from riparian areas. Competition with European Starlings for limited nest cavities may limit breeding success of this species in some areas. Finding ways to reduce competition from these non-native, unprotected birds would be beneficial.

Western Kingbird – Recommendations include reducing disturbances to the riparian areas that this species is dependent upon, locating recreational facilities such as roads, trails, and campgrounds away from riparian areas, and protecting plant species that attract large numbers of insect pollinators.

Appendix E continued.

Black-throated Gray Warbler – Since this species is common, it serves as an indicator of healthy Piñon-Juniper woodland and should be monitored for population changes that could identify problems for it as well as other species associated with this habitat.

Sage Shrubland Habitat

Gunnison Sage-Grouse – The greatest threat to Gunnison Sage-Grouse is loss of habitat due to agricultural conversion, encroachment of pinyon-juniper forests, residential development, and other activities, which create a fragmented sagebrush landscape. Excessive livestock grazing reduces nesting success and brood survival. The genetic effects of population isolation may eventually result in demographic problems including reduced fertility and hatching success. Recommendations include protecting existing sagebrush habitats and reestablishing corridors to maintain viable populations of this species outside of Gunnison County.

Brewer's Sparrow – This sparrow prefers large, contiguous sagebrush stands; the minimum acceptable stand size has not been determined but isolated stands of sagebrush smaller than 2 hectares are not likely to support Brewer's Sparrow. Recommendations include maintaining contiguous sagebrush stands of at least 12 hectares. Treatment of large areas of sagebrush with herbicides has been shown to cause individuals to abandon the treated areas, so herbicide use should be avoided. Fires that remove up to 50% of the sagebrush may result in a decline in local Brewer's Sparrow populations for 1-2 years, but populations should be able to rebound (Petersen and Best 1985).

Sage Sparrow – Sage Sparrows prefer large patches of sagebrush, and may need patches of continuous habitat of at least 130 hectares. Maintenance of large areas of mature sagebrush habitat is recommended.

Semi-desert Shrubland Habitat

Burrowing Owl – Programs to control principal prey species (grasshoppers, crickets, beetles) are detrimental to Burrowing Owl populations, as the insecticides have direct and indirect effects on the birds. Recommendations include avoiding the use of insecticides near Burrowing Owl colonies. Also, control of prairie dogs and ground squirrels, upon which the owls are dependent for burrows, has a negative impact on Burrowing Owl populations and should be avoided.

Loggerhead Shrike – Greasewood and stands of large sagebrush are valuable to this species. Discouraging the conversion of this habitat is recommended. Wildfires are a significant threat to Loggerhead Shrikes in their Semi-desert Shrubland habitat. Full suppression of wildfires in this habitat is recommended. Also, since a large percentage of this species diet consists of insects, the use of insecticides in Semi-desert Shrubland habitats should be avoided.

Horned Lark – Horned Larks require low-stature vegetation in relatively large habitat patches. The conversion of native grassland to agriculture is detrimental to this species. Programs to control the principal prey species (grasshoppers, crickets, beetles) are also detrimental to Horned Larks, as the insecticides have direct and indirect effects on the birds. The use of insecticides over large expanses of land should be avoided.

Appendix F. Point count transects conducted in Black Canyon National Park and Curecanti National Recreation Area and their locations, dates, and observers.

Transect or Point Count ID	Location	Date	Observer
BLCA-01	Green Mountain North	22-May-2003	Glenn Giroir
BLCA-02	Green Mountain South	23-May-2003	Glenn Giroir
BLCA-03	North Vista Trail	20-May-2003	Glenn Giroir
BLCA-04	North Rim Entrance	4-June-2003	Bill Day
BLCA-05	North Rim Entrance	13-June-2003	Bill Day
BLCA-06	North Rim Entrance	5-June-2003	Bill Day
BLCA-07	Grizzly Ridge	14-June-2003	Bill Day
BLCA-08	Deadhorse Trail West	4-June-2003	Glenn Giroir
BLCA-09	Deadhorse Trail East	4-June-2003	Glenn Giroir
BLCA-10	Jones Summit	2-June-2003	Glenn Giroir
BLCA-11	Warner Point South	20-May-2003	Glenn Giroir
BLCA-12	Chukar Trail	25-May-2003	Glenn Giroir
BLCA-13	S.O.B Trail	17-June-2003	Glenn Giroir
BLCA-14	Long Draw	16-June-2003	Glenn Giroir
BLCA-15	Slide Draw	18-June-2003	Glenn Giroir
BLCA-16	Tomichi	12-June-2003	Glenn Giroir
BLCA-17	Gunnison Route	2-June-2003	Glenn Giroir
BLCA-18	Warner Point	13-June-2003	Glenn Giroir
BLCA-19	Warner Point Trail	9-June-2003	Glenn Giroir
BLCA-20	East Portal	9-June-2003	Glenn Giroir
BLCA-21	Oak Flat Trail	9-June-2003	Glenn Giroir
CURE-01	East Portal	2-June-2003	Glenn Giroir
CURE-02	Crystal	24-June-2003	Glenn Giroir
CURE-03	Hermits Rest	6-June-2003	Glenn Giroir
CURE-04	Meyers Gulch	6-June-2003	Glenn Giroir
CURE-05	Blue Creek East	11-June-2003	Glenn Giroir
CURE-06	Curecanti Creek	5-June-2003	Glenn Giroir
CURE-07	Blue Creek West	11-June-2003	Glenn Giroir
CURE-08	Pine Creek West	23-June-2003	Glenn Giroir
CURE-09	Pine Creek	10-June-2003	Glenn Giroir
CURE-10	Soap Creek	5-June-2003	Glenn Giroir
CURE-11	Ponderosa Campground	5-June-2003	Glenn Giroir
CURE-12	Dillon Pinnacles	28-May-2003	Glenn Giroir
CURE-13	Red Creek	28-May-2003	Glenn Giroir
CURE-14	Fourmile Gulch	27-May-2003	Glenn Giroir
CURE-15	Dillon Overlook	27-May-2003	Glenn Giroir
CURE-16	Lake Fork	24-June-2003	Glenn Giroir
CURE-17	Elk Creek	30-May-2003	Glenn Giroir
CURE-18	Iola West	29-May-2003	Glenn Giroir
CURE-19	Rainbow Lake	30-May-2003	Glenn Giroir
CURE-20	Iola East	29-May-2003	Glenn Giroir
CURE-21	Lake City Bridge	3-June-2003	Glenn Giroir
CURE-22	Neversink	3-June-2003	Glenn Giroir
CURE-23	East Cimarron	12-June-2003	Glenn Giroir
CURE-24	Mesa Creek	12-June-2003	Glenn Giroir
CURE-25	Red Creek	24-June-2003	Glenn Giroir
CURE-26	Dry Gulch	24-June-2003	Glenn Giroir
CURE-27	East Elk Creek	24-June-2003	Glenn Giroir
CURE-28	Beaver Creek	24-June-2003	Glenn Giroir

Appendix F. continued (field workers at Black Canyon National Park and Curecanti National Recreation Area)

Bill Day – Bill Day has a bachelors degree in Agriculture from Western Kentucky University, and an associates degree in surveying from Red Rocks Community College. He has recently retired as a surveyor, and has worked for RMBO seasonally since 2000. Bill has been birding for about 7 years, and is currently the president of the Black Canyon Audubon Society. He conducts point count transects throughout the state for RMBO.

Glenn Giroir – Glenn Giroir became a full-time employee of RMBO in 1998. He has a bachelors degree in biology. At RMBO, he works in both research and education. He has worked as a bird bander for five years, and currently supervises RMBO's Grand Junction education and bird banding station. He also works on RMBO's Monitoring Colorado's Birds Program, conducting transects throughout the state. His bird monitoring and research projects have included a Gray and Plumbeous vireo habitat utilization study at Colorado National Monument, bird inventories at Colorado and Dinosaur National Monuments, and currently, a bird inventory at Black Canyon National Monument and Curecanti National Recreation Area.

Appendix G. Rocky Mountain Bird Observatory Point Count Transect Protocol

I. Project overview
Rocky Mountain Bird Observatory (RMBO) in cooperation with Colorado Division of Wildlife, U.S. Forest Service, Bureau of Land Management, and other agencies, has developed a program to monitor bird populations in Colorado that utilizes point counts along transects (i.e., point transects) as the primary sampling technique. The point-transect portion of this program has been designed to be statistically rigorous and biologically sound. This document delineates the design and operation of our point transect program. It is intended to instruct our field workers on how to establish and run the transects *and* for others to follow when establishing monitoring projects of their own, so that design and methods are comparable.

II. Materials
Before heading out into the field, each technician should be sure s/he has the following:

A. A timepiece with a countdown timer and a chime;
B. Binocular*;*
C. A declination-adjustable compass with sighting capability (i.e., a mirror);
D. A clipboard;
E. At least two writing utensils - in case you lose one (pencil or indelible ink pen);
F. GPS unit;
G. Laser Rangefinder;
H. Extra batteries;
I. Data forms sufficient for the transect planned that morning;
J. A master list of four-letter bird codes taped to the clipboard for easy access;
K. A master list of weather and habitat codes, also taped to the clipboard; and
L. A random numbers table, if establishing a new transect.

III. Setting up new sites
Transects were established in BLCA and CURE in 2003. If additional or replacement transects are desired, please refer to Leukering et al. (2003) for protocol.

IV. Conducting the point count transects
Seasonal Timing--Point counts should be performed after all migratory species have returned to the area and as early in the season as possible, but beware of performing them too early and potentially counting a lot of transient migrants, or missing some of the breeders that have not yet arrived. Also, transects within a given habitat should all be performed in as short a period as possible--within three weeks; less, if possible. Obviously, counts performed in grasslands in late May are not comparable to counts performed in the same habitat in early July, as most locally breeding species have completed nesting and are much less vocal in July than they were in May. By limiting the period in which transects in given habitats are performed, we reduce the amount of seasonal variability in singing rates, and hence detections, that we capture in our data.

Point Counts—Upon reaching a point*, fill out ALL the UTM and habitat data on page 1 of the field form* ***first*** (including directions to point). ***Do NOT begin counting until after this is done.*** Doing this *first* is important for two reasons: it will ensure that you do not forget to write it down, as is possible if you wait until after the count is done, and it will allow the local birds to "settle down" somewhat after the disturbance you created when approaching the point. If the GPS unit is taking a long time to get a stable reading, record all other site information and begin the count, *but leave the GPS unit on and don't forget to take a reading before you leave the station!* However, you only need to record UTM locations for new sites; for established sites, simply use the GPS to get to the exact location of the point.

1. **Habitat data**- Pay particular attention to filling in the squares in the habitat block of the data form for *each of the points of the transect* ***while at each point***. The habitat data will be used to relate bird use with vegetative features of the habitat and will have real applications for managing habitats for birds, so please be thoughtful in providing these data. At each point, describe the habitat around the point-count station by selecting the best and next-best habitat

classifications that describe the landscape around the point. When more than two habitats make up significant components of the landscape around you, select the one habitat that occupies the most area around you as "best habitat" and for "next best habitat" select the habitat that is contributing the most birds to the count (other than the "best habitat"). For each habitat selected, you should also assess the seral (or structural) stage and canopy closure of those habitats. Next, select the primary understory vegetation category that best reflects the dominant woody understory vegetation *within a 50 m radius around the count station*, **and** estimate the percent of that 50 m radius occupied by that vegetation type. Then, select the secondary understory vegetation category that best reflects the second-most dominant woody understory vegetation *within a 50 m radius around the count station*, **and** estimate the percent of that 50-m radius occupied by that vegetation type.

2. **Bird data**- After the general habitat data are recorded at the point count station, activate your timepiece and begin counting and recording the birds you see and/or hear. **The count duration is 5 minutes**. *It is important to use a timepiece that has a count-down timer and a chime that rings at the end of the period*. This avoids counting birds beyond the duration of the count and eliminates having to look at the timepiece to see how much time remains in the count, and thus potentially miss birds. All birds detected during the 5-minute count period should be recorded using the ***correct 4-letter codes***. Birds flushed from the count station upon arrival should also be recorded (and their distance *from the point* measured), as it is assumed that these birds would have remained at their original locations were it not for the disturbance created by the observer.

In short, for each bird you record on a point transect, you should also record:
1) the **radial distance** from you to the bird;
2) **how** the bird was detected; and
3) the **sex** of the bird (if known);

Measuring Distances: Using the rangefinder, measure (or estimate when necessary, using the rangefinder as a gauge) the distance from the point to *each and every individual bird detected during the count* and record the distance on the data sheet under "Radial Distance". **Every bird recorded on point transects must have a radial distance measurement associated with it!!! This is imperative!** Because this monitoring program relies on distance-sampling techniques and analyses, *birds without associated distances are essentially useless and cannot be analyzed with the larger datasets!*

All distances should be ***measured*** using the binocular rangefinder whenever possible. If you cannot get a direct line of sight to the location of a bird, use the rangefinder to measure to a point close to that bird, and then add or subtract the estimated distance between that point and the bird to obtain the best possible distance estimate from the point to the bird. Distance sampling relies upon the assumption that all distances are measured to within 10% of true accuracy, so *use your rangefinders as much as possible!*

Always measure distances to where the bird was first *detected*, not necessarily to where it was first identified. For birds that are vocalizing but not seen, try to pin-point their locations to a specific tree/bush, then measure the distance to that tree. If you are unable to pin-point its location to a specific tree/bush, then estimate the distance, but ***do not round distances*** *to the nearest 5- or 10-m interval*. Rounding distances causes heaping at popular values and makes analysis more problematic! If you see/hear a bird that is beyond the range of the rangefinder, measure to the furthest object in the direction of the bird that the rangefinder can measure to, and estimate the distance beyond that object to the bird. Add your estimate plus the measured distance and record the sum as the total distance.

Other Bird-related Data: In the "How" column, record ***how each bird was detected***, i.e., whether the bird was detected by ear (C=calling, S=singing, D=drumming, O=other, e.g. wing beats) or by sight (V=visual). In the "Sex" column, record the sex of the bird, *if known* (F=female, M=male, U=unknown). Assume that a singing bird is a male unless it is an individual of a species of tanager or of the Cardinalidae. However, if an individual bird is singing emphatically and repeatedly, then record it as a male, regardless of species. Females of many species will sing, although generally their songs are less emphatic and extensive.

Unseen birds (or monomorphic birds that are seen) giving only non-sex-specific calls should not be sexed.

Example: On point 1 of a Ponderosa Pine transect, you detect six birds. You see a male HAWO, hear a drumming WISA, a calling WBNU, a con-tinuously singing WETA, a singing CHSP, and you see a brown-plumaged CAFI. You should make estimates of radial distances for all six individ-uals and take bearings for the two woodpeckers and the CAFI. In order, the "How" column should be filled in with V, D, C, S, S, and V. The "Sex" column should be filled in: M, U, U, M, M, and U, respectively (male CAFI require two years to achieve adult plumage, thus a brown-plumaged bird cannot be sexed in the field).

Flyovers: For flyovers, enter the species code and an "F" in the "How" column and draw a short line through the distance column – i.e. you do not need to estimate distance for flyovers. *For individuals of species that habitually hunt on the wing (e.g., raptors, swifts, swallows), record those individuals that appear to be foraging as on the point, **NOT** as flyovers*. Additionally, individuals that are first detected in flight, but that are simply flying from perch to perch within the habitat should NOT be recorded as flyovers. Provide distance estimates to those flying individuals that you record as using the habitat around the point. Thus, estimate distance to the point at which you first saw the bird(s) and record the best how-detected variable.

Other Survey Tips: While conducting counts, be sure to look and listen in all directions, including up. It is best to slowly rotate in place while you are counting; making three complete turns in the five minutes is probably adequate. **Don't forget to look up!** It is very important to stay in one place while counting - *it is called a point count for a reason*. It is acceptable to take a step or two away from the point in order to identify a bird that you have detected from a point, but cannot identify from the point, but ***ALWAYS*** return ASAP to the point. Do NOT chase birds during the count. After the five minutes are up, you may chase down a bird that you couldn't identify on the point in order to get an identification for the point, but do not leave the point during the five minutes and do NOT record birds on the point count that were found only while you were chasing another bird. ***Remember: Consistency of methods and coverage is the key to useful data!*** Be aware of what is going on around you and realize that you will hear individual birds on multiple points. **DO NOT** count an individual bird that you saw and/or heard on a previous point.

Example 2: On a Grassland point, you see an adult male NOHA quartering low over the habitat. You record it for that point, finish the point, and walk to the next point. After writing down the point information, you start the count. You look in the direction of the previous point and see two NOHAs, one of which is an adult male. For the second point, you should record only one NOHA.

Example 3: At the same point as above, you hear two WEMEs singing, each bird roughly perpendicular to the transect line on opposite sides of the transect from each other. When you start the next point count, you hear three WEMEs, two from back by the previous point on opposite sides of the transect and one in the opposite direction toward the third point. You would record only one WEME for the second point, as you already recorded two WEME from that area on the first point.

V. Potential problems when conducting point counts

A. *Window species*--This is "listening through" (not detecting) a particular common species because you are habituated to it (Mourning Dove is a common window species).

B. *Looking/listening everywhere*--Be sure to look up regularly, particularly in taller forest types and, particularly if you are wearing a hat. Be sure to look AND listen in all directions (try to look and listen in all directions about equally).

C. *Stand at points*--**Do not sit or kneel**, as this can reduce the number of individuals recorded, by decreasing visibility, audibility and dexterity. If you are tired, take a short break after the point count.

D. *Recording data*—Do not use a second person as a scribe; this can enable the observer to record more birds (or fewer, if the scribe detracts from the job at hand or creates more disturbance), therefore those points are not comparable to points that were conducted by one person.

E. *NO pishing*--Do not attract birds to you. Pishing is permissible after the count in order to attempt to identify an individual that was not identifiable on the count, but *do not add other individuals after the count that were not first detected during the count period.*

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F. *Airplane (and other) noise*--If audibility of birds is reduced by mechanical noise, interrupt the count (i.e., stop your timer), and restart when the noise abates so that the total time still equals a five-minute count.
G. *Guessing*--Never guess on the identity of a bird. Instead, use an unknown code (*e.g*. unidentified sparrow - UNSP) for those individuals about which you're not sure. *However, recording a lot of unidentified birds is an indication that you need to learn/practice more before performing point counts*.
H. *Practice*--**Practice in habitat before conducting actual counts**. Be familiar with the songs and calls of *all* species found in a habitat before conducting point transects in that habitat. Use the habitat-specific bird lists along with CDs or tapes to practice before (and during) the field season.

Explanation of field form and data codes.

***Transect #*:** Enter the transect number as described in Appendix B.

Observer: Enter your first two initials *and your full last name*.

Map coord.: Enter the map coordinates for the transect Access Point, using either or both the *DeLorme* or *Roads of Colorado* atlases
Directions to access point (VERY IMPORTANT!)*:** If conducting a pre-established transect, disregard this field; all established transects have directions provided. However, if moving an access point, ***Provide explicit directions to the new access point from some nearby town, major intersection, or geographical feature readily found on a USGS topo map. Provide mileages from intersections or other landmarks using your odometer. Take GPS readings and record **UTM coordinates** (and stored GPS waypoint#) for each access point. Also, **be explicit in your description about the *exact location* of the access point** (e.g., "the right post of the green metal gate" or "the NE corner of the bridge").

Transect description*:** Again, if conducting a pre-existing transect, disregard this field. If establishing a new transect or moving points along an existing transect, provide the **distance** and **bearing** *from the access point* ***to *the first point* (do not provide bearing from first point back to the access point). Then, provide *between-point accounts*, describing the topography, habitat, landmarks and/or other features that you pass prior to arriving at the next count station, with sufficient detail so that future observers can follow the same route that you are establishing. ***It is especially important that you record any turns, changes in bearings, or other deviations that you make from the original transect bearing.***
Example: Pt#6: From pt 5, turn to 356□ and head down steep drainage. Stay on bearing, passing ~45 m to the right of drainage bottom, where drainage meets larger valley. Continue through small stand of aspen; cross dirt 2-track at ~175 m; cross small creek at ~225 m. After creek, head up small hill with tall spruce trees on top. Point is on top of this hill, ~3 m south of largest-diameter spruce.

Date: Enter the date in the format: MM-DD-YY

Time: Enter start and stop times for entire transect (not individual points) using 24-hour clock.

Sky (start and end)**:** Enter one-digit codes at beginning and end of transect (not at points)
0=0-15% cloud cover *1=16-50% cloud cover* *2=51-75% cloud cover*
3=76-100% cloud cover *4=fog* *6=drizzle*
You shouldn't conduct counts in any other conditions!

Wind (start and end)**:** Enter one-digit codes at beginning and end of transect
0=Less than 1 mph; smoke rises vertically
1=1-3 mph; smoke drift shows wind direction
2=4-7 mph; leaves rustle, wind is felt on face
3=8-12 mph; leaves, small twigs in constant motion; light flag extended
4=13-18 mph; raises dust, leaves, loose paper; small branches in motion
YOU SHOULDN'T CONDUCT COUNTS IN ANY OTHER CONDITIONS!

Temperature (start and end)**:** Use degrees F.

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Transect notes: Information relevant to the site, interesting birds seen, good camp sites, cool scenery, or other tidbits that either don't really fit in other places or that future surveyors might find interesting.

UTM data: *Enter the UTM coordinates* (**using the NAD27 CONUS datum** in navigation setup) *for each point-count station associated with a **new** site* (*for established sites, only take a GPS reading if you are moving the count station; in these cases, provide new directions to the count station as well*). Be sure that the GPS reading is essentially stable before recording the UTM location. **Record all *new* UTM coordinates in the appropriate spaces provided on the field form and save all *new* UTM coordinates in the GPS units using the "Mark Waypoint" feature**.

Within 100m of road (Y/N): Enter "Y" for yes and "N" for no for **EACH** point based on your best knowledge of the site. For our purposes, a "road" must be substantial enough so that it either causes a significant disruption of the understory vegetation OR a break in the canopy. For example, a grassy 2-track running through an open meadow should not be considered a road, whereas a gravel or dirt road that forms a 3 to 4-m wide break in the grass cover would be considered a road. Similarly, an old, pine needle-covered logging track in an open forest situation should not be considered a road, whereas a logging road that causes a clear and wide break in the woody understory vegetation, or in the forest canopy, should be considered a road.

Bearing to point: Enter the true bearing (do not use magnetic bearings) you followed from the last point (or access point) to arrive at the current point.

Best habitat classification: Enter the two-letter code of the habitat that BEST describes the habitat surrounding the point count station. Consider the entire landscape around the count station from which you are picking up birds and select *the dominant habitat type that occupies the greatest amount of this area*.

Habitat classification codes:

MF = Montane Forest	RP = Riparian
MS = Montane Shrubland	SA = Sage Shrubland
PJ = Pinyon-juniper	

Best habitat seral stage and canopy closure: Enter one-digit code of seral stage of habitat used in best habitat classification, followed by a one-letter code for canopy closure:

1=grass-forb stage 2=shrub-seedling stage 3=sapling-pole stage 4=mature stage 5=old growth

a=<40% canopy closure b=40-70% canopy closure c=>70% canopy closure

seral stage assessment:

- *1 = Grass-Forb stage:* Grasses and forbs dominate; seedlings and shrubs scarce or absent. This stage usually results from fire and/or logging.
- *2 = Shrub-Seedling stage:* Small saplings, <=1 inch dbh, and a variety of woody shrubs small deciduous trees are present, as well as herbs. Litter and downed material may exist.
- *3 = Sapling-Pole stage:* Trees 1-8 inches dbh, 3-17 m in height; age of stand 6-50 yrs old. Stands in this stage can be quite dense, normally exceeding 70% canopy closure, and are typically even aged. Some small diameter snags may be present.
- *4 = Mature stage:* Avg. dbh of trees >8 inches. *Stand may be multi-layered*, and snags suitable in size for most cavity-nesting birds should be present. Shrub layer, if present, is usually well developed.
- *5 = Old-Growth stage:* Avg. dbh of dominant trees >8 inches, with some trees between 30 to 60 inches; *stand typically of uneven age, woody understory is extensive and well-developed*; canopy and stand structure generally open; numerous large snags, dying trees, and downfall present.

Next-best habitat classification: Enter two-letter code of habitat that NEXT best describes the habitat surrounding the point. Consider the entire landscape from which you are picking up birds and select the next-most dominant habitat type occupying the greatest amount of this area ***OR** select the habitat*

that is contributing the most birds to the point count (if different than the Best Habitat).

Next-best habitat seral stage and canopy closure: Enter one-digit code of seral stage and one-letter code for canopy closure of habitat used in next-best habitat classification.

Primary understory classification: Enter two-letter code for primary understory vegetation type that best describes the **woody shrub layer** within a 50-m radius of the point:

BG=bare ground	*GO=Gambel's oak*	*GF=grass/forb*
MM=mountain mahogany	*NS=not sage or willow*	*SA=sage*
SV=serviceberry	*SN=snowberry*	*WI=willow*

Primary understory percentage: Estimate the percent coverage of the primary understory type within a 50-m radius of point and enter the 1-digit code:

1=1-20% 2=21-40% 3=41-60% 4=61-80% 5=81-100%

Secondary understory classification: Enter two-letter code for secondary understory type that NEXT BEST describes the **woody shrub layer** within a 50-m radius of the point, as described above.

Secondary understory percentage: Estimate the percent coverage of the secondary understory type within a 50-m radius of point and enter the 1-digit code, as described above.

POINT-COUNT DATA

Point #: Enter number of point (01-15) on the transect

Species: Enter **CORRECT** four-letter code for birds. Species that cause particular problems for observers include: **Northern Shoveler** (NSHO, not NOSH), Ring-necked Pheasant (RINP, not RNPH), **Western Wood-Pewee** (WEWP, not WWPE), **Gray Jay** (GRAJ, not GRJA), **Tree Swallow** (TRES, not TRSW), **Bank Swallow** (BANS, not BASW), **Barn Swallow** (BARS, not BASW), **MacGillivray's Warbler** (MGWA, not MAWA), **Yellow Warbler** (YWAR, not YEWA), **Yellow-rumped Warbler** (AUWA - for Audubon's Warbler, MYWA for Myrtle's Warbler, not YRWA), **Lark Bunting** (LARB, not LABU), **Sage Sparrow** (SAGS, not SASP), **Savannah Sparrow** (SAVS, not SASP), **Lazuli Bunting** (LAZB, not LABU) and **Red-winged Blackbird** (RWBL, not RWBB) (see pages 7-8 for complete list).

Radial distance: Measure radial distance (estimate only when necessary) to *each* bird (that is, direct distance from point to bird), using a binocular rangefinder, in one-meter units (when estimating, **DO NOT** round off to five- or ten-meter units) -- if beyond a kilometer (1000 meters), fit number in the three spaces provided as best you can.

How: Enter code for how each individual was **detected**: C=calling, S=singing, D=drumming, O=other aural cue; V=visual; F=flyover; K=flock

Sex: Enter code for sex: M=male, F=female, U=unknown

VERY IMPORTANT: Skip a line between entries for individual points and/or individual legs of the transect. That is, all individual birds on a particular point (or transect leg) should be bunched together on the form; then you should leave a blank line before starting entries for the next transect leg (or point).

OTHER IMPORTANT REMINDERS:

Before leaving your transect sites, don't forget to:

enter transect and page #'s at the bottom of EACH page.

record the end of transect data (time, temp, sky, wind, transect notes) IMMEDIATELY UPON COMPLETING THE TRANSECT.

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go through your data sheets carefully to make sure that you have not forgotten to record any data.

provide clear and explicit directions to the access point, if you have not already done so.

Key to four-letter bird name codes (alphabetical by species name).

Code	Species	Code	Species	Code	Species
AMAV	American Avocet	BRSP	Brewer's Sparrow	DOWO	Downy Woodpecker
AMBI	American Bittern	BTLH	Broad-tailed Hummingbird	DUFL	Dusky Flycatcher
AMCO	American Coot	BRCR	Brown Creeper	EAGR	Eared Grebe
AMCR	American Crow	BRTH	Brown Thrasher	EABL	Eastern Bluebird
AMDI	American Dipper	BCRF	Brown-capped Rosy-Finch	EAKI	Eastern Kingbird
AMGO	American Goldfinch	BHCO	Brown-headed Cowbird	EAME	Eastern Meadowlark
AMKE	American Kestrel	BUOR	Bullock's Oriole	EAPH	Eastern Phoebe
AMPI	American Pipit	BUOW	Burrowing Owl	EASO	Eastern Screech-Owl
AMRO	American Robin	BUSH	Bushtit	EUCD	Eurasian Collared-Dove
AWPE	American White Pelican	CAGU	California Gull	EUST	European Starling
AMWI	American Wigeon	CAGO	Canada Goose	EVGR	Evening Grosbeak
ATFL	Ash-throated Flycatcher	CANV	Canvasback	FEHA	Ferruginous Hawk
BAEA	Bald Eagle	CANT	Canyon Towhee	FISP	Field Sparrow
BAOR	Baltimore Oriole	CANW	Canyon Wren	FLOW	Flammulated Owl
BTPI	Band-tailed Pigeon	CAFI	Cassin's Finch	FOTE	Forster's Tern
BANS	Bank Swallow	CAKI	Cassin's Kingbird	FOSP	Fox Sparrow
BNOW	Barn Owl	CASP	Cassin's Sparrow	FRGU	Franklin's Gull
BARS	Barn Swallow	CAEG	Cattle Egret	GADW	Gadwall
BEVI	Bell's Vireo	CEDW	Cedar Waxwing	GAQU	Gambel's Quail
BEKI	Belted Kingfisher	CCLO	Chestnut-collared Longspur	GOEA	Golden Eagle
BEWR	Bewick's Wren	CHRA	Chihuahuan Raven	GCKI	Golden-crowned Kinglet
BLPH	Black Phoebe	CHSW	Chimney Swift	GRWA	Grace's Warbler
BLSW	Black Swift	CHSP	Chipping Sparrow	GRSP	Grasshopper Sparrow
BLTE	Black Tern	CHUK	Chukar	GRCA	Gray Catbird
BBCU	Black-billed Cuckoo	CITE	Cinnamon Teal	GRFL	Gray Flycatcher
BBMA	Black-billed Magpie	CLGR	Clark's Grebe	GRAJ	Gray Jay
BCCH	Black-capped Chickadee	CLNU	Clark's Nutcracker	GRVI	Gray Vireo
BCHU	Black-chinned Hummingbird	CLSW	Cliff Swallow	GBHE	Great Blue Heron
BCNH	Black-crowned Night-Heron	COGR	Common Grackle	GCFL	Great Crested Flycatcher
BHGR	Black-headed Grosbeak	COME	Common Merganser	GHOW	Great Horned Owl
BNST	Black-necked Stilt	CONI	Common Nighthawk	GTGR	Great-tailed Grackle
BTYW	Black-throated Gray Warbler	COPO	Common Poorwill	GRPC	Greater Prairie-Chicken
BTSP	Black-throated Sparrow	CORA	Common Raven	GRRO	Greater Roadrunner
BLGR	Blue Grosbeak	COSN	Common Snipe	GRHE	Green Heron
BGRU	Blue Grouse	COYE	Common Yellowthroat	GTTO	Green-tailed Towhee
BLJA	Blue Jay	COHA	Cooper's Hawk	AGWT	Green-winged Teal
BGGN	Blue-gray Gnatcatcher	COFL	Cordilleran Flycatcher	GUSG	Gunnison Sage-Grouse
BWTE	Blue-winged Teal	CBTH	Curve-billed Thrasher	HAWO	Hairy Woodpecker
BOBO	Bobolink	GHJU	Dark-eyed Junco	HAFL	Hammond's Flycatcher
BOOW	Boreal Owl	DICK	Dickcissel	HETH	Hermit Thrush
BRBL	Brewer's Blackbird	DCCO	Double-crested Cormorant	HOGR	Horned Grebe

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HOLA	Horned Lark
HOFI	House Finch
HOSP	House Sparrow
HOWR	House Wren
INBU	Indigo Bunting
JUTI	Juniper Titmouse
KILL	Killdeer
LBWO	Ladder-backed Woodpecker
LARB	Lark Bunting
LASP	Lark Sparrow
LAZB	Lazuli Bunting
LEBI	Least Bittern
LETE	Least Tern
LEGO	Lesser Goldfinch
LEPC	Lesser Prairie-Chicken
LESC	Lesser Scaup
LEWO	Lewis's Woodpecker
LISP	Lincoln's Sparrow
LOSH	Loggerhead Shrike
LBCU	Long-billed Curlew
MGWA	MacGillivray's Warbler
MALL	Mallard
MAWR	Marsh Wren
MCLO	McCown's Longspur
MIKI	Mississippi Kite
MOBL	Mountain Bluebird
MOCH	Mountain Chickadee
MOUP	Mountain Plover
MODO	Mourning Dove
NOBO	Northern Bobwhite
RSFL	Northern Flicker
NOGO	Northern Goshawk
NOHA	Northern Harrier
NOMO	Northern Mockingbird
NOPI	Northern Pintail
NOPO	Northern Pygmy-Owl
NRWS	Northern Rough-winged Swallow
NOSG	Northern Sage-Grouse
NSWO	Northern Saw-whet Owl
NSHO	Northern Shoveler
OSFL	Olive-sided Flycatcher
OCWA	Orange-crowned Warbler
OROR	Orchard Oriole
OSPR	Osprey
PEFA	Peregrine Falcon
PBGR	Pied-billed Grebe
PIGR	Pine Grosbeak
PISI	Pine Siskin
PIJA	Pinyon Jay
PLVI	Plumbeous Vireo
PRFA	Prairie Falcon
PUMA	Purple Martin
PYNU	Pygmy Nuthatch
RECR	Red Crossbill
RBWO	Red-bellied Woodpecker
RBNU	Red-breasted Nuthatch
RHWO	Red-headed Woodpecker
RNSA	Red-naped Sapsucker
RTHA	Red-tailed Hawk
RWBL	Red-winged Blackbird
REDH	Redhead
RNDU	Ring-necked Duck
RINP	Ring-necked Pheasant
RODO	Rock Dove
ROWR	Rock Wren
RCKI	Ruby-crowned Kinglet
RUDU	Ruddy Duck
RUHU	Rufous Hummingbird
RCSP	Rufous-crowned Sparrow
SAGS	Sage Sparrow
SATH	Sage Thrasher
SACR	Sandhill Crane
SAVS	Savannah Sparrow
SAPH	Say's Phoebe
SCQU	Scaled Quail
STFL	Scissor-tailed Flycatcher
SCOR	Scott's Oriole
SSHA	Sharp-shinned Hawk
STGR	Sharp-tailed Grouse
SEOW	Short-eared Owl
SNEG	Snowy Egret
SNPL	Snowy Plover
SOSP	Song Sparrow
SORA	Sora
SPSA	Spotted Sandpiper
SPTO	Spotted Towhee
STJA	Steller's Jay
SWHA	Swainson's Hawk
SWTH	Swainson's Thrush
TTWO	Three-toed Woodpecker
TOSO	Townsend's Solitaire
TRES	Tree Swallow
TUVU	Turkey Vulture
UPSA	Upland Sandpiper
VEER	Veery
VESP	Vesper Sparrow
VGSW	Violet-green Swallow
VIRA	Virginia Rail
VIWA	Virginia's Warbler
WAVI	Warbling Vireo
WEBL	Western Bluebird
WEGR	Western Grebe
WEKI	Western Kingbird
WEME	Western Meadowlark
WESO	Western Screech-Owl
WESJ	Western Scrub-Jay
WETA	Western Tanager
WEWP	Western Wood-Pewee
WBNU	White-breasted Nuthatch
MWCS	White-crowned Sparrow
WFIB	White-faced Ibis
WTPT	White-tailed Ptarmigan
WTSW	White-throated Swift
WWCR	White-winged Crossbill
WITU	Wild Turkey
WILL	Willet
WISA	Williamson's Sapsucker
WIFL	Willow Flycatcher
WIPH	Wilson's Phalarope
WIWA	Wilson's Warbler
WODU	Wood Duck
YWAR	Yellow Warbler
YBCU	Yellow-billed Cuckoo
YBCH	Yellow-breasted Chat
YHBL	Yellow-headed Blackbird