Monitoring the Birds of the National Park Service, Northern Colorado Plateau Network (NCPN): 2007 Field Season Report

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February 2008

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Tech. Report # M-NPS-NCPN-07-01

ROCKY MOUNTAIN BIRD OBSERVATORY

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Research*:* *RMBO conducts scientific research on bird distribution and abundance in relation to habitat, habitat changes, and other ecological patterns and processes relevant to bird conservation.*

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Suggested Citation: ***Giroir, G.*** **2008**. *Monitoring the Birds of the National Park Service, Northern Colorado Plateau Network, 2007 Field Season Report.* Tech. Rep. M-NPS-NCPN-07-01. Rocky Mountain Bird Observatory, Brighton, CO, 102 pp.

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EXECUTIVE SUMMARY

In 2005, Rocky Mountain Bird Observatory (RMBO) and the National Park Service (NPS), initiated *Monitoring Birds of the National Park Service, Northern Colorado Plateau Network* (NCPN), using a protocol similar to other RMBO monitoring programs as delineated by Panjabi et al. (2006). This monitoring program continued through 2007. RMBO designed the program to provide statistically rigorous long-term trend data for populations of most diurnal, regularly breeding landbird species in the NCPN. The program provides information needed to effectively manage and conserve bird populations in the NCPN, including the spatial distribution, abundance, and relationship to important habitat characteristics for each species. The program also supports the NCPN's efforts to develop long-term natural resource monitoring plans for its park units, and contributes to RMBO's broader landscape-scale breeding bird monitoring program, which currently includes 11 states in the Rocky Mountains and Great Plains regions.

The program consists of 45 point transects (15 transects each in low-elevation riparian, pinyon-juniper, and sage shrubland habitats) within 11 different parks. Each transect is conducted two times each spring/summer. We use program DISTANCE to generate density estimates using data collected at point count stations.

In 2007, we detected a total of 10,576 individual birds of 128 species on point transects. We detected 4,023 individual birds of 92 species in low-elevation riparian habitat, 3,382 individual birds of 90 species in pinyon-juniper habitat, and 3,171 individual birds of 91 species in sage shrubland habitat.

In 2007, in a departure from our usual DISTANCE analyses methods, we pooled the 2005-2007 point transect data to determine density estimates for each year. This allowed us to calculate density estimates for some low-density species that did not have large enough sample sizes to calculate density estimates using only the 2007 data. The pooled 2005-2007 data yielded robust density estimates (CV < 50%) for 41 species and moderately robust estimates (CV = 50-75%) for 11 additional species. We should be able to reach our target of detecting a population change of at least 3% within 30 years for these 52 species, which represent 40 percent of all species detected on point transects in the NCPN during 2005-2007 and represent more than 90 percent of all individual birds observed during 2005-2007.

ACKNOWLEDGEMENTS

This project was funded by the National Park Service through a cooperative agreement with the Rocky Mountain Bird Observatory.

We thank Steve Garmin of the National Park Service for his role in the development of the project, his continued involvement in the project, and for his logistical assistance before, during, and after the field season. We thank the superintendents, resource managers, and biologists in the individual parks for providing us with research permits, allowing us access into the backcountry of the parks, and for their logistical assistance. We thank our crew of field biologists: Michelle Giroir, and Matt Gracey, who conducted transects and collected data. We thank Rob Sparks for making the maps for the report. We thank Chandman Sambuu for his work on the RMBO database and data entry and management system. We thank Jennifer Blakesley for providing her expertise in statistical analysis to the project. And, we thank Jennifer Blakesley, Nancy Drilling, and Chris White of the Rocky Mountain Bird Observatory for their review of this report.

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INTRODUCTION

Program History

In 1995 the Rocky Mountain Bird Observatory (RMBO), in conjunction with the Colorado Division of Wildlife (CDOW), the United States Forest Service (USFS), the Bureau of Land Management (BLM) and the National Park Service (NPS), began efforts to create and conduct a Colorado-wide program to monitor breeding-bird populations. Since then, RMBO has continually expanded its monitoring efforts to include neighboring states using a similar transect selection protocol and survey methodology. In 2005 RMBO began work with the National Park Service to monitor landbirds in 11 National Parks in three states (CO, WY, UT) in the Northern Colorado Plateau Inventory and Monitoring Network (NCPN). We plan to continue to build partnerships and to expand the level of effort so that bird population monitoring occurs across Bird Conservation Regions (BCR).

Monitoring Objectives

RMBO's bird monitoring programs are designed to provide population status trend estimates for all regularly-occurring breeding landbird species within each program area. Initially, we expect to collect data to provide "early-warning" information for all species that can be monitored through a habitat-based approach. After establishing this monitoring framework, we anticipate collecting more demographic information and testing *a priori* hypotheses to determine the possible reasons for any observed declines and to better inform management decisions. Herein we discuss the initial "early-warning" monitoring framework, the monitoring goals and progress. In the future, with the initial trend information, we hope to develop and establish the second phase of the program to gather demographic and other information to address specific management issues.

The specific objectives of RMBO's monitoring program are:

1.) to integrate existing bird monitoring efforts in the region to provide better information on distribution and abundance of all breeding birds, and especially for priority species;
2.) to provide basic habitat association data for most bird species to address habitat management issues;
3.) to provide long-term status and trend estimates for all regularly occurring breeding landbird species in the region, with a target of detecting a minimum rate of population change of 3.0% per year over a maximum time period of 30 years;
4.) to maintain a high-quality database that is accessible to all of our collaborators as well as the public on the web in the form of raw and summarized data and,
5.) to generate decision support tools such as population estimate models that help guide conservation efforts and provide a better measure of our conservation success.

METHODS

Study Area

In winter 2005, the National Park Service selected three habitats (low-elevation riparian, pinyon-juniper, and sage shrubland) in which to place 45 point transects. These habitats were selected by a panel of National Park Service resource managers on the basis of distinct avifaunal communities, as well as management questions associated with each in the NCPN. During the spring and summer of 2005, RMBO staff established the 45 transects.

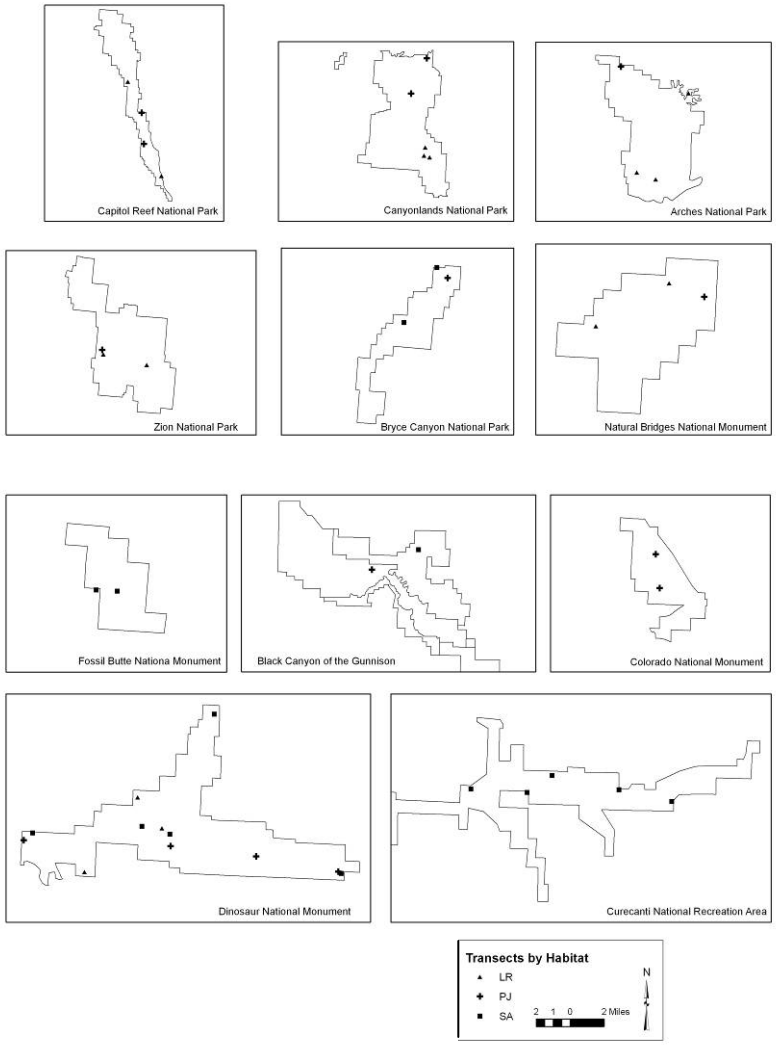

Figure 1. Point-transect locations within the National Park Service Northern Colorado Plateau Network.

Low-elevation Riparian

This habitat is comprised mostly of scattered stands of Fremont cottonwood (*Populus fremontii*) and boxelder (*Acre negundo*) along perennial streams, sometimes within deeply-cut canyons. Tamarisk (*Tamarix sp*), also known as saltcedar, is an exotic species that has invaded much of the low-elevation riparian habitat of the western United States. While the NPS is working to eradicate tamarisk in many of its park units, it is still fairly common in this habitat type.

Pinyon-Juniper

Pinyon-juniper typically lies just above semidesert shrubland in elevation. It covers most of the ridges and mesas in the NCPN and is the most extensive habitat there. Pinyon-juniper varies in composition with various ratios of its two main components – pinyon pine (*Pinus edulis*) and juniper (*Juniperus* spp.).

Sage Shrubland

The sagebrush shrubland community occurs extensively on the Colorado Plateau. The stands of sage that we survey in the NCPN are generally narrow "fingers" of pure sage and our point-count stations are often near forests. The most common species of sagebrush in the NCPN are big sagebrush (*Artemisia tridentata*) and mountain sagebrush (*Artemisia frigida*).

Field Personnel

Three experienced biologists with excellent aural and visual bird-identification skills comprised the RMBO staff who executed the field component of NCPN in 2007. Each biologist had several years experience with RMBO bird monitoring protocol and had excellent knowledge of local birds. Each biologist also completed a training program at the beginning of the season to ensure full understanding of the field protocols.

Site Selection

Transect sites were selected during the winter of 2005, and ground-proofed that spring. The sites were randomly selected from a pool of habitat "stands" that were accessible (not on plateaus with vertical cliffs) and large enough to accommodate transects of 15 point counts. All transects were established during the 2005 field season, and no changes have been made to them since.

Point Transect Protocol

We conducted point transects following protocol established by Leukering (2000) and modified by Panjabi et al. (2006) in order to sample bird populations in each habitat selected for monitoring. We conducted all transects during mornings, between ½-hour before sunrise and 11 AM; we completed most transects before 10 AM.

We conducted 15 five-minute point counts at stations located at 250-m intervals along each point transect. In order to increase our sample size, we conducted each of the 45 transects two times (each visit was on a separate day). We recorded all bird detections on standardized forms. We recorded Fly-overs (birds flying over, but not using the immediate surrounding landscape) but excluded them analyses of density. For each bird detected, we recorded the species, sex, how it was detected (e.g., call, song, drumming, etc.), and distance from the observation point. Whenever possible, we measured distances using laser rangefinders. When it was not possible to measure the distance to a bird, we used rangefinders to gauge distance estimates by measuring to some nearby object.

We recorded atmospheric data (i.e., temperature in degrees Fahrenheit, cloud cover, precipitation, and wind speed using the Beaufort scale) and the time at the start and end of each transect. We measured distances between count stations using hand-held Global Positioning System units. We recorded all GPS data in Universal Transverse Mercator (UTM) North American Datum 1983. At each count station, we recorded UTM coordinates, whether or not the station was within 100m of a road, and vegetation data, including the structural stage and canopy closure of the forest, mean canopy height, the types and relative proportions of overstory trees, the sub-canopy volume and tree species composition, and the percent coverage and types of shrubs within a 50 m radius of the point. We recorded these data prior to beginning each bird count.

Data Analysis

We used Program DISTANCE (Thomas et al. 2006) to generate density estimates (*D*) using data collected at point count stations. The notation, concepts, and analysis methods of Distance were developed by Buckland et al. (1993). In Distance analysis, a unique detection function is fit to each distribution of distances associated with a species in a given habitat. Because the detection function is unique to each species in each habitat, Distance analysis avoids some serious problems inherent in traditional analyses of point count data (e.g., unquantifiable differences in detectability among habitats, species, and years). Distance analysis relies on three assumptions, all of which are reasonably well met by our protocol: 1) all birds at distance=0 are detected, 2) distances of birds close to the point are measured accurately, and 3) birds do not move in response to the observer's presence.

This year, in a departure from our usual analyses methods, we pooled the 2005-2007 point transect data in each habitat type to determine density estimates for each year. This allowed us to calculate density estimates for some low-density species that would not have had large enough sample sizes to calculate density estimates if we had used only the 2007 data.

RESULTS

In 2007, we conducted a total of 1347 point counts along 45 point transects (all transects were conducted twice) in three habitats between 01 May and 07 July, 2007 (Table 1).

Table 1. Bird sampling periods and effort in each habitat in the Northern Colorado Plateau Network (NCPN), summer 2007.

Habitat	Dates Sampled	# Transects	# Point Counts
Low-Elevation Riparian	01 May – 26 June	15*	450
Pinyon-Juniper	02 May – 01 July	15*	447
Sage Shrubland	15 May – 07 July	15*	450
All habitats	**01 May – 07 July**	**45***	**1347**

*All transects were conducted twice.

We detected a total of 10,576 individual birds of 128 species on point transects (Table 2). We detected 53 species in sufficient numbers to estimate density in at least one habitat, and we were able to estimate density in multiple habitats for many of those (Tables 3-5).

We detected 4,023 individual birds of 92 species in low-elevation riparian, 3,382 individual birds of 90 species in pinyon-juniper, and 3,171 individual birds of 91 species in sage shrubland (Table 2). Of the three habitats surveyed, the average number of species detected per transect and point count was highest in low-elevation riparian and lowest in sage shrubland (Table 2).

Table 2. Bird totals and average number of birds and species in habitats surveyed in the Northern Colorado Plateau Network (NCPN), summer 2007.

Habitat	# Birds Detected	Avg. # Birds/Point	# Species Detected	Avg. Species per Point	Avg. Species per Transect
Low-Elevation Riparian	4,023	8.9	92	5.8	23.6
Pinyon-Juniper	3,382	7.6	90	5.5	21.5
Sage Shrubland	3,171	7.0	91	4.6	19.1
All habitats	**10,576**	**7.9**	**128**	**5.2**	**21.4**

Low-Elevation Riparian (LR)

We conducted 450 point counts along 15 transects in low-elevation riparian between 01 May and 26 June, 2007 (Table 1). We detected a total of 4,023 individual birds in this habitat, with an average of 8.9 birds per point count (Table 2). We detected 92 species in this habitat with an average of 5.8 species per point count and 23.6 species per transect (Table 2).

The pooled 2005-2007 point transect data from low-elevation riparian yielded robust density estimates (CV < 50%) for 25 species and moderately robust estimates (CV =

50-75%) for eight additional species (Table 3). We should be able to reach our target of detecting a population change of at least 3% within 30 years for these 33 species, which represent 36 percent of all species detected and more than 90 percent of all individual birds detected in low-elevation riparian habitat.

Black-chinned Hummingbird, Violet-green Swallow, White-throated Swift, Yellow Warbler, and Lazuli Bunting had the highest estimated densities of all species detected in low-elevation riparian (listed in order of highest to lowest density). Twenty-three species – White-throated Swift, Black-chinned Hummingbird, Western Wood-Pewee, Say's Phoebe, Ash-throated Flycatcher, Plumbeous Vireo, Warbling Vireo, Violet-green Swallow, Rock Wren, Canyon Wren, House Wren, American Robin, Virginia's Warbler, Yellow Warbler, Common Yellowthroat, Yellow-breasted Chat, Spotted Towhee, Song Sparrow, Black-headed Grosbeak, Lazuli Bunting, Brown-headed Cowbird, House Finch, and Lesser Goldfinch – had higher estimated densities in low-elevation riparian than in the other two habitats surveyed.

Table 3. Estimated densities of breeding birds in low-elevation riparian habitat in the Northern Colorado Plateau Network (NCPN), summers 2005-2007[1].

Species	Year	D	LCL	UCL	CV	n
Mourning Dove	2005	11.0	6.7	18.3	30	94
	2006	15.9	10.9	23.3	22	127
	2007	18.0	12.3	26.2	22	153
White-throated Swift	2005	59.5	30.5	116.3	42	134
	2006	50.5	30.1	84.7	31	145
	2007	75.6	44.5	128.6	33	207
Black-chinned Hummingbird	2005	233.5	128.2	425.2	37	18
	2006	341.7	181.8	642.3	39	27
	2007	156.2	77.7	314.0	43	13
Western Wood-Pewee	2005	4.7	2.5	8.9	38	27
	2006	6.0	2.9	12.3	43	35
	2007	5.8	2.6	12.8	48	34
Say's Phoebe	2005	3.3	2.2	5.1	25	41
	2006	4.6	2.7	8.1	33	56
	2007	2.9	1.8	4.5	27	36
Ash-throated Flycatcher	2005	12.9	9.2	18.1	20	152
	2006	19.9	14.8	26.7	17	235
	2007	17.2	12.6	23.4	18	205
Gray Vireo	2005	1.0	0.5	2.0	42	18
	2006	2.0	1.0	4.0	42	36
	2007	1.0	0.4	2.4	52	19
Plumbeous Vireo	2005	12.5	8.5	18.2	22	55
	2006	19.4	12.7	29.5	25	86
	2007	15.7	10.5	23.5	23	70
Warbling Vireo	2005	4.1	2.0	8.3	43	21
	2006	8.7	4.2	18.2	44	45
	2007	6.9	3.0	15.8	51	36
Western Scrub-Jay	2005	3.4	1.8	6.3	38	18
	2006	3.6	2.0	6.5	35	28

Species	Year	D	LCL	UCL	CV	n
Western Scrub-Jay (continued)	2007	3.7	1.9	7.1	40	24
Common Raven	2005	1.2	0.7	1.9	29	28
	2006	0.8	0.4	1.5	39	23
	2007	1.2	0.7	2.0	33	30
Violet-green Swallow	2005	56.3	38.8	81.7	22	98
	2006	155.9	101.1	240.2	26	200
	2007	105.1	73.8	149.7	21	139
Juniper Titmouse	2005	9.6	4.9	18.9	41	28
	2006	8.3	4.7	14.7	34	24
	2007	11.4	6.9	19.1	30	39
Bushtit	2005	26.1	10.5	64.9	57	4
	2006	58.3	25.8	131.5	51	12
	2007	6.4	2.1	19.5	72	2
Rock Wren	2005	6.1	3.9	9.5	27	87
	2006	7.6	4.8	11.9	27	109
	2007	9.6	6.1	15.1	27	140
Canyon Wren	2005	1.4	0.7	2.5	37	31
	2006	3.1	1.9	5.0	28	70
	2007	1.8	1.0	3.2	36	41
Bewick's Wren	2005	7.9	3.8	16.2	43	42
	2006	18.0	10.0	32.4	35	99
	2007	9.8	4.8	20.0	42	55
House Wren	2005	20.2	8.0	51.4	59	44
	2006	5.5	1.9	15.8	66	45
	2007	6.0	2.1	17.0	67	34
Blue-gray Gnatcatcher	2005	57.5	41.7	79.4	19	110
	2006	75.0	51.4	109.4	22	149
	2007	56.7	41.0	78.5	19	116
American Robin	2005	2.9	1.5	5.8	41	16
	2006	4.4	2.3	8.3	38	26
	2007	5.5	2.8	10.8	40	33
Virginia's Warbler	2005	15.0	8.2	27.4	36	34
	2006	18.0	7.5	43.0	53	41
	2007	16.0	8.8	29.2	36	37
Yellow Warbler	2005	70.7	35.5	141.0	41	142
	2006	77.1	35.9	165.5	46	157
	2007	63.8	30.4	133.9	44	132
Black-throated Gray Warbler	2005	6.0	3.1	11.9	40	38
	2006	14.2	9.1	22.1	26	90
	2007	9.2	6.2	13.6	23	59
Common Yellowthroat	2005	9.1	4.1	20.6	50	9
	2006	26.2	10.2	67.9	59	26
	2007	24.8	8.3	74.6	70	24
Yellow-breasted Chat	2005	7.6	2.5	22.5	69	39
	2006	10.0	3.3	30.3	70	51
	2007	9.1	2.7	30.1	77	48
Spotted Towhee	2005	44.0	32.5	59.6	18	235
	2006	96.3	69.1	134.3	20	422
	2007	58.3	42.3	80.4	19	293

Species	Year	D	LCL	UCL	CV	n
Chipping Sparrow	2005	4.8	2.5	9.5	41	15
	2006	5.1	2.6	10.3	43	16
	2007	11.4	5.4	24.0	46	34
Black-throated Sparrow	2005	4.7	2.0	10.9	51	50
	2006	5.3	2.6	10.8	43	55
	2007	5.9	2.2	16.1	62	66
Song Sparrow	2005	20.4	8.5	48.7	53	49
	2006	25.8	11.1	60.2	51	64
	2007	18.8	7.5	46.9	56	48
Black-headed Grosbeak	2005	4.8	1.6	14.6	71	13
	2006	10.3	5.2	20.2	41	28
	2007	6.5	3.0	14.2	47	18
Lazuli Bunting	2005	45.8	22.5	93.1	42	112
	2006	53.5	25.0	114.5	45	135
	2007	60.4	33.0	110.5	35	155
Brown-headed Cowbird	2005	6.4	2.7	15.1	54	8
	2006	10.6	5.3	21.2	43	25
	2007	6.7	2.8	15.9	54	15
House Finch	2005	29.6	19.5	45.1	25	106
	2006	24.7	12.3	49.8	44	173
	2007	30.1	20.4	44.6	23	185
Lesser Goldfinch	2005	10.4	5.2	21.1	42	26
	2006	25.2	16.7	38.0	24	59
	2007	42.3	27.3	65.4	26	104

[1]D = estimated density (birds/km^2); LCL and UCL = lower and upper 90% confidence limits on D; %CV = percent coefficient of variation of D; n = number of independent detections used to estimate D.

Pinyon-Juniper (PJ)

We conducted 447 point counts along 15 transects in pinyon-juniper between 02 May and 01 July, 2007 (Table 1). We detected a total of 3,382 individual birds in this habitat, with an average of 7.6 birds per point count (Table 2). We detected a total of 90 species in this habitat with an average of 5.5 species per point count and 21.5 species per transect (Table 2).

The pooled 2005-2007 point transect data from pinyon-juniper yielded robust density estimates (CV < 50%) for 20 species and moderately robust estimates (CV = 50-75%) for eight additional species (Table 4). We should be able to reach our target of detecting a population change of at least 3% within 30 years for these 28 species, which represent 31 percent of all species detected and more than 90 percent of all individual birds detected in pinyon-juniper habitat.

Black-throated Gray Warbler, Blue-gray Gnatcatcher, Bushtit, Chipping Sparrow, and Juniper Titmouse had the highest estimated densities of all species detected in pinyon-juniper (listed in order of highest to lowest density). Sixteen species – Mourning Dove, Gray Flycatcher, Dusky Flycatcher, Gray Vireo, Western Scrub-Jay, Pinyon Jay, Juniper Titmouse, Bushtit, White-breasted Nuthatch, Bewick's Wren, Blue-gray Gnatcatcher,

Mountain Bluebird, Black-throated Gray Warbler, Western Tanager, Chipping Sparrow, and Black-throated Sparrow – had higher estimated densities in pinyon-juniper than in the other two habitats surveyed.

Table 4. Estimated densities of breeding birds in pinyon-juniper habitat in the Northern Colorado Plateau Network (NCPN), summers 2005-2007[1].

Species	Year	D	LCL	UCL	CV	n
Mourning Dove	2005	13.8	9.0	21.1	25	180
	2006	13.3	8.7	20.2	25	223
	2007	23.0	12.0	44.0	41	230
White-throated Swift	2005	12.9	6.8	24.6	39	81
	2006	18.1	8.6	37.9	45	100
	2007	20.8	11.3	38.3	36	118
Gray Flycatcher	2005	28.6	20.6	39.9	20	112
	2006	22.3	14.1	35.5	27	86
	2007	21.9	12.6	37.9	33	85
Dusky Flycatcher	2005	2.9	0.9	9.6	77	12
	2006	9.1	3.7	22.5	56	37
	2007	7.1	2.5	20.0	65	29
Say's Phoebe	2005	2.3	1.3	4.1	35	33
	2006	0.7	0.3	1.7	54	10
	2007	0.6	0.2	1.7	66	9
Ash-throated Flycatcher	2005	12.8	9.3	17.7	19	125
	2006	13.8	9.5	20.0	22	131
	2007	13.2	8.6	20.3	25	128
Gray Vireo	2005	7.3	4.2	12.6	33	87
	2006	5.7	3.0	11.1	40	68
	2007	6.3	3.5	11.4	36	75
Plumbeous Vireo	2005	5.8	3.1	10.6	36	66
	2006	3.4	1.7	6.8	41	49
	2007	5.8	2.8	12.0	46	53
Western Scrub-Jay	2005	4.3	2.5	7.3	32	46
	2006	7.9	4.6	13.5	32	43
	2007	8.0	5.1	12.7	28	43
Pinyon Jay	2005	1.6	0.8	3.3	44	46
	2006	3.8	1.9	7.6	43	75
	2007	5.3	2.9	9.7	37	100
Common Raven	2005	0.6	0.4	0.9	23	41
	2006	0.4	0.3	0.6	23	33
	2007	0.9	0.6	1.4	24	72
Violet-green Swallow	2005	12.2	6.6	22.6	37	35
	2006	19.2	8.5	43.5	50	53
	2007	27.2	11.4	64.9	54	63
Juniper Titmouse	2005	33.4	23.1	48.2	22	83
	2006	28.0	17.1	45.9	29	77
	2007	29.5	16.8	51.8	33	83
Bushtit	2005	115.5	66.5	200.7	34	40
	2006	66.7	36.5	121.7	37	35
	2007	44.1	22.8	85.0	41	21

Species	Year	D	LCL	UCL	CV	n
White-breasted Nuthatch	2005	2.6	0.9	7.2	63	16
	2006	3.1	1.3	7.7	55	18
	2007	3.6	1.5	8.9	55	22
Rock Wren	2005	7.0	4.6	10.8	26	109
	2006	3.0	1.8	5.1	31	108
	2007	4.6	2.8	7.5	29	104
Canyon Wren	2005	0.5	0.2	1.0	48	15
	2006	0.8	0.3	2.1	64	24
	2007	0.7	0.2	1.7	62	21
Bewick's Wren	2005	13.2	9.6	18.1	19	147
	2006	24.6	14.7	41.3	31	148
	2007	18.5	10.6	32.1	33	122
Blue-gray Gnatcatcher	2005	119.6	60.2	237.4	43	136
	2006	155.8	77.6	312.9	44	95
	2007	91.5	63.1	132.7	22	126
Mountain Bluebird	2005	14.9	5.9	37.5	57	63
	2006	7.4	2.3	24.2	76	33
	2007	9.8	3.1	30.3	72	38
American Robin	2005	1.9	1.0	3.6	39	27
	2006	2.5	1.2	5.2	43	37
	2007	2.4	0.9	6.6	63	35
Virginia's Warbler	2005	10.8	5.0	23.6	47	55
	2006	9.8	3.4	28.2	67	35
	2007	4.0	1.3	11.9	70	34
Black-throated Gray Warbler	2005	84.7	59.9	119.7	21	276
	2006	87.5	58.7	130.3	24	358
	2007	92.1	66.3	127.9	19	323
Western Tanager	2005	0.6	0.2	1.9	71	16
	2006	2.6	1.2	5.8	50	22
	2007	3.9	1.8	8.5	48	30
Spotted Towhee	2005	10.1	5.9	17.3	32	102
	2006	23.7	12.4	45.3	39	82
	2007	28.7	14.2	57.9	42	129
Chipping Sparrow	2005	30.9	19.1	50.0	28	88
	2006	23.1	14.3	37.1	28	63
	2007	31.8	19.2	52.9	30	87
Lark Sparrow	2005	2.2	0.9	5.4	55	22
	2006	5.6	1.5	20.4	86	17
	2007	1.8	0.5	5.7	78	19
Black-throated Sparrow	2005	3.5	1.9	6.7	38	46
	2006	11.9	5.9	23.9	42	74
	2007	13.6	6.4	28.6	45	102
Western Meadowlark	2005	2.8	0.9	8.7	73	49
	2006	1.3	0.3	5.1	92	34
	2007	1.8	0.5	6.3	84	25
House Finch	2005	18.5	11.7	29.2	27	96
	2006	11.5	5.9	22.5	40	73
	2007	24.4	15.1	39.5	28	158

[1]D = estimated density (birds/km^2); LCL and UCL = lower and upper 90% confidence limits on D; %CV = percent coefficient of variation of D; n = number of independent detections used to estimate D.

Sage Shrubland (SA)

We conducted 450 point counts along 15 transects in sage shrubland between 15 May and 07 July, 2007 (Table 1). We detected a total of 3,171 individual birds in this habitat, with an average of 7.0 birds per point count (Table 2). We detected 91 species in this habitat with an average of 4.6 species per point count and 19.1 species per transect (Table 2).

The pooled 2005-2007 point transect data from sage shrubland yielded robust density estimates (CV < 50%) for 16 species and moderately robust estimates (CV = 50-75%) for 10 additional species (Table 5). We should be able to reach our target of detecting a population change of at least 3% within 30 years for these 26 species, which represent 29 percent of all species detected and more than 90 percent of all individual birds detected in sage shrubland habitat.

Brewer's Sparrow, Vesper Sparrow, Green-tailed Towhee, Chipping Sparrow, and Mountain Bluebird had the highest estimated densities of all species detected in sage shrubland (listed in order of highest to lowest density). Fifteen species – Broad-tailed Hummingbird, Northern Flicker, Western Wood-Pewee, Black-billed Magpie, Common Raven, Horned Lark, Cliff Swallow, Sage Thrasher, Green-tailed Towhee, Brewer's Sparrow, Vesper Sparrow, Lark Sparrow, Sage Sparrow, Western Meadowlark, and Brewer's Blackbird – had higher estimated densities in sage shrubland than in the other two habitats surveyed.

Table 5. Estimated densities of breeding birds in sage shrubland habitat in the Northern Colorado Plateau Network (NCPN), summers 2005-2007[1].

Species	Year	D	LCL	UCL	CV	n
Mourning Dove	2005	2.4	1.1	5.2	50	83
	2006	2.5	1.6	3.8	25	151
	2007	3.2	1.8	5.8	35	80
Broad-tailed Hummingbird	2005	11.4	4.5	29.2	59	21
	2006	3.3	1.1	9.6	70	19
	2007	4.4	1.3	14.8	80	20
Northern Flicker	2005	1.3	0.7	2.5	42	21
	2006	1.6	0.8	3.4	47	27
	2007	1.0	0.5	2.2	46	17
Dusky Flycatcher	2005	3.5	1.2	10.3	67	33
	2006	6.6	3.0	14.9	49	62
	2007	6.3	2.8	14.4	50	58
Black-billed Magpie	2005	3.3	1.6	6.6	42	69
	2006	2.5	1.4	4.3	33	94
	2007	1.3	0.7	2.4	36	50
Common Raven	2005	0.1	0.0	0.6	110	25
	2006	0.3	0.1	0.7	53	42

Species	Year	D	LCL	UCL	CV	n
Common Raven (continued)	2007	1.9	0.9	4.1	47	58
Horned Lark	2005	3.5	1.6	7.9	49	29
	2006	4.3	2.2	8.6	41	34
	2007	4.8	2.2	10.5	47	40
Violet-green Swallow	2005	8.4	3.8	18.7	50	21
	2006	3.5	1.6	7.3	45	33
	2007	3.8	1.6	8.8	53	20
Cliff Swallow	2005	36.7	10.4	129.4	87	26
	2006	9.5	4.5	20.1	46	34
	2007	3.3	1.2	8.7	61	10
Rock Wren	2005	2.6	1.6	4.5	32	91
	2006	4.2	2.4	7.2	33	166
	2007	5.0	2.5	10.0	43	79
Blue-gray Gnatcatcher	2005	8.6	4.3	17.1	41	34
	2006	4.8	2.8	8.2	32	19
	2007	3.3	1.4	7.4	50	12
Mountian Bluebird	2005	6.8	4.0	11.7	31	62
	2006	8.5	5.8	12.3	22	81
	2007	8.3	5.0	13.6	29	79
American Robin	2005	2.8	1.7	4.7	31	45
	2006	5.2	2.7	9.9	39	84
	2007	3.7	2.1	6.3	32	60
Sage Thrasher	2005	2.2	1.1	4.5	43	90
	2006	2.2	1.0	4.8	48	87
	2007	1.9	0.9	4.1	44	80
Virginia's Warbler	2005	1.4	0.5	3.6	59	24
	2006	1.7	0.7	4.1	54	29
	2007	1.0	0.2	4.1	96	17
Black-throated Gray Warbler	2005	5.9	2.5	13.8	53	28
	2006	1.9	0.7	5.2	65	22
	2007	3.9	1.4	10.8	65	13
Western Tanager	2005	0.6	0.2	2.0	73	13
	2006	0.8	0.2	2.7	82	16
	2007	1.2	0.4	3.6	71	24
Green-tailed Towhee	2005	32.1	17.7	58.1	36	272
	2006	45.2	23.3	87.9	41	388
	2007	33.0	17.4	62.7	39	284
Spotted Towhee	2005	3.9	2.0	7.8	41	61
	2006	4.3	2.4	7.7	34	67
	2007	3.2	1.7	5.9	36	50
Chipping Sparrow	2005	6.5	3.5	11.9	37	33
	2006	11.4	6.2	21.0	37	59
	2007	10.1	4.8	21.3	46	50
Brewer's Sparrow	2005	74.6	54.5	102.0	18	532
	2006	79.3	57.3	109.9	19	571
	2007	69.0	50.5	94.4	18	496
Vesper Sparrow	2005	27.7	19.2	40.1	22	292
	2006	23.0	16.4	32.1	20	400
	2007	47.7	33.4	68.1	21	424

Species	Year	D	LCL	UCL	CV	n
Lark Sparrow	2005	8.4	3.7	18.8	49	91
	2006	9.8	4.9	19.9	42	109
	2007	6.2	2.6	14.3	51	69
Black-throated Sparrow	2005	1.0	0.2	5.4	125	10
	2006	1.6	0.7	3.9	54	29
	2007	1.6	0.6	3.8	54	18
Sage Sparrow	2005	2.4	0.8	6.9	69	39
	2006	2.0	0.7	6.2	73	29
	2007	3.2	1.0	9.8	72	31
Western Meadowlark	2005	4.3	2.2	8.5	40	142
	2006	4.4	2.5	7.5	32	165
	2007	6.5	3.3	12.6	40	134
Brewer's Blackbird	2005	0.9	0.4	2.0	53	7
	2006	6.0	3.4	10.8	35	44
	2007	3.1	1.3	7.1	52	19
House Finch	2005	0.4	0.2	0.9	45	6
	2006	3.9	2.3	6.6	32	63
	2007	2.4	1.1	5.4	49	41

[1]D = estimated density (birds/km^2); LCL and UCL = lower and upper 90% confidence limits on D; %CV = percent coefficient of variation of D; n = number of independent detections used to estimate D.

DISCUSSION

2007 Accomplishments

In 2007 we conducted all transects and completed all but three point counts. On May 27th, while conducting transect CP-PJ06 (Colorado National Monument), the biologist did not complete points 14 and 15 because of an approaching storm. The transect is in a remote and somewhat exposed area, so lightning was a threat. And, on June 4th, the biologist did not complete point 15 on transect CP-PJ12 (Natural Bridges National Monument). It had rained the night before, and the sandstone in the area was still slightly wet. Since it is necessary to negotiate a steep slope to reach point 15 of that transect, the biologist elected not to risk falling in order to reach the point.

Changes in 2007 Distance Analysis

As mentioned in the "Methods" section of this report, this year, in a departure from our usual analyses methods, we pooled the 2005-2007 point transect data to determine density estimates for each year. Doing so provided more statistically rigorous analyses and also allowed us to calculate density estimates for some low-density species that would not have had large enough sample sizes to calculate density estimates if we had used only the 2007 data. In low-elevation riparian habitat, we were able to calculate density estimates for four additional species – Gray Vireo, Bushtit, Black-headed

Grosbeak, and Brown-headed Cowbird. In pinyon-juniper habitat, we were able to calculate density estimates for one additional species – Say's Phoebe. In sage shrubland habitat, we were able to calculate density estimates for six additional species – Northern Flicker, Cliff Swallow, Blue-gray Gnatcatcher, Virginia's Warbler, Black-throated Gray Warbler, and Black-throated Sparrow.

In Tables 3-5, we give density estimates for all three years' data (2005-2007), which differs from the format of the previous reports. We have done this for two reasons – in order to provide a comparison of the three years' density estimates, and more importantly, to provide more statistically rigorous estimates for 2005 and 2006. The density estimates that are presented in this report should replace the estimates provided in the 2005 and 2006 reports.

Unique Characteristics of Each Habitat

While the number of species and densities of birds vary across habitats, each habitat supports unique assemblages of birds and other attributes that contribute to the overall biological diversity in the NCPN. Some highlights pertaining to each habitat surveyed in 2007 follow:

Low-Elevation Riparian

In 2007, Prairie Falcon, Spotted Sandpiper, Belted Kingfisher, Willow Flycatcher, Cordilleran Flycatcher, Black Phoebe, Western Kingbird, Black-capped Chickadee, American Dipper, Lucy's Warbler, Wilson's Warbler, White-crowned Sparrow, Red-winged Blackbird, and Pine Siskin were observed exclusively in low-elevation riparian habitat. Two other species observed exclusively in low-elevation riparian habitat, Common Black-Hawk and Eurasian Collared-Dove deserve special mention. While most field guides indicate that Zion National Park is just inside of the range of Common Black-Hawk, this was the first year that we detected the species. It was observed on two consecutive days along the Virgin River in Zion National Park. And, while Eurasian Collared-Dove has become more common in the west (the species was introduced and has been spreading across most of the United States), it is most commonly seen in urban or agricultural areas. We detected one individual along Halls Creek in Capital Reef National Park. It is uncommon to find the species in such a remote area.

It should be noted that, while the NCPN low-elevation riparian habitat is comprised mostly of Scattered stands of Fremont cottonwood (*Populus fremontii*) and boxelder (*Acre negundo*) along perennial streams, it has components of pinyon-juniper, cliff-rock, and other semi-desert habitats. This accounts for the detection of some species that may seem out of place in riparian habitat (for example, Gray Vireo, Juniper Titmouse, Canyon Wren, and Black-throated Gray Warbler).

Pinyon-Juniper

In 2007, Chukar, Sharp-shinned Hawk, Rock Pigeon, Common Nighthawk, Common Poorwill, Gray Jay, and Scott's Oriole were observed exclusively in pinyon-juniper habitat. The detection of Scott's Oriole (in Dinosaur National Monument) was the first detection of the species on this project.

It should be noted that, while the NCPN pinyon-juniper habitat is comprised mostly of pinyon pine and juniper, it has components of cliff-rock, sage shrubland, and other semi-desert habitats, as well as limited amounts of ponderosa pine in Bryce Canyon. This accounts for the detection of some species that may seem out of place in pinyon-juniper habitat (for example, White-throated Swift, Grace's Warbler, and Western Meadowlark).

Sage Shrubland

In 2007, Greater Sage-Grouse, Northern Harrier, Killdeer, Sage Sparrow, and Savannah Sparrow were observed exclusively in sage shrubland habitat.

It should be noted that, while the NCPN sage shrubland habitat is comprised mostly of stands of sagebrush, it has components of cliff-rock, pinyon-juniper, and other semi-desert habitats, as well as limited amounts of Gamble oak in Curecanti National Recreation Area. This accounts for the detection of some species that may seem out of place in sage shrubland habitat (for example, Northern Flicker, Dusky Flycatcher, Black-throated Gray Warbler, and House Finch).

Prospects for Population Monitoring

The National Park Service's specific project objective is to determine status and trends of breeding bird species density in low-elevation riparian, pinyon-juniper, and sagebrush habits. While determining bird population trends is a long-term goal, and we will not be able to make any statements about trends until after several years, in the short term, this program provides information needed to effectively manage and conserve bird populations in the NCPN, including the spatial distribution, abundance, and relationship to important habitat characteristics for each species.

RMBO typically uses the Partners in Flight (PIF 2005) Plan as a guideline for bird conservation. PIF is a partnership of federal and state agencies, industry, non-governmental organizations, and many others, with the goal of conserving North American birds. In 1991, PIF began developing a formal species assessment process that could provide consistent, scientific evaluations of conservation status across all bird species in North America, and identify areas most important to the conservation of each species. This process applies quantitative rule sets to complex biological data on the population size, distribution, population trend, threats, and regional abundance of individual bird species to generate simple numerical scores that rank each species in terms of its biological vulnerability and regional status. The process results in global and

regional conservation assessments of each bird species that, among other uses, can be used to objectively assign regional and continental conservation priorities among birds.

PIF identifies 50 bird species as "Important Species" for Bird Conservation in Region (BCR) 16, which includes almost all of the NCPN. It identifies 41 bird species as "Important Species" for Bird Conservation in Region (BCR) 10, which includes Fossil Butte National Monument. The U.S. Fish and Wildlife Service (USFWS) identifies 41 species as "Birds of Conservation Concern" for USFWS Region 6 (Mountain-Prairie Region), which includes all of Utah, Colorado, and Wyoming. In 2007, we collected data for 40 species that are on one or more of those lists. For these species, we provide detailed information about their regional distribution, conservation status, and natural history in the species accounts (Appendix A). Of the 40 species, 22 were detected in sufficient numbers to calculate a density estimate in at least one habitat on NCPN. We provide detailed information on the density estimates in the species accounts (Appendix A).

The habitat-stratified point transects yielded robust density estimates (CV < 50%) for 41 species and moderately robust estimates (CV = 50-75%) for 11 additional species. We should be able to detect habitat-specific population trends for these 52 species, which represent 40 percent of all species detected on point transects in the NCPN during 2005-2007, and represent more than 90 percent of all individual birds observed during 2005-2007. The other 60% of species (~10% of birds observed) fall into one of the following categories:

1) Low-density, highly localized species such as Black-chinned Sparrow ;
2) Low-density, widespread species such as Golden Eagle;
3) Species that occur mainly outside the NCPN in other habitats, such as Olive-sided Flycatcher;
4) Nocturnal species such as Common Nighthawk;
5) Colonially nesting species such as Great Blue Heron; and
6) Species that are most readily detectable prior to late May, such as Greater Sage-Grouse.

Species in the aforementioned groups could be monitored through additional effort using one or more of the following survey techniques:

1) Additional point transects in existing habitats;
2) Censusing small but localized populations;
3) Censusing birds at nesting sites (e.g., colonies, eyries, etc);
4) Species-specific call-response surveys;
5) Nocturnal surveys;
6) Wetland surveys; and
7) Early-season (i.e., winter/spring) surveys.

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APPENDIX A. SPECIES ACCOUNTS

In this section we present an account and map for each bird species detected in 2007 that is of management interest, as designated by the Partners in Flight (PIF).

All species accounts follow the same format with an overview of our findings, a table of the density estimates by habitat (providing there were sufficient data), and a map showing distribution of detections in NCPN. In the density estimate tables we present *N, the number of individuals observed*, and if we were able to calculate a density estimate for the species in at least one habitat, we also present *n, the number of observations to estimate density*. These numbers may be different as often several individuals are detected in a single observation (cluster), as when birds are in a flock. While the number of individuals observed is of interest, especially for rare species, density estimates are derived using only independent observations (clusters).

The geographic distribution maps in the accounts depict the locations and relative abundance (average number of birds detected per point count) of species of management interest that were detected on point transects in 2007. The location of each dot does not necessarily indicate the precise location of the point at which the species was observed, but rather the mid-point of that transect. It is important to keep in mind that the maps only reflect the abundance and distribution of the species across the sites we surveyed, and should not be interpreted to suggest anything about the areas in which we did not conduct transects.

Index to Species Accounts

Greater Sage-Grouse
(*Centrocercus urophasianus*)

*PIF BCR 16 Species of Continental Concern and Regional Concern
*PIF BCR 10 Species of Continental Concern, Regional Concern, Continental Stewardship, and Regional Stewardship

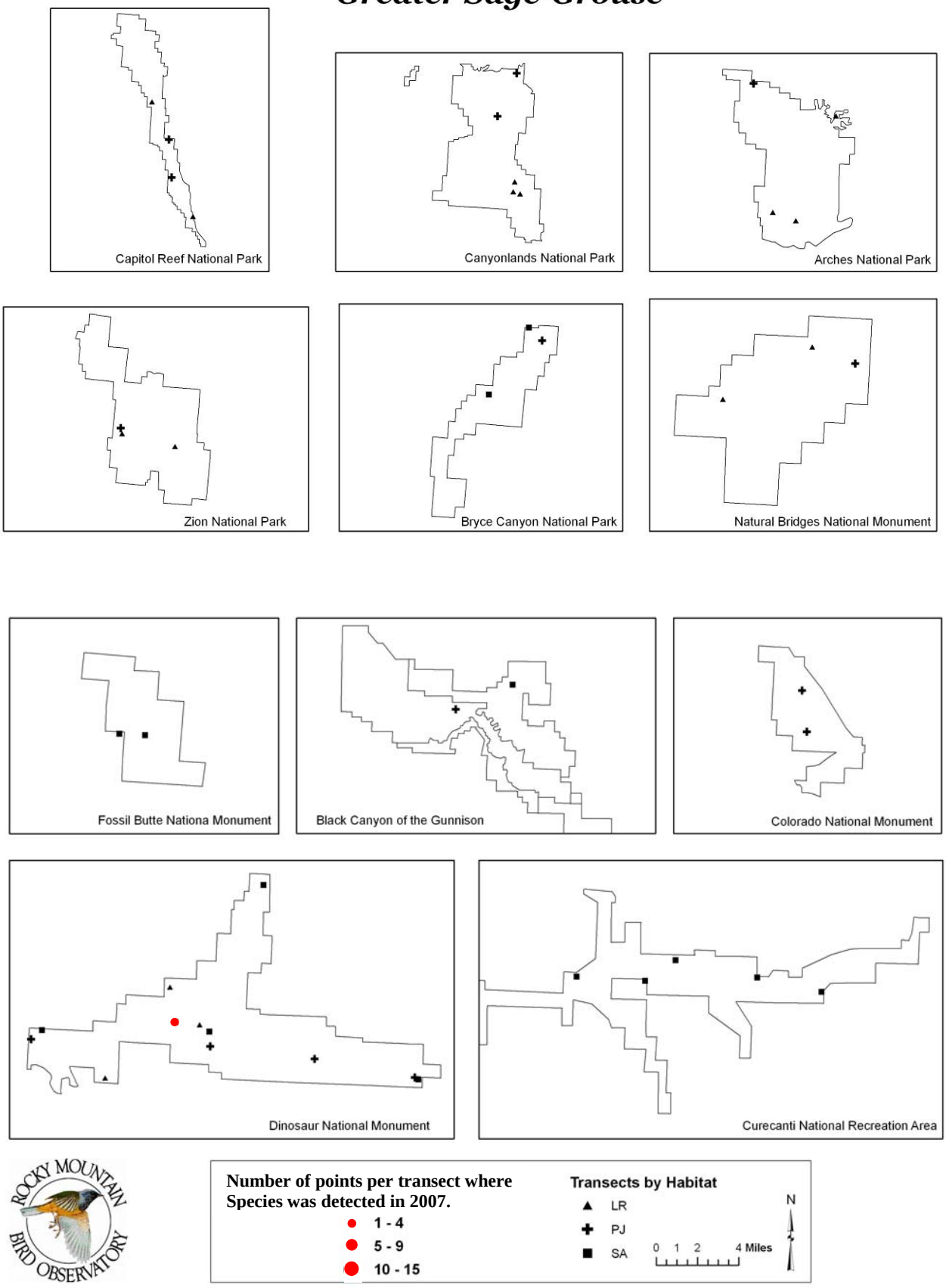
Greater Sage-Grouse inhabits large, contiguous areas of sagebrush, and requires tall grass within the sagebrush for nesting. It is believed that fences, overgrazing, and the removal of sagebrush have greatly reduced the numbers of Sage Grouse across its range. The species was recently proposed for listing under the Endangered Species Act (Righter et al. 2004). In 2007, we detected one individual Greater Sage Grouse in sage habitat on NCPN transects. This monitoring project does not target Greater Sage-Grouse or any gallinaceous birds, most of which are game species whose populations are monitored by state wildlife agencies.

Total number of individual detections, number of individuals, and habitat-specific density estimates for Greater Sage-Grouse on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	ID	--	--	--	--	1

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Greater Sage-Grouse



Northern Harrier
(*Circus cyaneus*)

*PIF BCR 10 Species of Regional Concern
*USFWS Region 6 Species of Conservation Concern

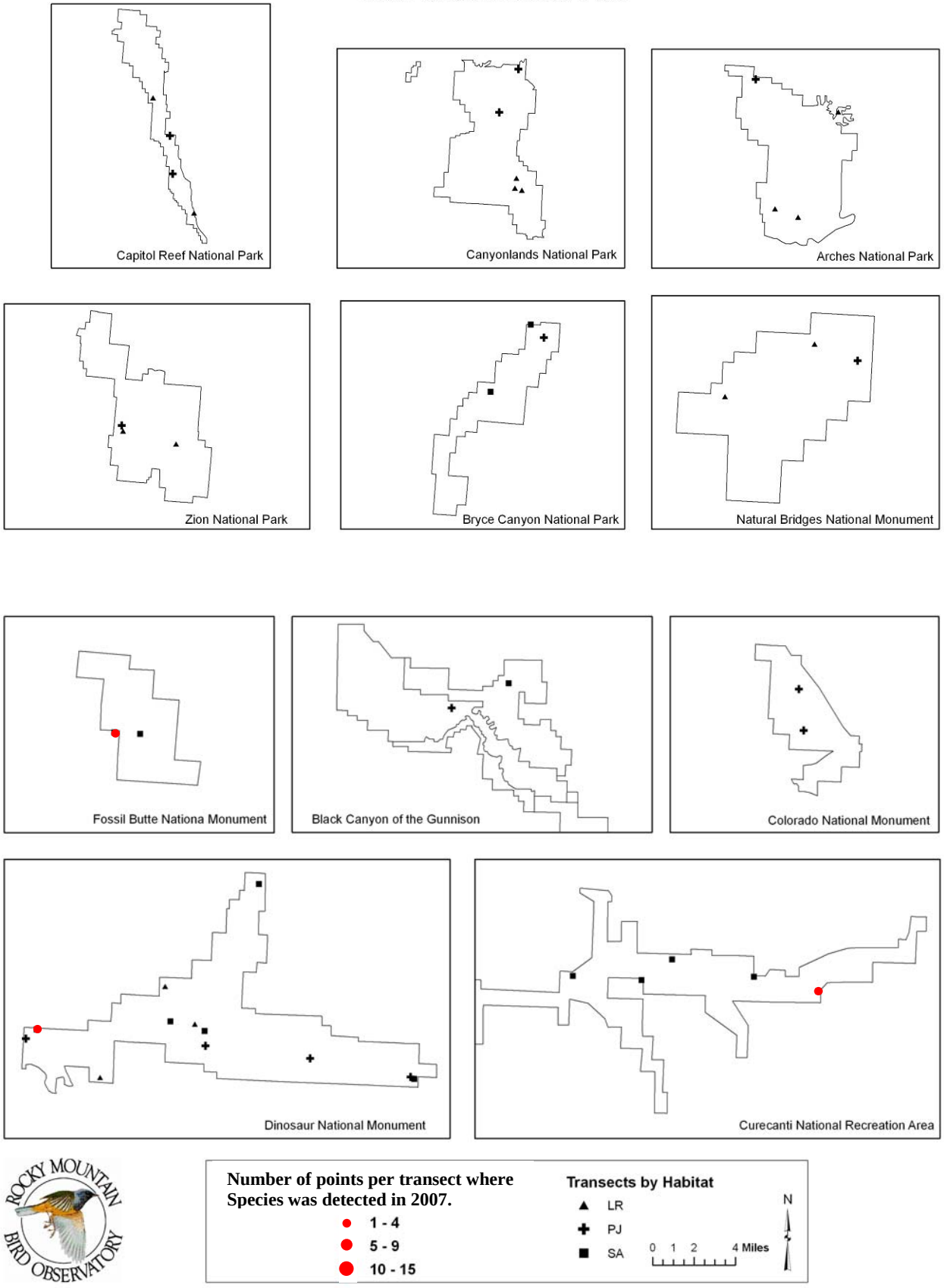
Northern Harriers nest in a wide variety of open grasslands and brushlands throughout the NCPN (Righter et al. 2004). In 2007, we detected five individual Northern Harriers in sage shrubland habitat on NCPN transects. Northern Harriers, like other raptors, are difficult to monitor using the point-transect protocol because of their low densities and large territories. Therefore, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Northern Harrier on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	ID	--	--	--	--	5

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Northern Harrier



Golden Eagle
(*Aquila chrysaetos*)

*PIF BCR 16 Species of Regional Concern

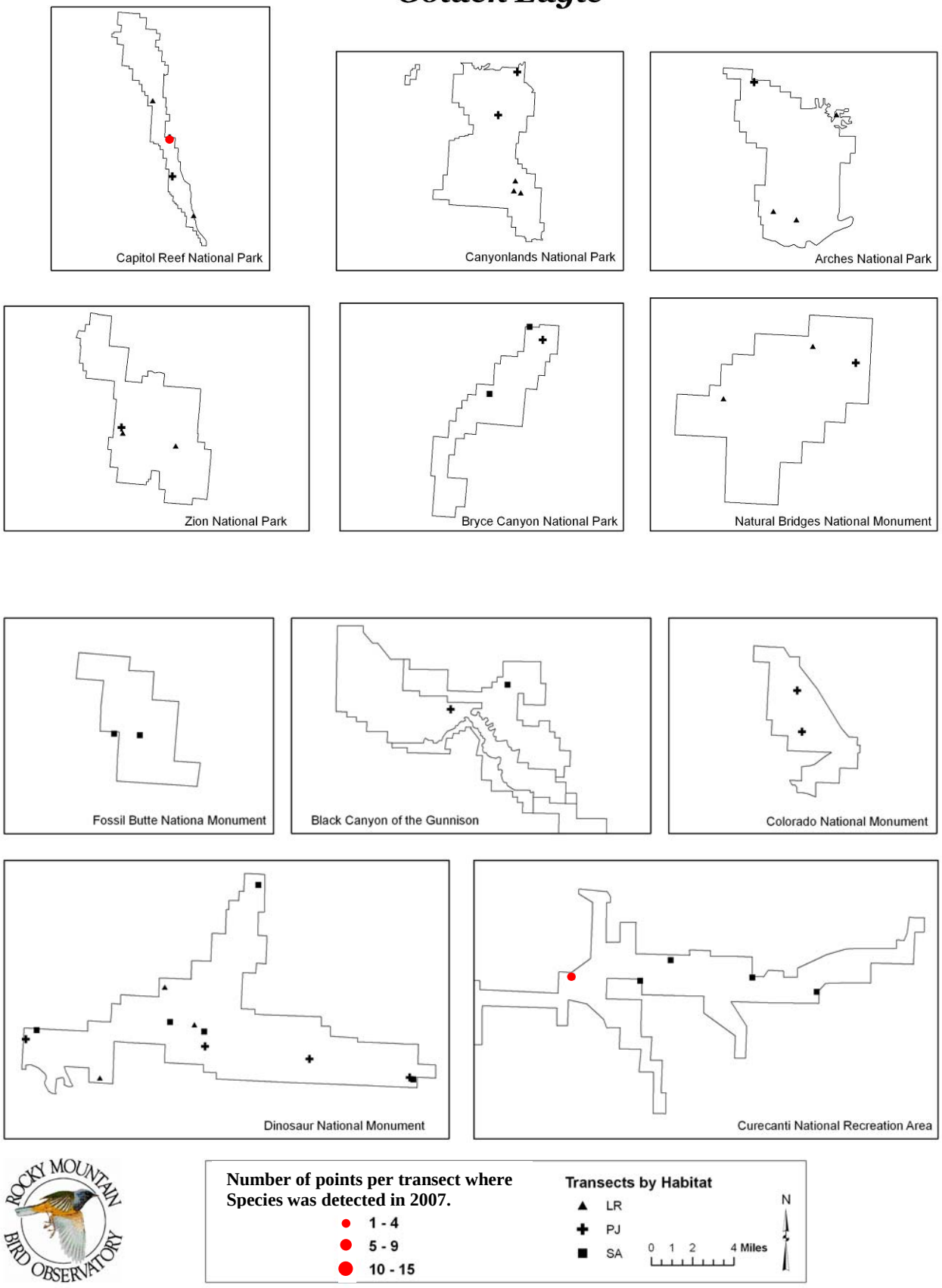
Golden Eagles nest throughout the Colorado Plateau region in cliff country, from desert canyons to high mesas (Righter et al. 2004). In 2007, we detected four individual Golden Eagles in two habitats on NCPN transects. Golden Eagles, like other raptors, are difficult to monitor using the point-transect protocol because of their low densities and large territories. Therefore, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Golden Eagle on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	2
Sage Shrubland	ID	--	--	--	--	2

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Golden Eagle



Peregrine Falcon
(*Falco peregrinus*)

*USFWS Region 6 Species of Conservation Concern

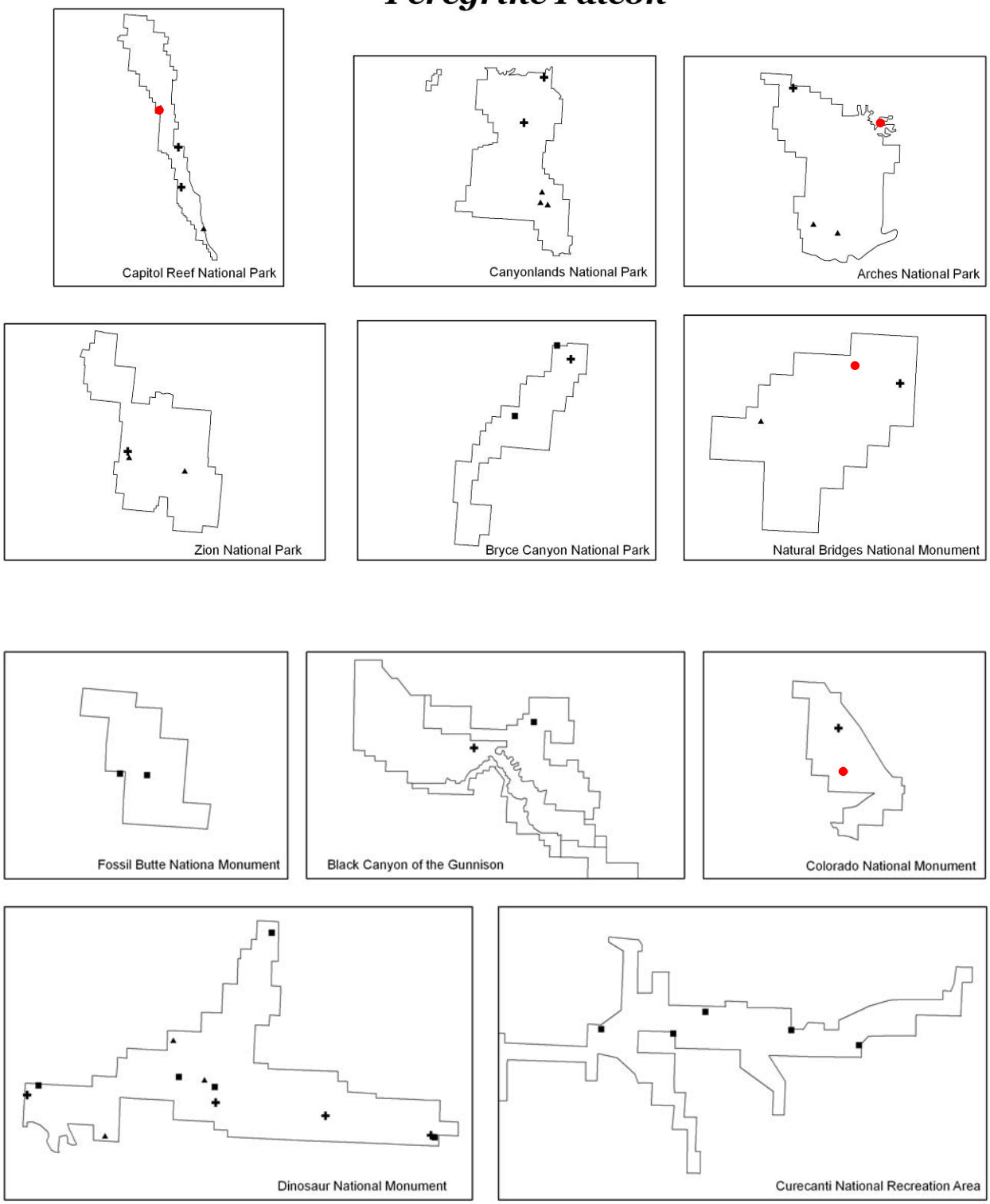
Peregrine Falcons nest throughout the Colorado Plateau region where towering cliffs, usually near water, are available. Once near extinction, its population in the region has recovered well (Righter et al. 2004). In 2007, we detected seven individual Peregrine Falcons in two habitats on NCPN transects. Peregrine Falcons, like other raptors, are difficult to monitor using point-transect protocol, because of their low densities and large territories. Therefore, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN. We will, however, be able to track the species' presence there. Effective monitoring would require a more intensive and focused effort, such as the ongoing monitoring projects in Dinosaur National Monument and other NCPN park units.

Total number of detections, number of individuals, and habitat-specific density estimates for Peregrine Falcon on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	4
Pinyon-Juniper	ID	--	--	--	--	3
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Peregrine Falcon



Common Nighthawk
(*Chordeiles minor*)
*PIF BCR 16 Species of Regional Concern

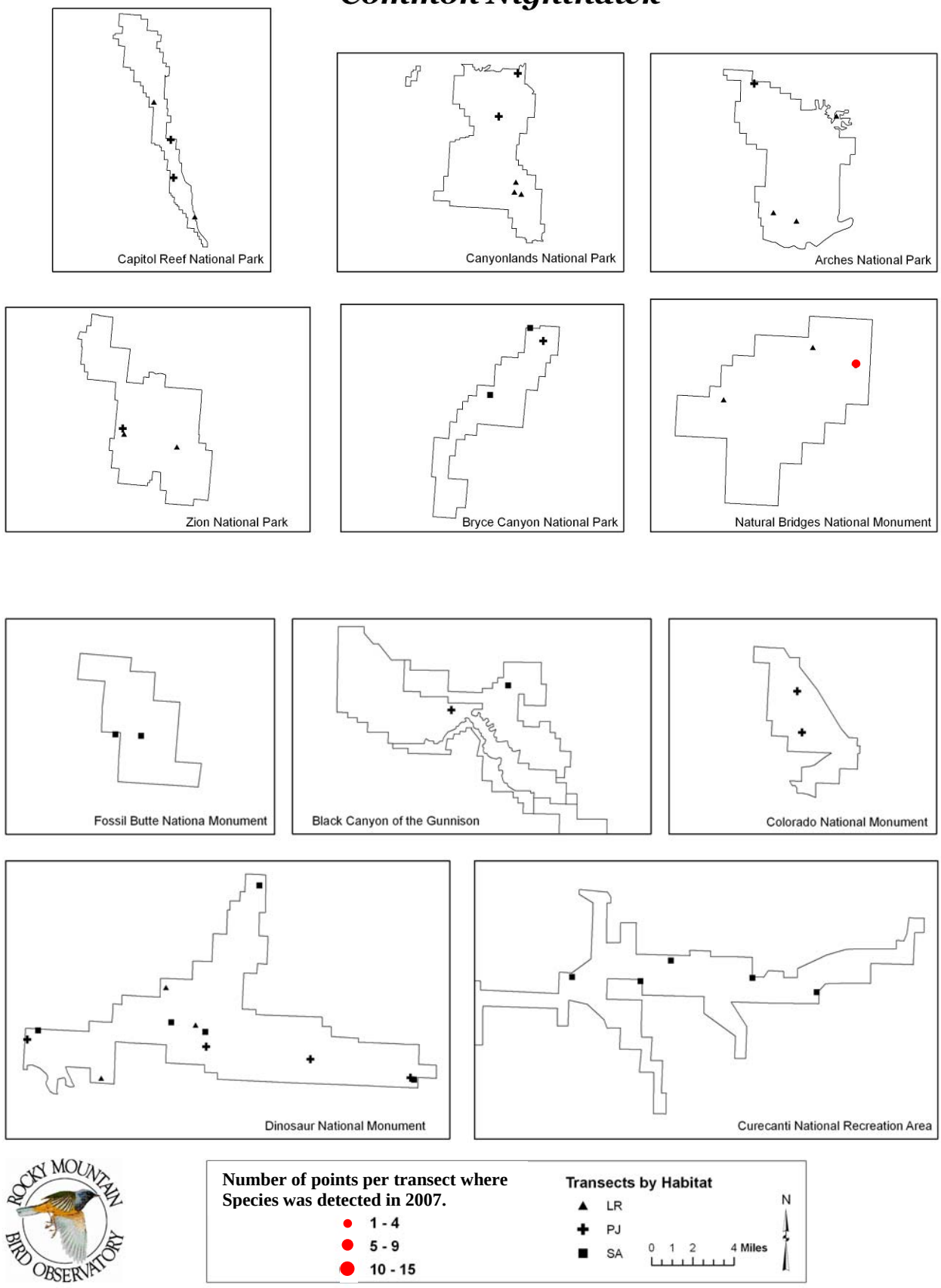
In 2007, we detected only one common Nighthawk on NCPN transects. Due to Common Nighthawk's nocturnal behavior, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN. Evening or nighttime surveys may provide a means by which to track the species' population in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Common Nighthawk on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	1
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Common Nighthawk



White-throated Swift
(*Aeronautes saxatalis)*

*PIF BCR 16 Species of Continental Concern and Regional Stewardship
*PIF BCR 10 Species of Continental Concern

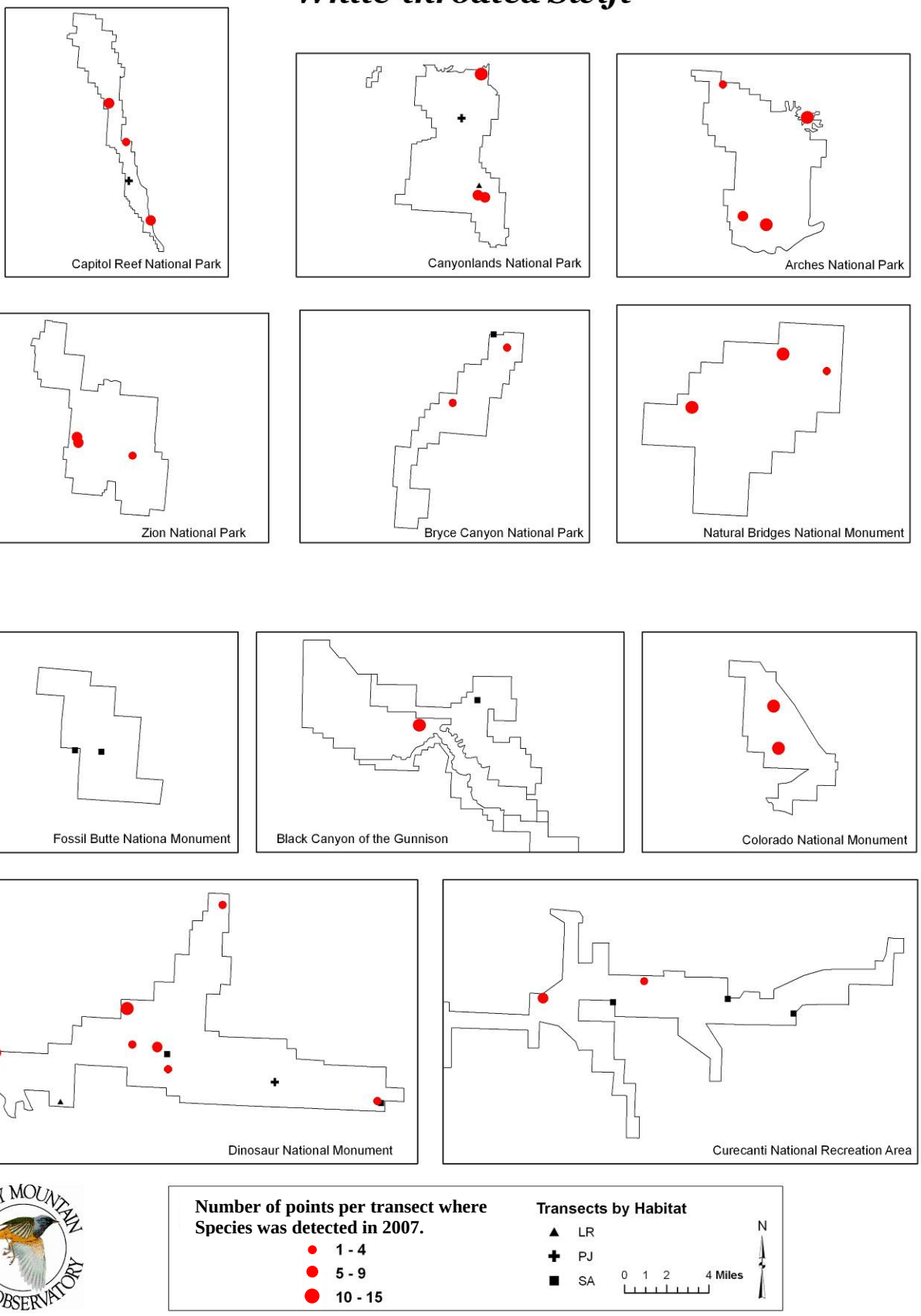
White-throated Swifts typically nest on high cliffs in small colonies (Righter et al. 2004). In 2007, we detected 815 individual White-throated Swifts in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of White-throated Swift in low-elevation riparian and pinyon-juniper habitats in the NCPN. However, because of White-throated Swift's colonial nature, obtaining reliable sample size from year to year may be difficult. A more reliable monitoring scheme for this species may require more intensive and focused effort involving censusing birds at known nesting sites and searching for new nesting sites in potential habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for White-throated Swift on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	75.6	44.5	128.6	33	207	563
Pinyon-Juniper	20.8	11.3	38.3	36	118	212
Sage Shrubland	ID	--	--	--	--	40

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

White-throated Swift



Broad-tailed Hummingbird
(*Selasphorus platycercus)*

*PIF BCR 16 Species of Regional Stewardship

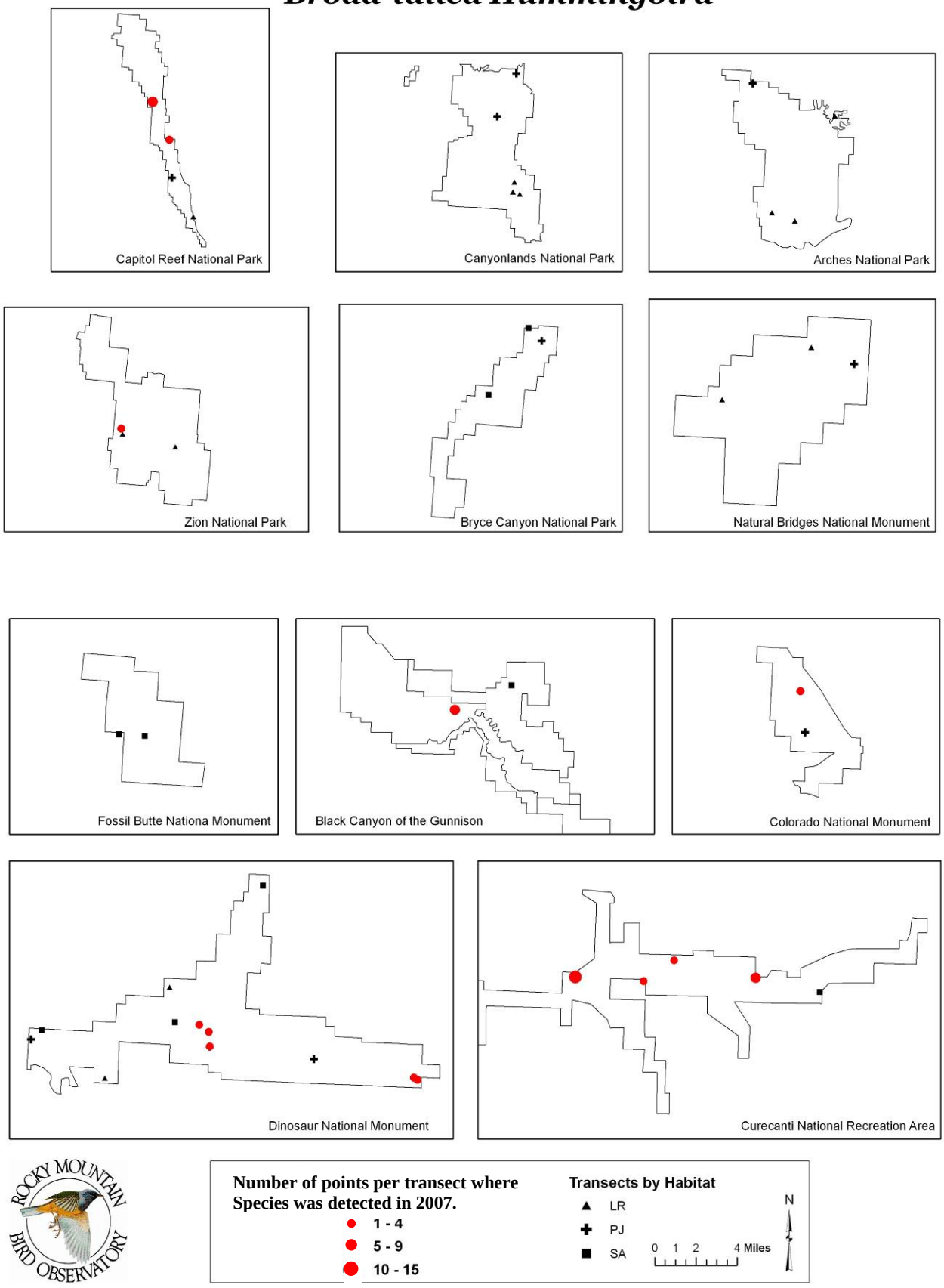
On the Colorado Plateau, Broad-tailed Hummingbirds inhabit a variety of forest types, wetlands, and riparian areas (Righter et al. 2004). In 2007, we detected 46 individual Broad-tailed Hummingbirds in three habitats on NCPN transects. We detected Broad-tailed Hummingbirds in largest numbers in sage shrubland habitat, but most of those detections were from individuals using bordering habitats such as pinyon-juniper and riparian. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Broad-tailed Hummingbird in at least one habitat in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Broad-tailed Hummingbird on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	5
Pinyon-Juniper	ID	--	--	--	--	14
Sage Shrubland	4.4	1.3	14.8	80	20	27

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Broad-tailed Hummingbird



Olive-sided Flycatcher
(*Contopus cooperi*)

*PIF BCR 16 Species of Continental Concern
*PIF BCR 10 Species of Continental Concern and Regional Concern

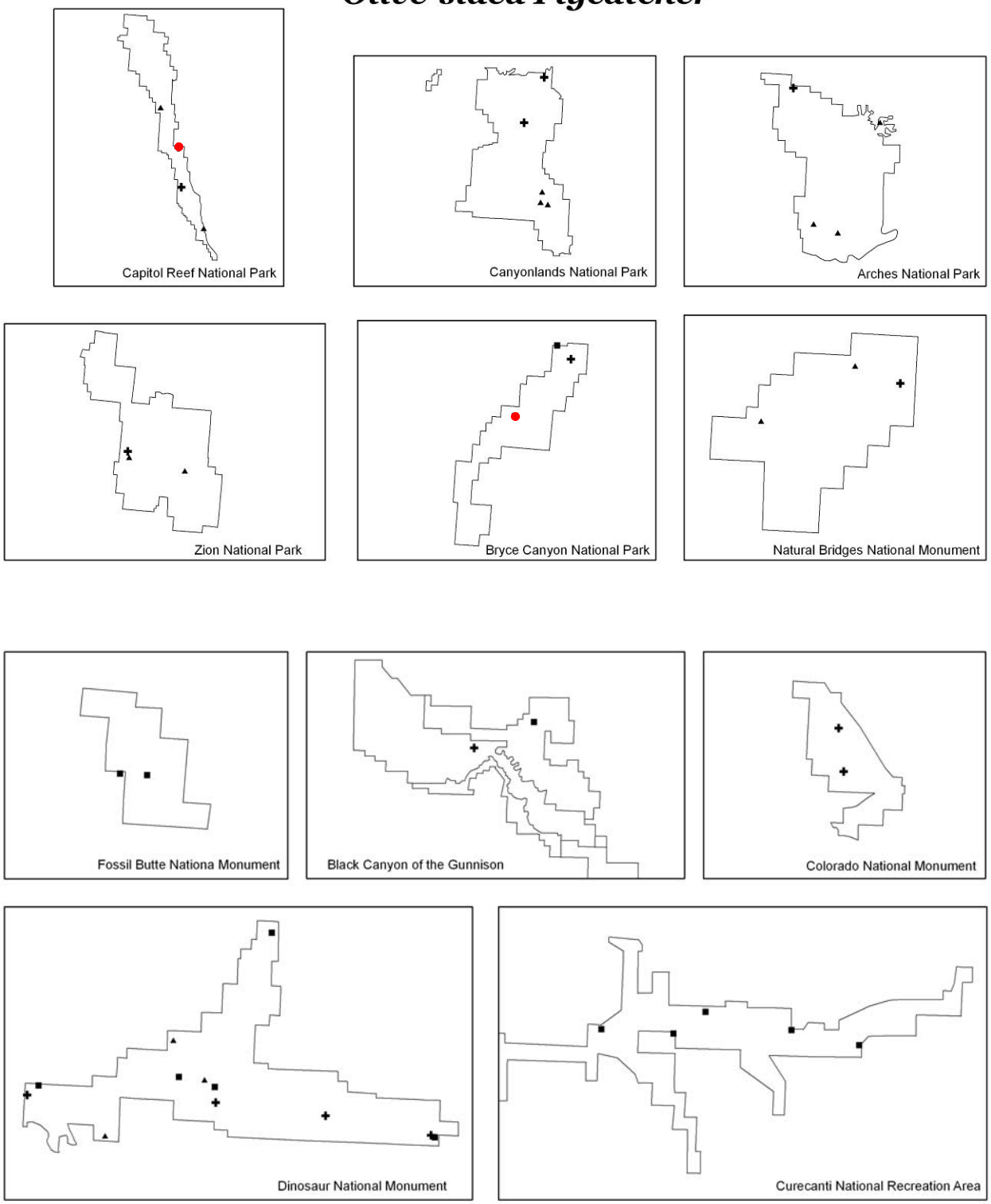
Olive-sided Flycatchers occur throughout the Colorado Plateau region, but they are usually never abundant. They will utilize low-elevation pinyon-juniper stands for nesting when they provide adequate perches for singing and foraging, but they prefer high-elevation conifers (Righter et al. 2004). In 2007, we detected four individual Olive-sided Flycatchers in two habitats on NCPN transects. Most of our detections of the species on NCPN transects were from ponderosa pine stands on the periphery of low-elevation riparian and pinyon-juniper habitat that we were sampling. Given the specific habitat requirements of Olive-sided Flycatcher, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Olive-sided Flycatcher on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	2
Sage Shrubland	ID	--	--	--	--	2

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Olive-sided Flycatcher



Willow Flycatcher
(*Empidonax traillii*)

*PIF BCR 16 Species of Continental Concern and Regional Concern
*PIF BCR 10 Species of Continental Concern and Regional Stewardship

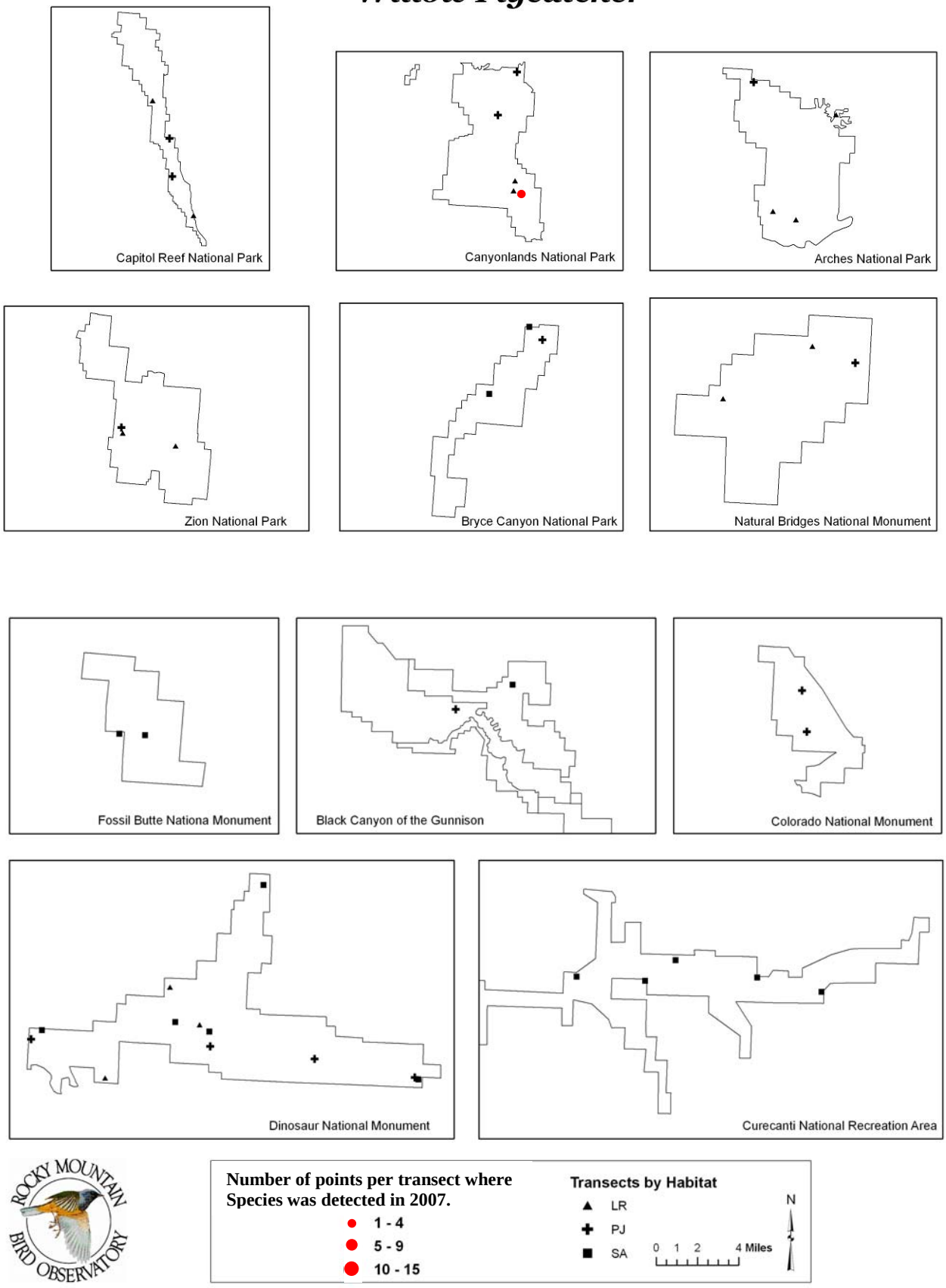
Willow Flycatchers nest in thick willow stands, usually adjacent to open, standing water (Righter et al. 2004). In 2007, we detected two Willow Flycatcher on NCPN transects. Since we do not sample any large stands of willow, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Willow Flycatcher on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	2
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Willow Flycatcher



Dusky Flycatcher
(*Empidonax oberholseri*)

*PIF BCR 10 Species of Continental Stewardship and Regional Stewardship

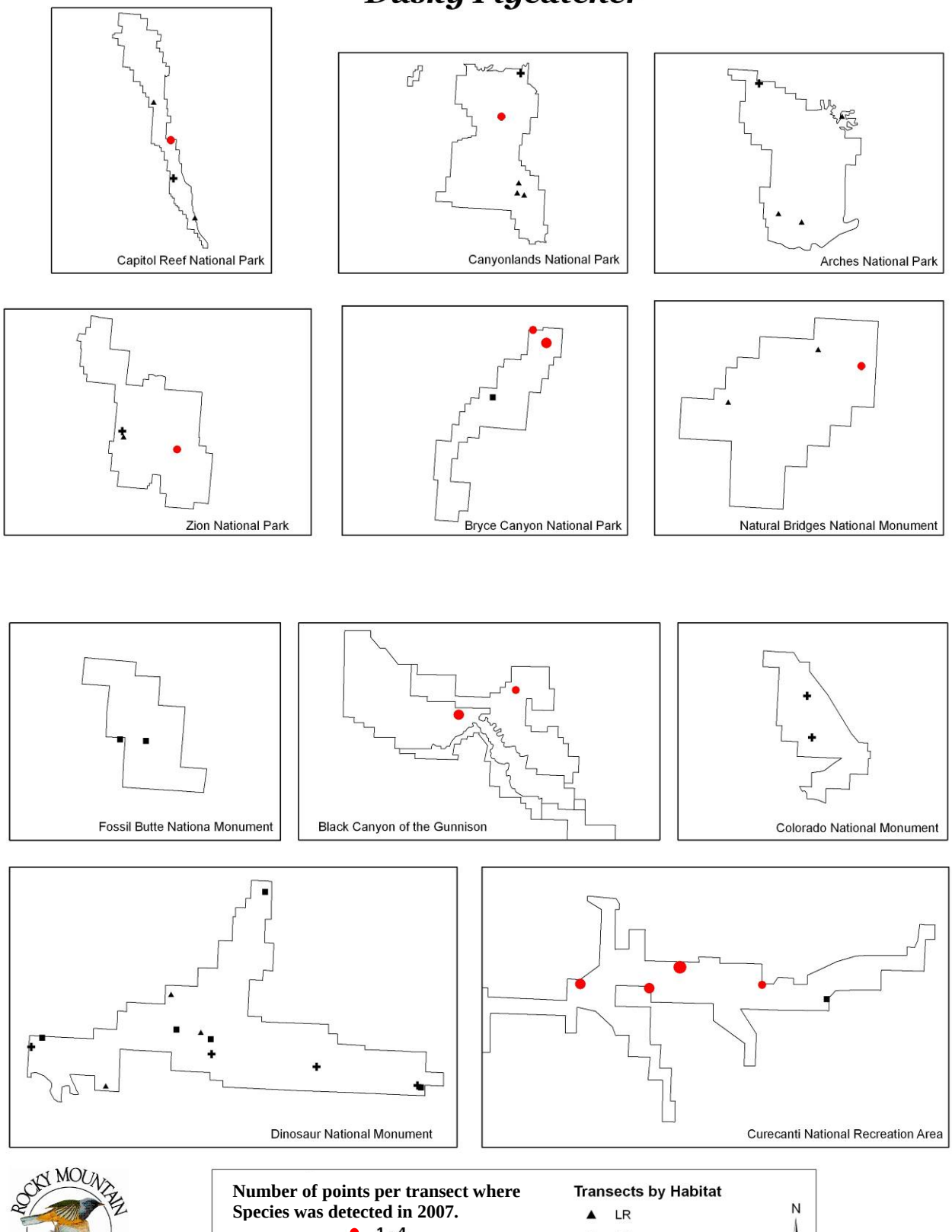
Dusky Flycatchers nest in a variety of shrubby habitats, especially those with some Gamble oak component (Righter et al. 2004). In 2007, we detected 99 Dusky Flycatchers in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Dusky Flycatcher in pinyon-juniper and sage shrubland habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Dusky Flycatcher on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	1
Pinyon-Juniper	7.1	2.5	20.0	65	29	32
Sage Shrubland	6.3	2.8	14.4	50	58	66

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Dusky Flycatcher



Cordilleran Flycatcher
(*Empidonax occidentalis*)

*PIF BCR 16 Species of Regional Stewardship

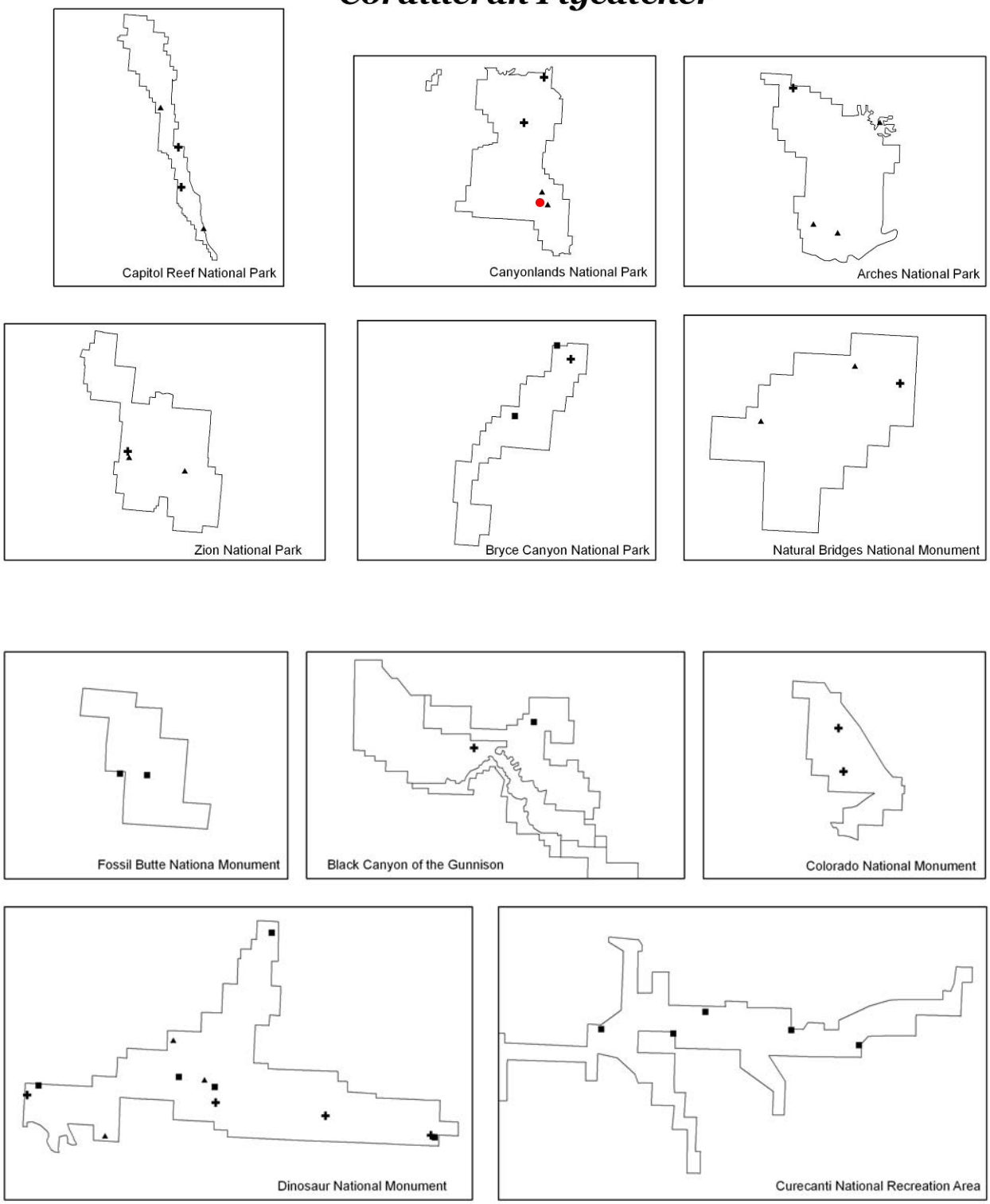
Cordilleran Flycatchers nest in forested areas with cliffs or rocky ledges and in riparian areas with available vertical surfaces. The species is also occasionally found in pinyon-juniper stands that have some element of deciduous vegetation (Righter et al. 2004). In 2007, we detected only one Cordilleran Flycatcher on NCPN transects. Given the specific habitat requirements of Cordilleran Flycatcher, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Cordilleran Flycatcher on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	1
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Cordilleran Flycatcher



Say's Phoebe
(*Sayornis saya)*

*PIF BCR 16 Species of Regional Stewardship

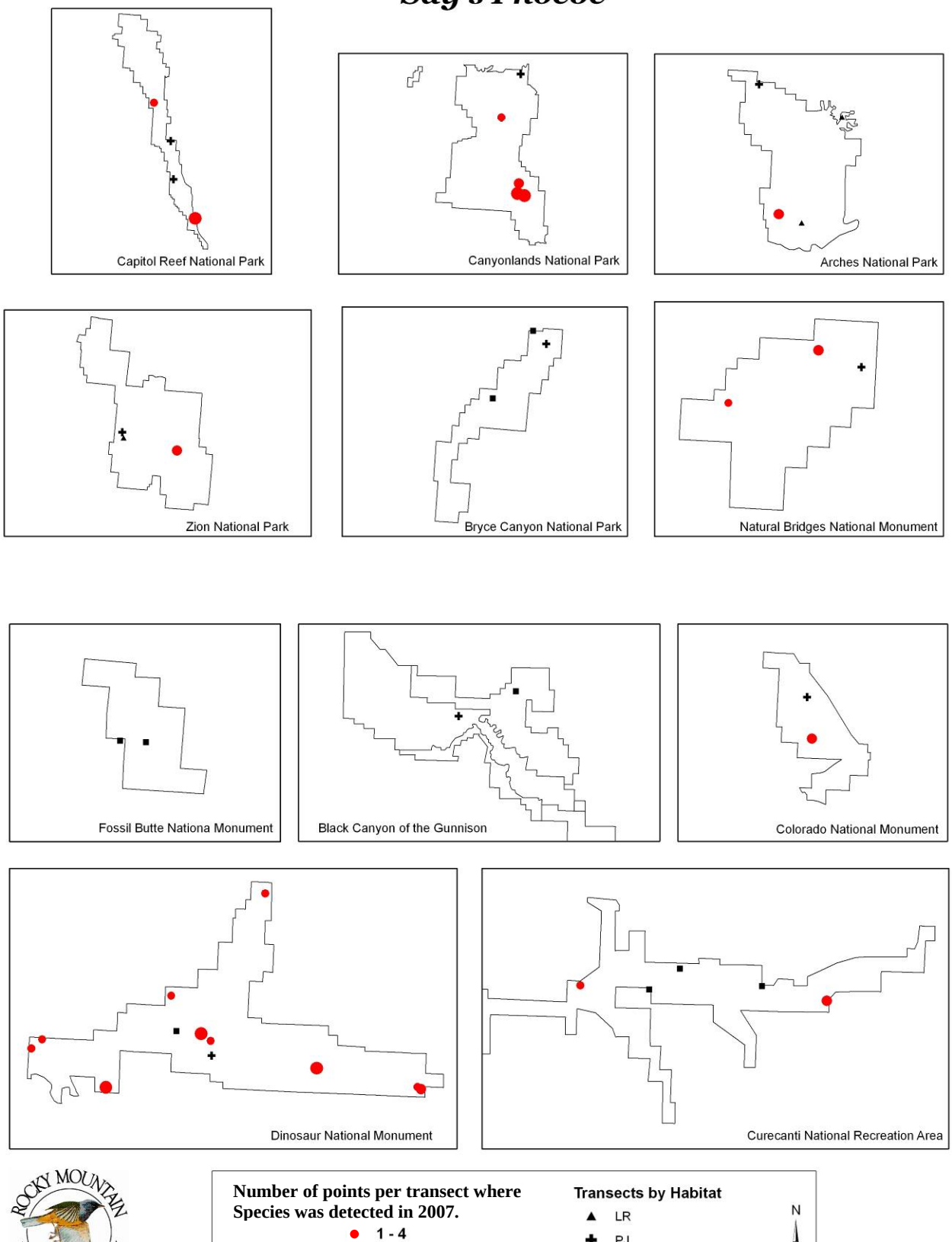
Say's Phoebes nest in niches and crevasses of cliffs and rocky outcrops in open shrubland habitats and along streams in those habitats (Righter et al. 2004). In 2007, we detected 67 individual Say's Phoebe in three habitats on NCPN transects. This species arrives on its breeding grounds earlier that most other migrants, and as a result, our surveys may miss the period when it is most actively singing. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Say's Phoebe in at least low-elevation riparian habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Say's Phoebe on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	2.9	1.8	4.5	27	36	46
Pinyon-Juniper	0.6	0.2	1.7	66	9	12
Sage Shrubland	ID	--	--	--	--	9

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Say's Phoebe


Capitol Reef National Park
Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
ROCKY MOUNTAIN BIRD OBSERVATORY
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

Gray Vireo
(*Vireo vicinior)*

*PIF BCR 16 Species of Continental Concern, Regional Concern, and Regional Stewardship
*USFWS Region 6 Species of Conservation Concern

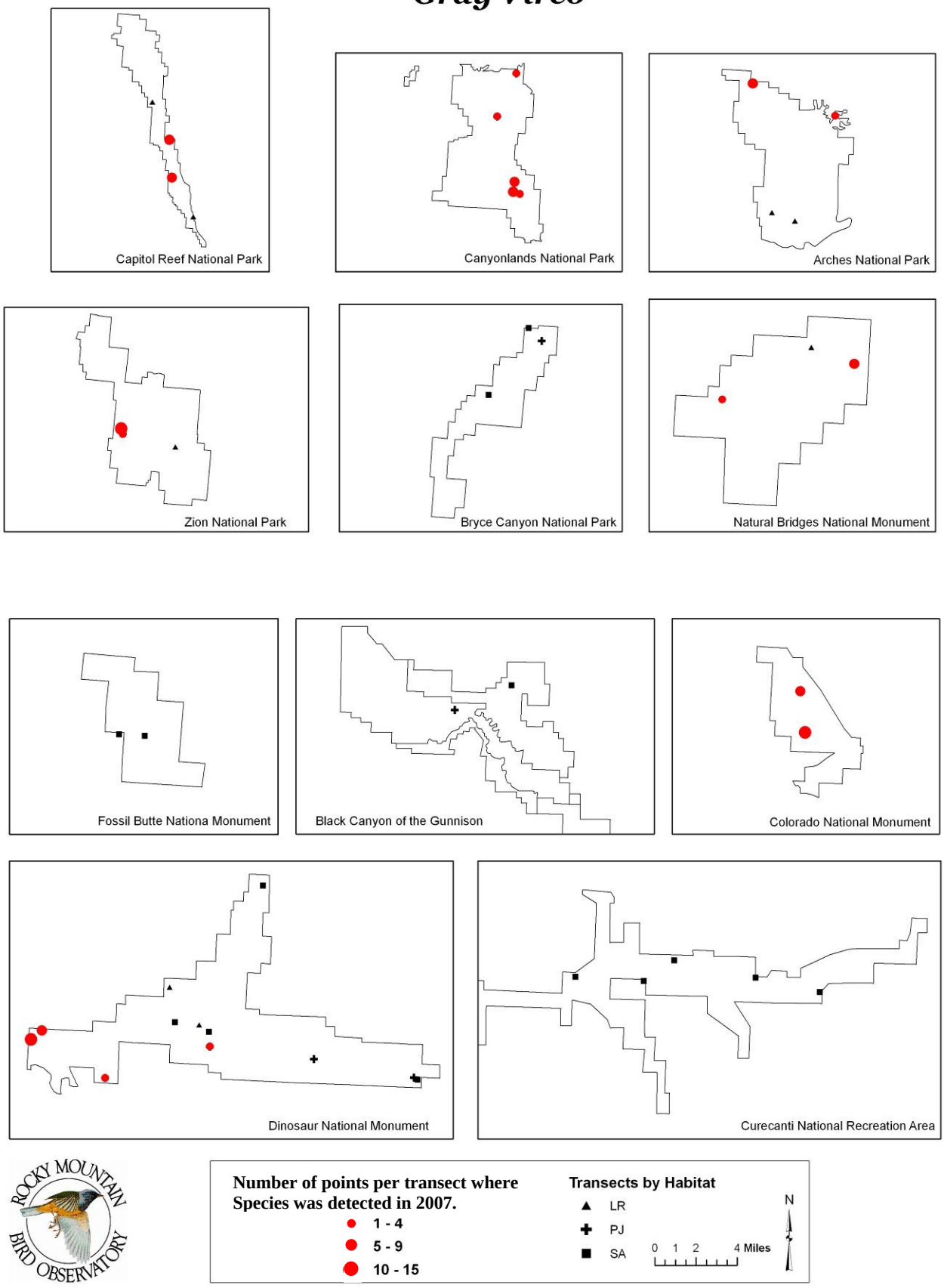
Gray Vireos nest in arid pinyon-juniper habitat usually with a deciduous shrub component (Righter et al. 2004). In 2007, we detected 102 individual Gray Vireos in three habitats on NCPN transects. Most of our detections of Gray Vireo on NCPN transects were from pinyon-juniper habitat. The detections from low-elevation riparian and sage shrubland habitats were always associated with nearby pinyon-juniper. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Gray Vireo in pinyon-juniper, and perhaps low-elevation riparian habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Gray Vireo on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	1.0	0.4	2.4	52	19	19
Pinyon-Juniper	6.3	3.5	11.4	36	75	79
Sage Shrubland	ID	--	--	--	--	4

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Gray Vireo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Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
ROCKY MOUNTAIN BIRD OBSERVATORY
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

Plumbeous Vireo
(*Vireo plumbeus)*

*PIF BCR 16 Species of Regional Stewardship

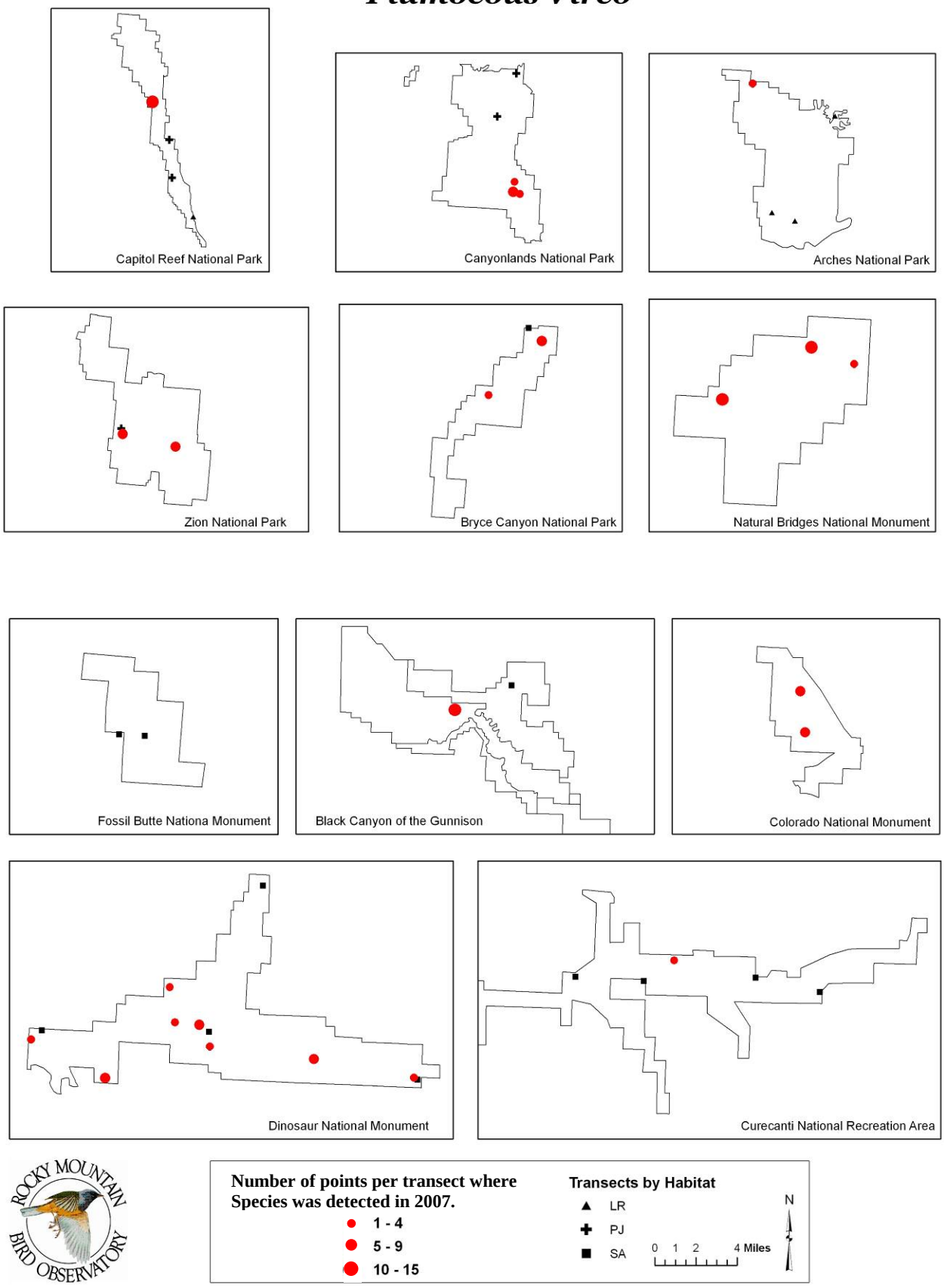
Plumbeous Vireos commonly nest throughout the Colorado Plateau region on ridges, mesas, mountain slopes, and plateaus. They nest most often in pinyon-juniper woodlands where they prefer the taller, denser stands. They also, less frequently, nest in riparian cottonwood habitats (Righter et al. 2004). In 2007, we detected 142 individual Plumbeous Vireos in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Plumbeous Vireo in low-elevation riparian and pinyon-juniper habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Plumbeous Vireo on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	15.7	10.5	23.5	23	70	80
Pinyon-Juniper	5.8	2.8	12.0	46	53	56
Sage Shrubland	ID	--	--	--	--	6

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Plumbeous Vireo



Warbling Vireo
(*Vireo gilvus*)

*PIF BCR 16 Species of Regional Stewardship

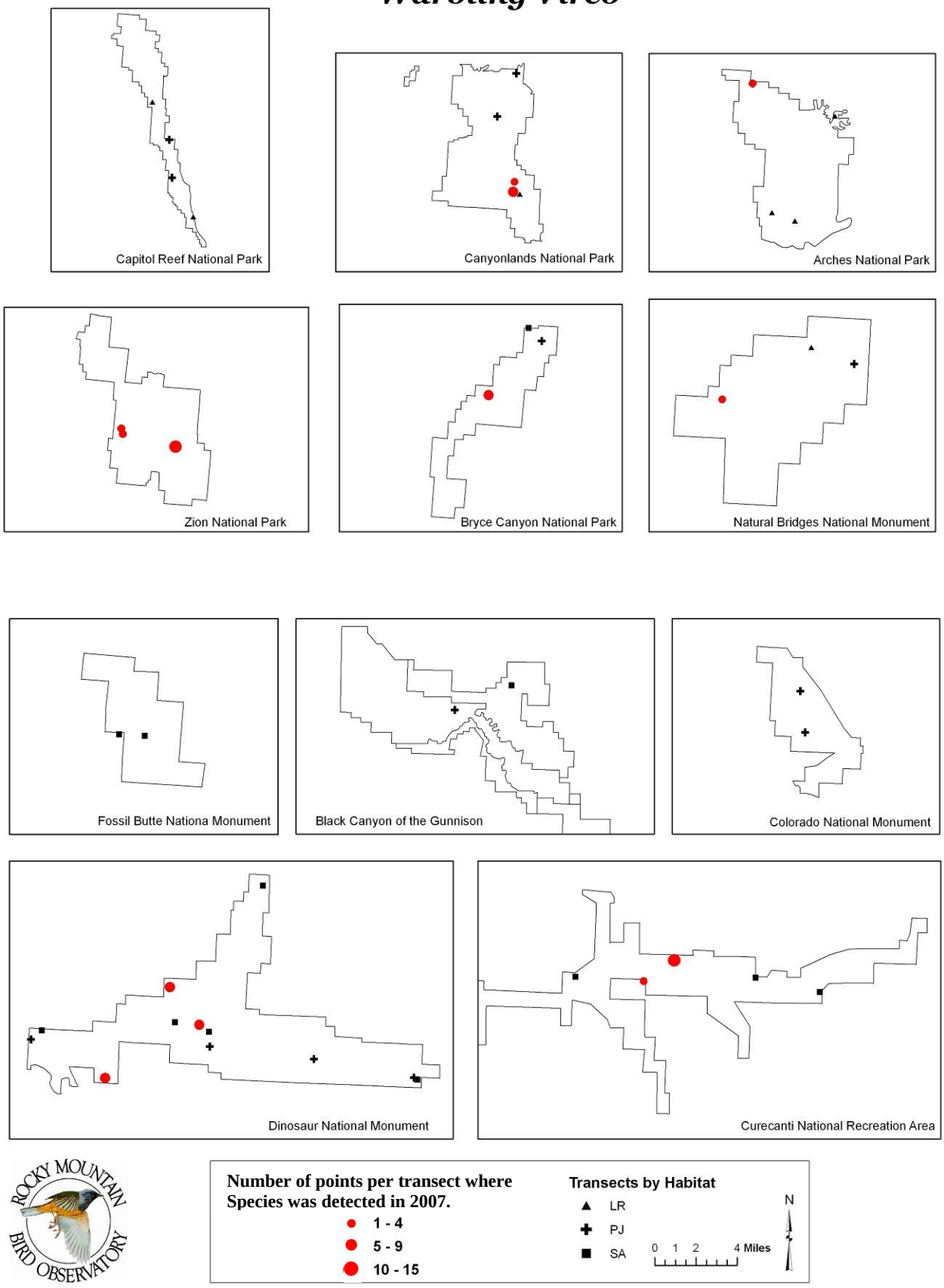
Warbling Vireos nest in a variety of habitats, including pinyon-juniper, and cottonwood galleries in riparian habitat (Righter et al. 2004). Although Warbling Vireos will breed in the low elevations of NCPN, they are much more common in higher-elevation deciduous forests. In 2007, we detected 69 individual Warbling Vireos in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Warbling Vireo in low-elevation riparian habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Warbling Vireo on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	6.9	3.0	15.8	51	36	38
Pinyon-Juniper	ID	--	--	--	--	8
Sage Shrubland	ID	--	--	--	--	23

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Warbling Vireo



Pinyon Jay
(*Gymnorhinus cyanocephalus)*

*PIF BCR Species of Continental Concern, Continental Stewardship, Regional Concern, and Regional Stewardship
*PIF BCR 10 Species of Continental Concern

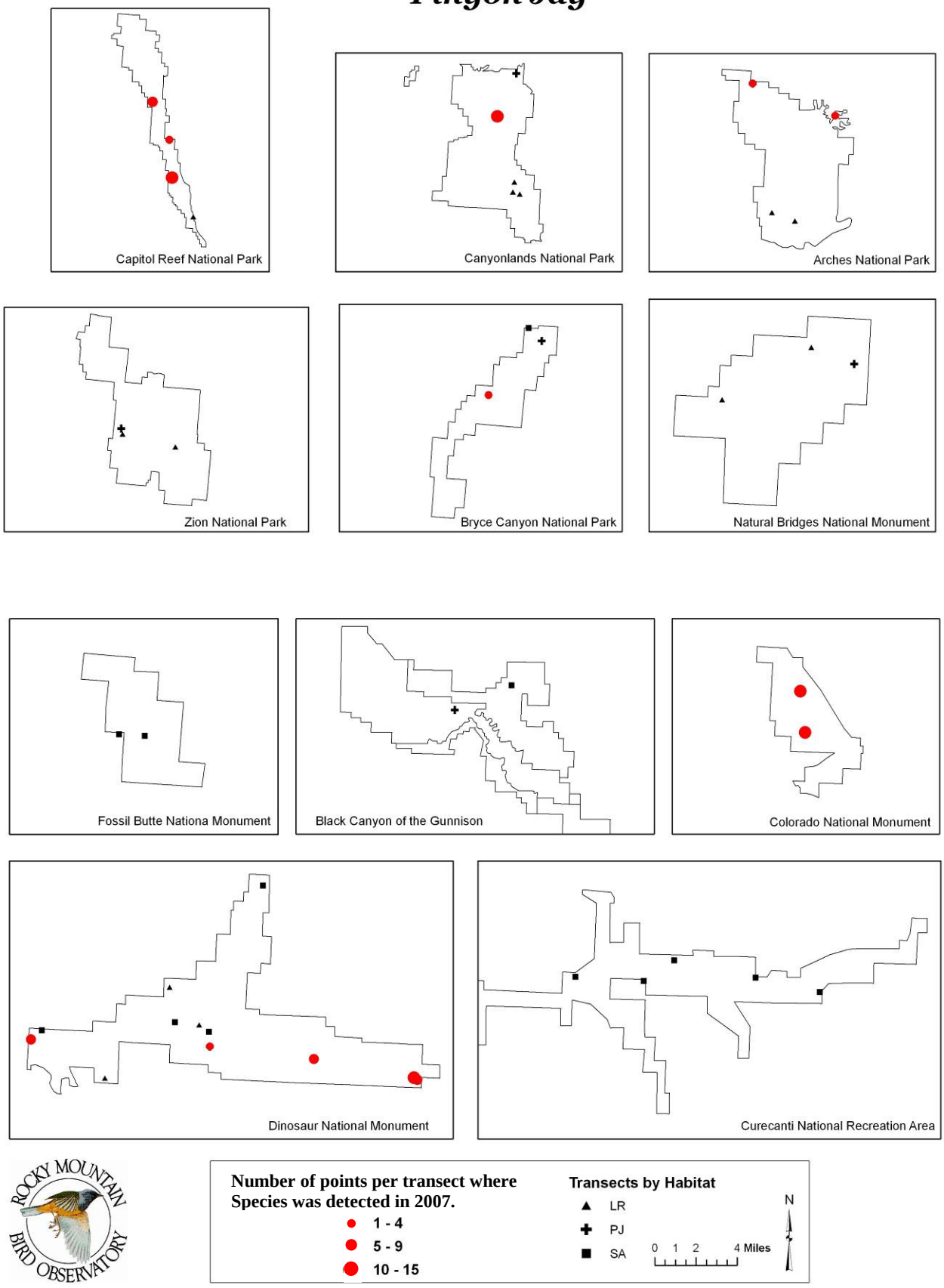
Pinyon Jays are rarely found in habitats other than pinyon juniper. They are important for the overall health of pinyon forests as they cache (basically planting) large amounts of seeds. They frequently travel in large flocks, and it is rare to detect a single individual (Righter et al. 2004). In 2007, we detected 230 individual Pinyon Jays in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Pinyon Jay in pinyon-juniper habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Pinyon Jay on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	49
Pinyon-Juniper	5.3	2.9	9.7	37	100	174
Sage Shrubland	ID	--	--	--	--	7

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Pinyon Jay


Capitol Reef National Park
Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
ROCKY MOUNTAIN BIRD OBSERVATORY
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

Clark's Nutcracker
(*Nucifraga columbiana*)

*PIF BCR 16 Species of Continental Stewardship and Regional Stewardship
*PIF BCR 10 Species of Continental Stewardship and Regional Stewardship

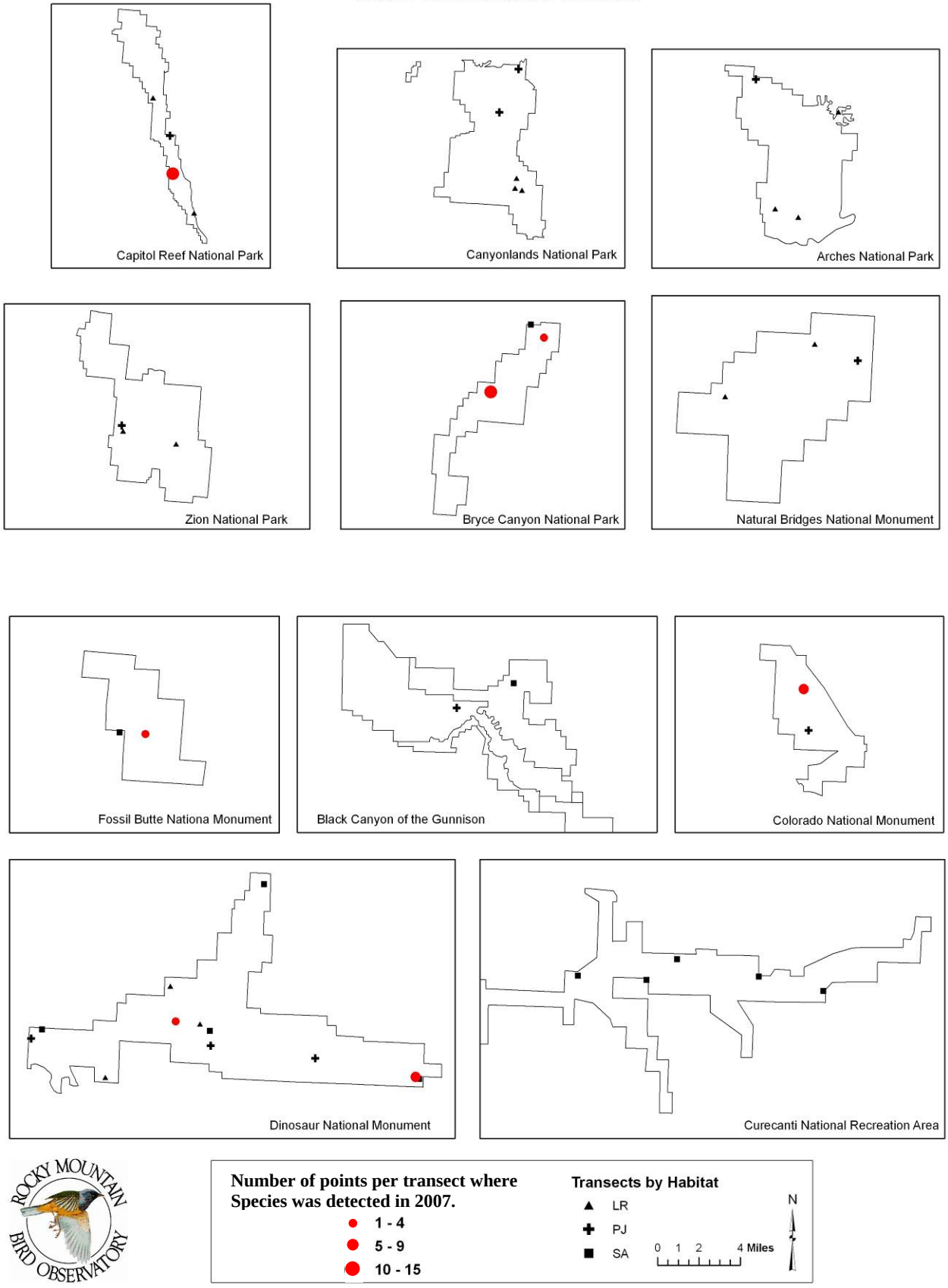
On the Colorado Plateau, Clark's Nutcrackers nest on mountain slopes and mesa tops, usually above 6,000 feet (Righter et al 2004). They travel long distances in search of food, which may explain our detections of the species in low elevations in the NCPN. In 2007, we detected 26 individual Clark's Nutcrackers in two habitats on NCPN transects. Given the specific habitat requirements of Clark's Nutcracker, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Clark's Nutcracker on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	15
Sage Shrubland	ID	--	--	--	--	11

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Clark's Nutcracker



Black-billed Magpie
(*Pica hudsonia*)

*PIF BCR 16 Species of Regional Stewardship

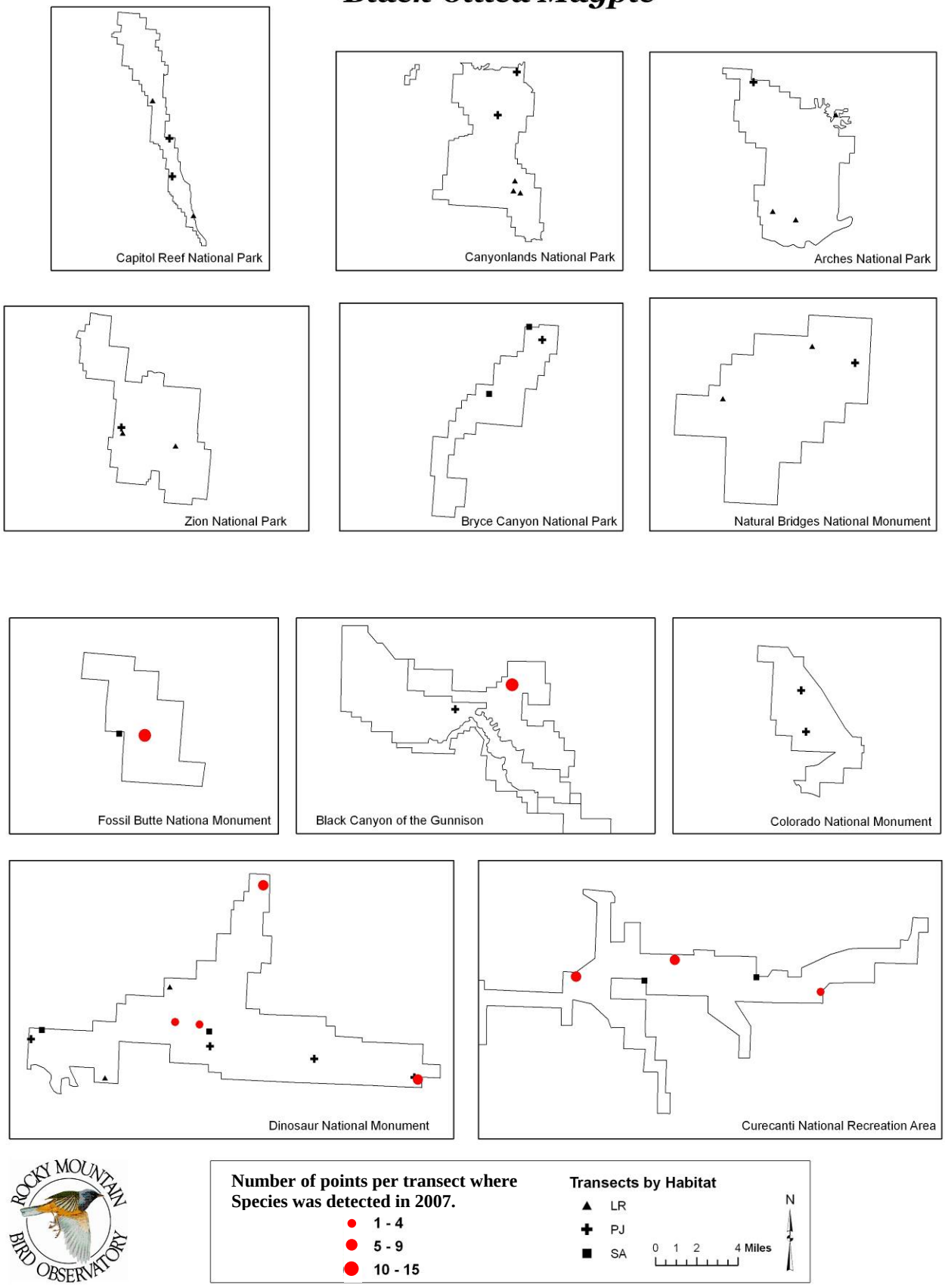
Black-billed Magpies occur throughout the Colorado Plateau region. Since they require a supply of mud to construct nests, they are most often found near water sources. They have adapted well to human disturbances, though, and are also often seen near development, particularly roads, where they forage for road-kill and refuse (Righter et al 2004). In 2007, we detected 64 individual Black-billed Magpies in two habitats on NCPN transects. Almost all of the detections were in sage shrubland habitat. Most of the detections, though, were from individuals in bordering habitats such as pinyon-juniper and riparian. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Black-billed magpie in at least one habitat in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Black-billed Magpie on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	1
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	1.3	0.7	2.4	36	50	63

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Black-billed Magpie



Violet-green Swallow
(*Tachycineta thalassina)*

*PIF BCR 16 Species of Regional Stewardship

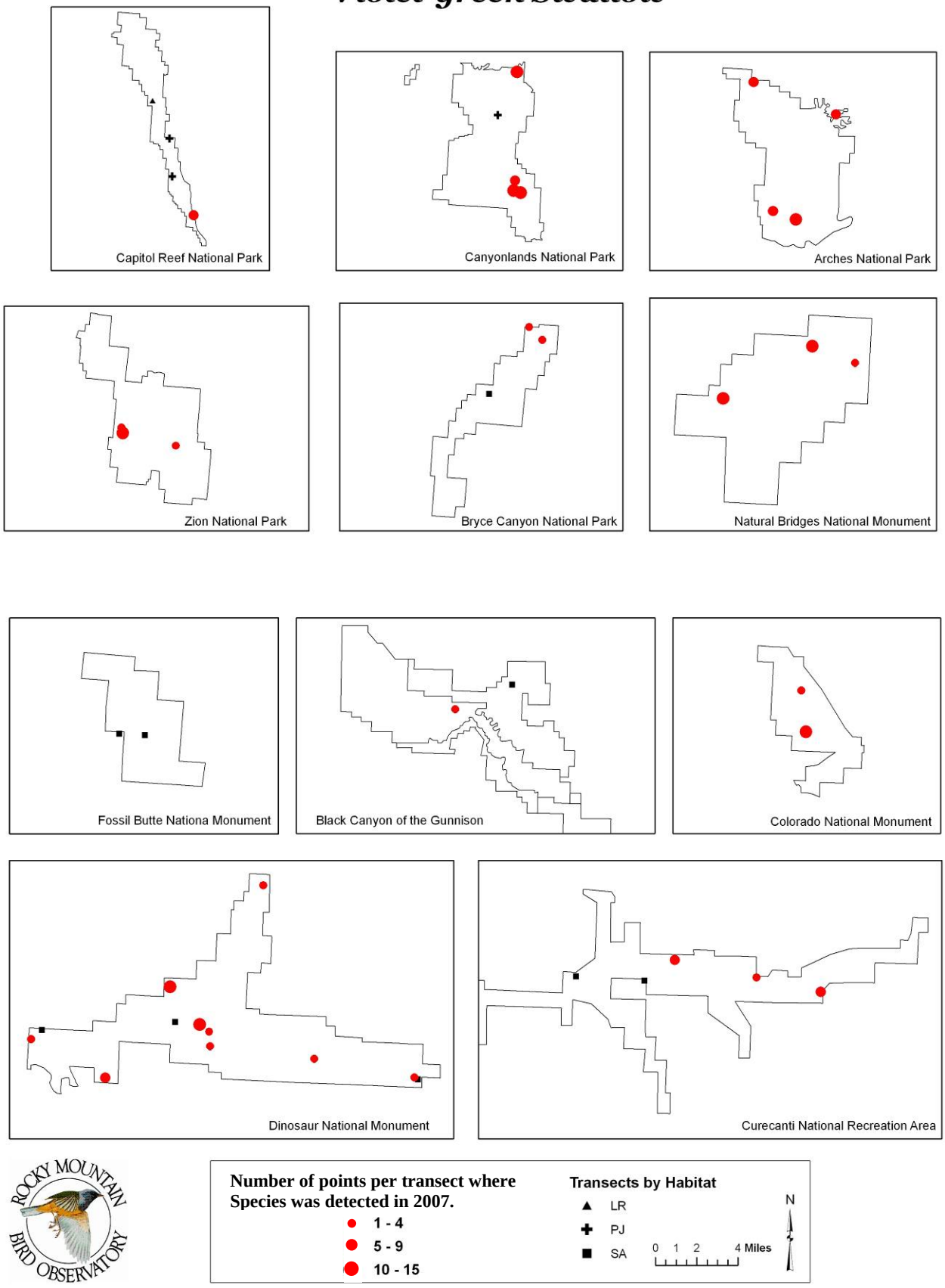
Violet-green Swallows often nest on cliffs, sometimes near White-throated Swifts. They will also nest in aspen stands or in ponderosa pine snags, often in association with Tree Swallows (Righter et al. 2004). In 2007, we detected 542 individual Violet-green Swallows in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Violet-green Swallow in at least low-elevation riparian and pinyon-juniper habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Violet-green Swallow on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	105.1	73.8	149.7	21	139	377
Pinyon-Juniper	27.2	11.4	64.9	54	63	122
Sage Shrubland	3.8	1.6	8.8	53.5	20	43

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Violet-green Swallow



Juniper Titmouse
(*Baeolophus ridgwayi)*

*PIF BCR 16 Species of Regional Concern

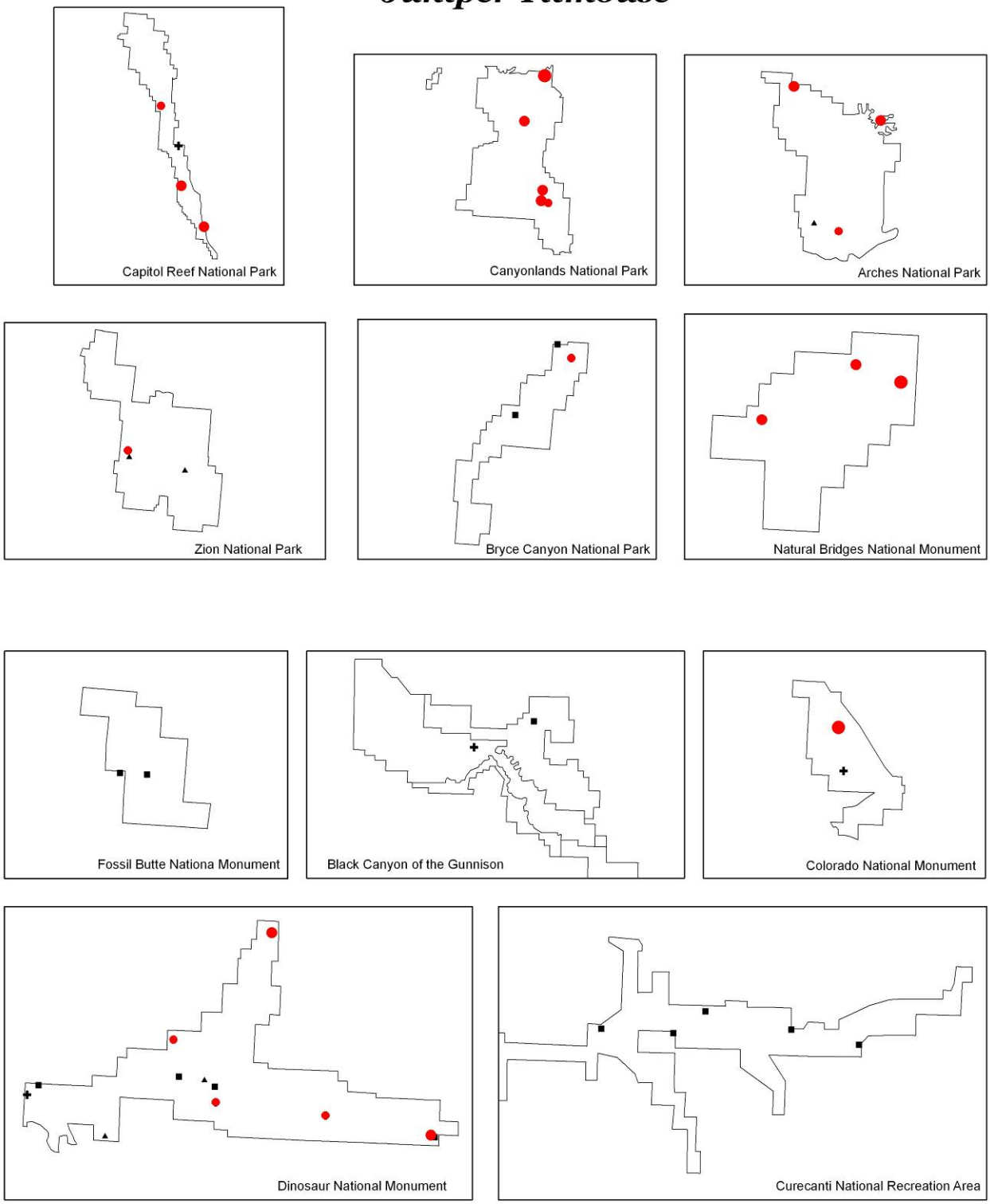
Common birds of the Colorado Plateau region, Juniper Titmice nest in knotholes or other natural cavities that occur abundantly in junipers (Righter et al. 2004). They begin nesting in early May, before most of our field work begins, so our detections of the species may not accurately represent its actual abundance in the NCPN. In 2007, we detected 139 individual Juniper Titmice in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Juniper Titmouse in pinyon-juniper and perhaps low-elevation riparian habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Juniper Titmouse on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	11.4	6.9	19.1	30	39	43
Pinyon-Juniper	29.5	16.8	51.8	33	83	90
Sage Shrubland	ID	--	--	--	--	6

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Juniper Titmouse



Pygmy Nuthatch
(*Sitta pygmaea*)

*PIF BCR 16 Species of Regional Concern

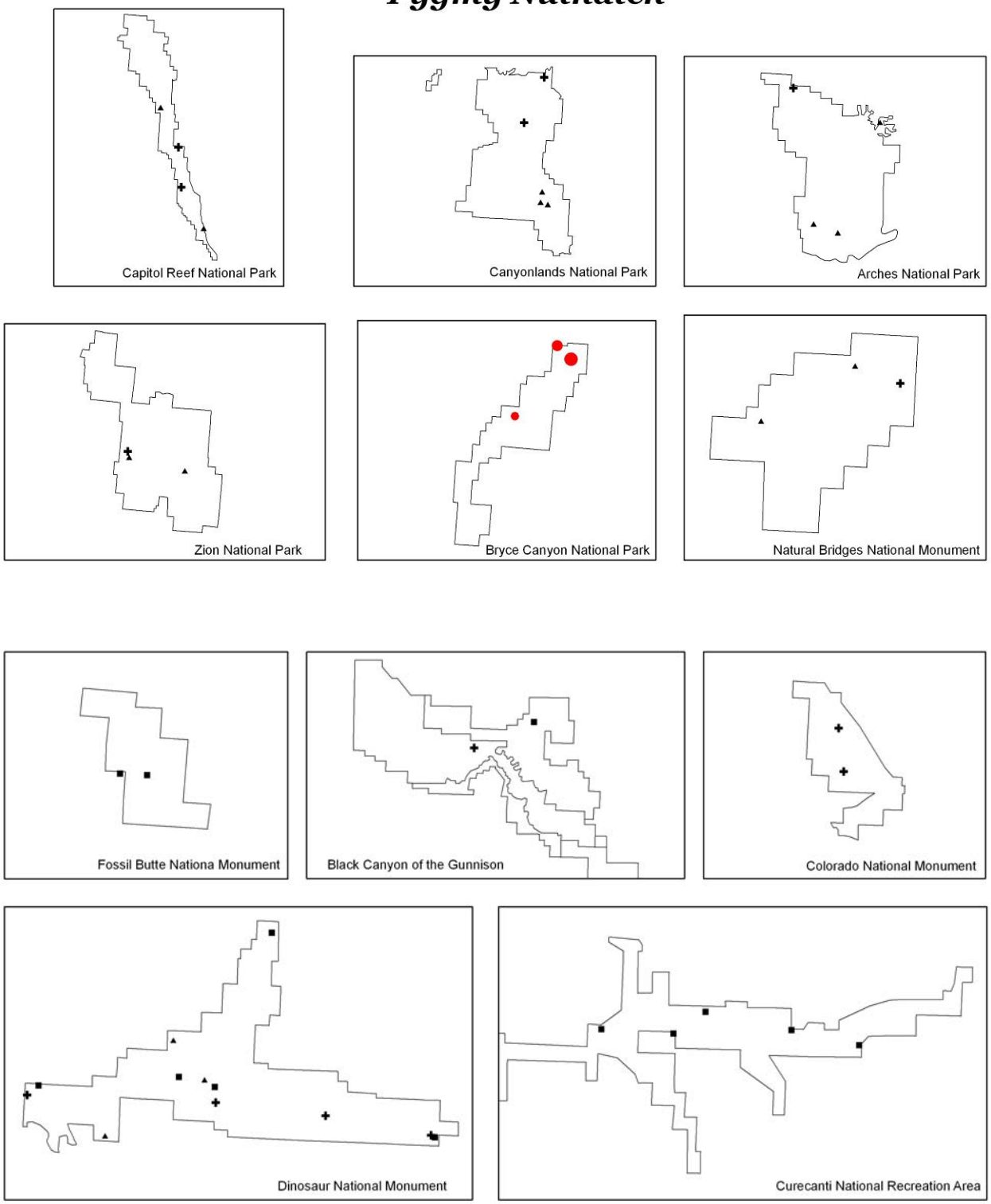
Pygmy Nuthatches are closely associated with ponderosa pine. Sometimes they will use other habitats, especially pinyon-juniper, but invariably these are within a short distance of ponderosa pine (Righter et al. 2004). In 2007, we detected 23 individual Pygmy Nuthatches in two habitats on NCPN transects. All of our detections of the species were from ponderosa pine bordering the habitats that we were surveying. Given the specific habitat requirements of Pygmy Nuthatch, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Pygmy Nuthatch on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	17
Sage Shrubland	ID	--	--	--	--	6

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Pygmy Nuthatch



Rock Wren
(*Salpinctes obsoletus)*

*PIF BCR 16 Species of Regional Stewardship

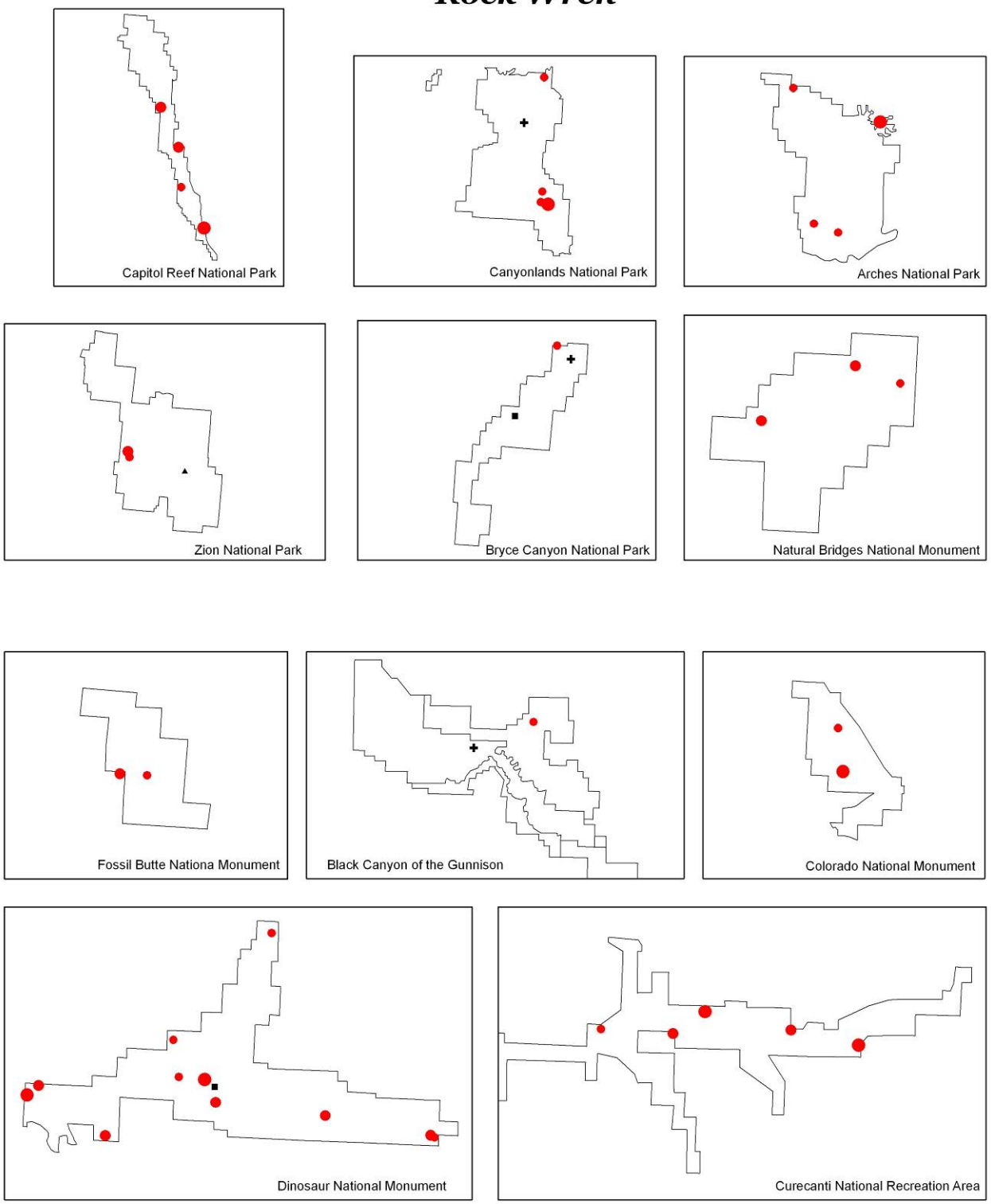
Rock Wrens typically inhabit rocky outcrops and slopes in open areas (Righter et al. 2004). In 2007, we detected 347 individual Rock Wrens in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Rock Wren all habitats that we survey in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Rock Wren on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	9.6	6.1	15.1	27	140	149
Pinyon-Juniper	4.6	2.8	7.5	29	104	107
Sage Shrubland	5.0	2.5	10.0	43	79	91

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Rock Wren


Capitol Reef National Park
Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
ROCKY MOUNTAIN BIRD OBSERVATORY
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

Canyon Wren
(*Catherpes mexicanus)*

*PIF BCR 16 Species of Regional Concern

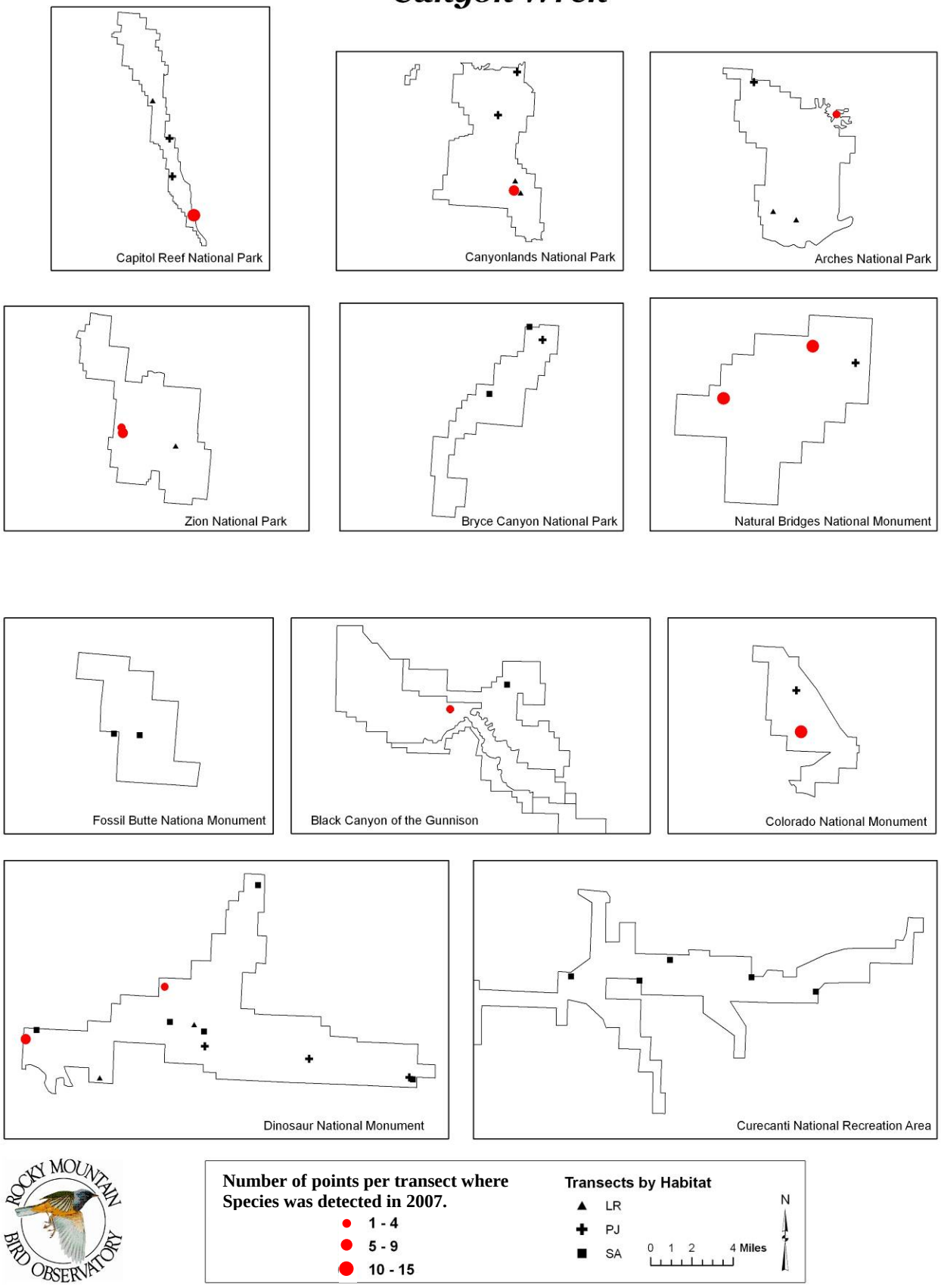
Canyon Wrens nest throughout the Colorado Plateau region on high cliffs, generally near streams or rivers, which carve out the canyons that they prefer (Righter et al. 2004). In 2007, we detected 67 individual Canyon Wrens in two habitats on NCPN transects. Most of our detections of Canyon Wrens were in low-elevation riparian habitat, where the steep canyon walls that the species prefer are prevalent. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Canyon Wren in low-elevation riparian, and perhaps pinyon-juniper habitat in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Canyon Wren on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	1.8	1.0	3.2	36	41	45
Pinyon-Juniper	0.7	0.2	1.7	62	21	22
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Canyon Wren


Capitol Reef National Park
Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
ROCKY MOUNTAIN BIRD OBSERVATORY
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

Bewick's Wren
(*Thryomanes bewickii*)

*USFWS Region 6 Species of Conservation Concern

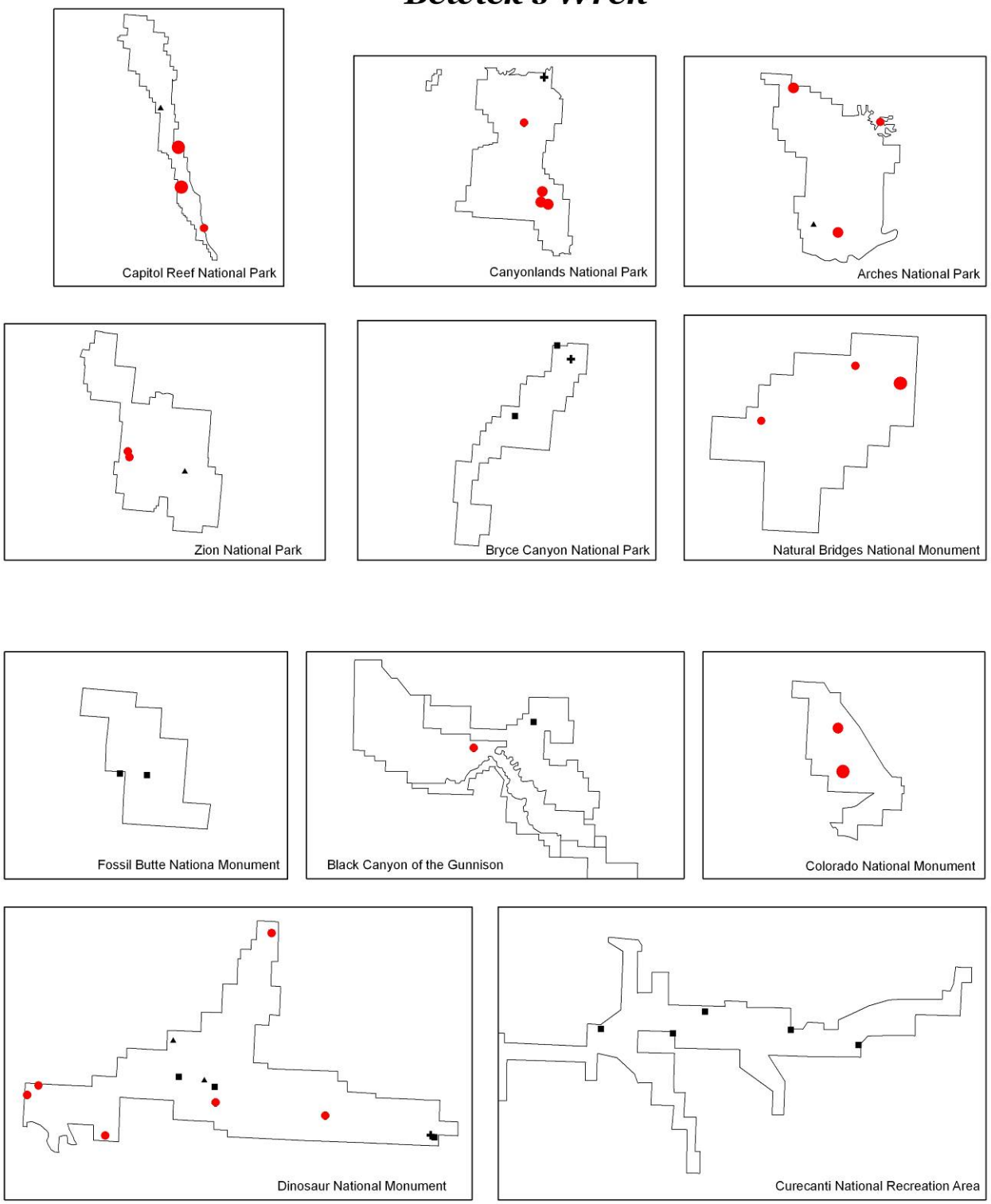
Bewick's Wren occurs throughout most of the Colorado Plateau region and breeds in a variety of habitats that contain brush (Righter et al. 2004). The species was detected in greatest numbers in pinyon-juniper habitat, but was also common in low riparian habitat. In 2007, we detected 198 individual Bewick's Wrens in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Bewick's Wren in low-elevation riparian and pinyon-juniper habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Bewick's Wren on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	9.8	4.8	20.0	42	55	62
Pinyon-Juniper	18.5	10.6	32.1	33	122	133
Sage Shrubland	ID	--	--	--	--	3

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Bewick's Wren



American Dipper
(*Cinclus mexicanus*)

*PIF BCR 10 Species of Regional Stewardship

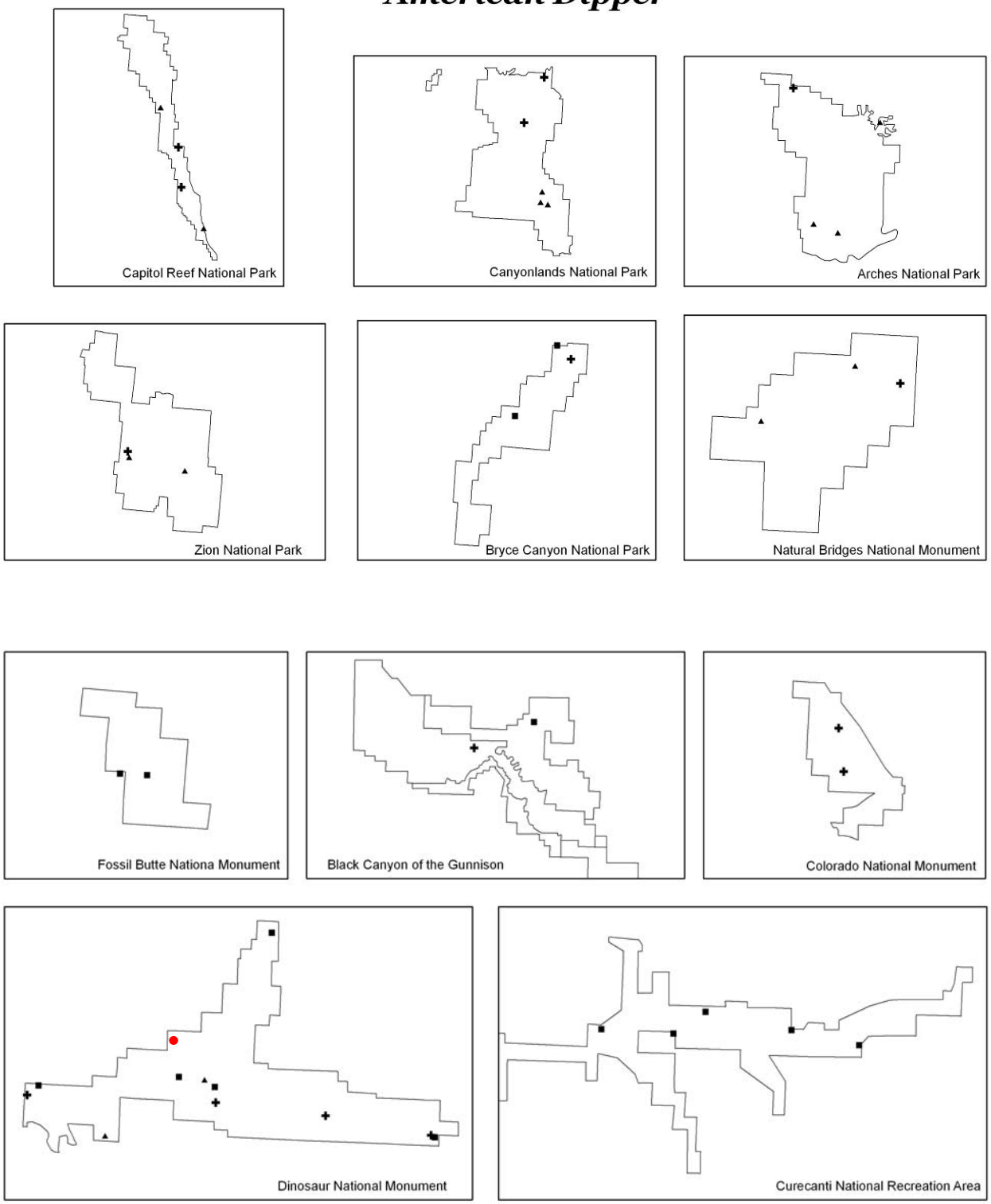
American Dippers nest along montane streams, normally at elevations of 7,000 to 11,000 feet. In the NCPN, they have been found on Jones Creek in Dinosaur National Monument. In 2007, we detected only one individual there. Given the specific habitat requirements of American Dipper, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for American Dipper on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	1
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

American Dipper



Western Bluebird
(*Sialia mexicana*)

*PIF BCR 16 Species of Regional Stewardship

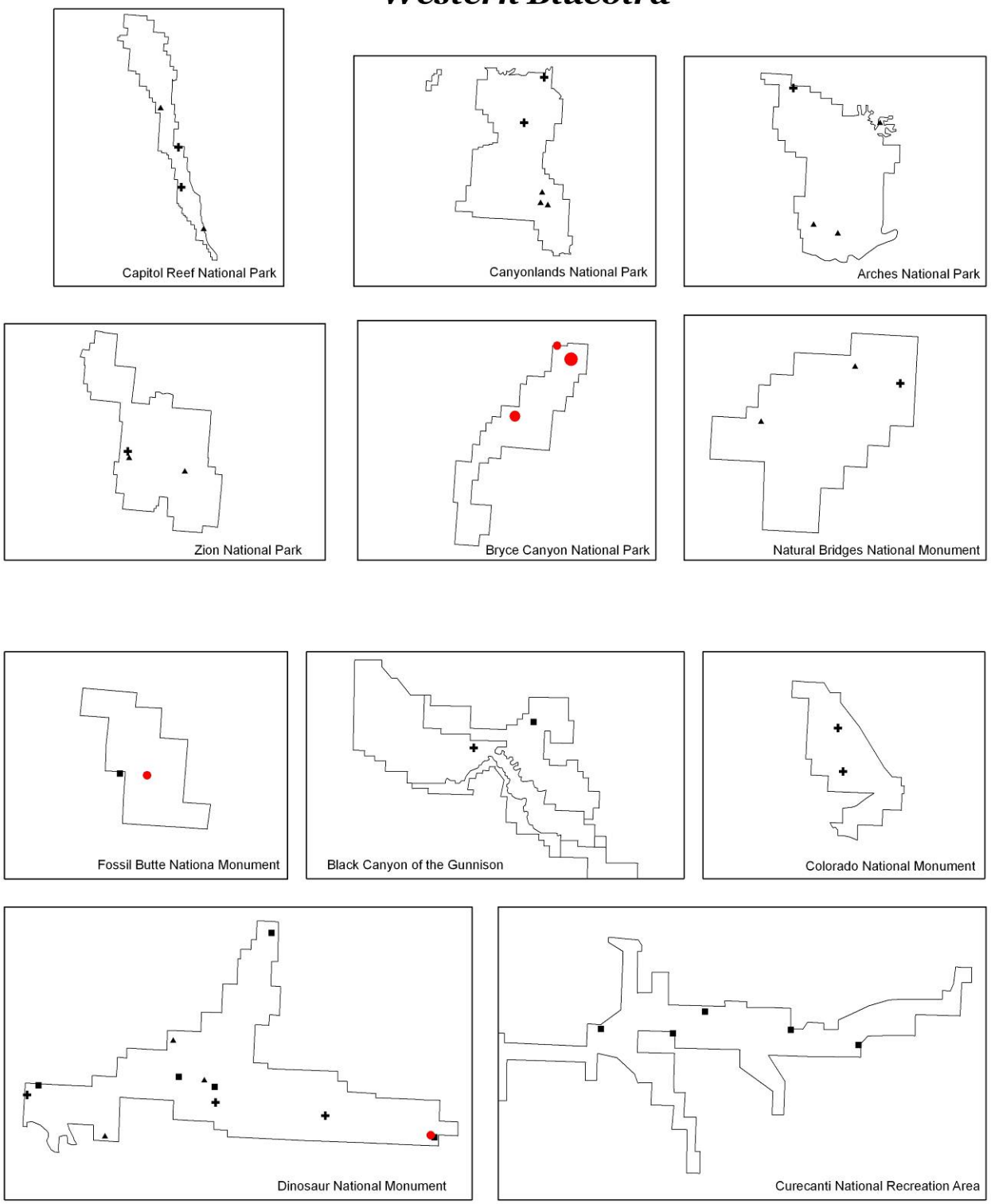
Western Bluebird is a cavity-nester that prefers ponderosa pine forests but will also nest in pinyon-juniper habitat (Righter et al. 2004). In 2007, we detected 20 individual Western Bluebirds in three habitats on NCPN transects. Given the specific habitat requirements of Western Bluebird, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Western Bluebird on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	7
Sage Shrubland	ID	--	--	--	--	13

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Western Bluebird



Mountain Bluebird
(*Salia currucoides)*

*PIF BCR 16 Species of Regional Concern, Continental Stewardship, and Regional Stewardship

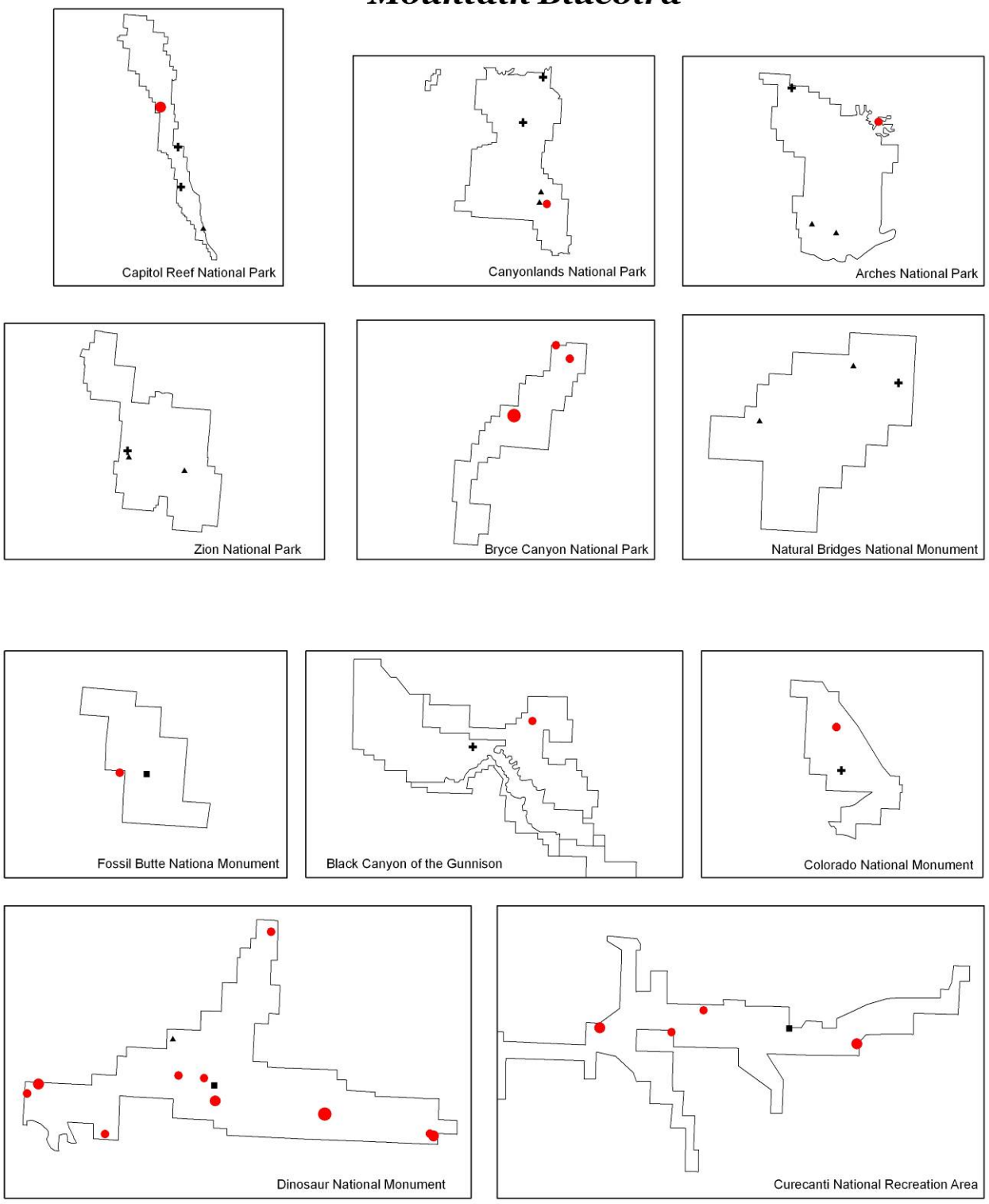
Mountain Bluebirds are secondary cavity nesters that rely largely on cavities excavated by woodpeckers for nest sites (Righter et al 2004). In 2007, we detected 174 individual Mountain Bluebirds in three habitats on NCPN transects. While we detected the largest numbers of Mountain Bluebirds in sage shrubland habitat, most of those detections were related to bordering pinyon-juniper habitat. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Mountain Bluebird in pinyon-juniper and sage shrubland habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Mountain Bluebird on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	28
Pinyon-Juniper	9.8	3.1	30.3	72	38	51
Sage Shrubland	8.3	5.0	13.6	29	79	95

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Mountain Bluebird



Townsend's Solitaire
(*Myadestes townsendi)*

*PIF BCR 10 Species of Regional Stewardship

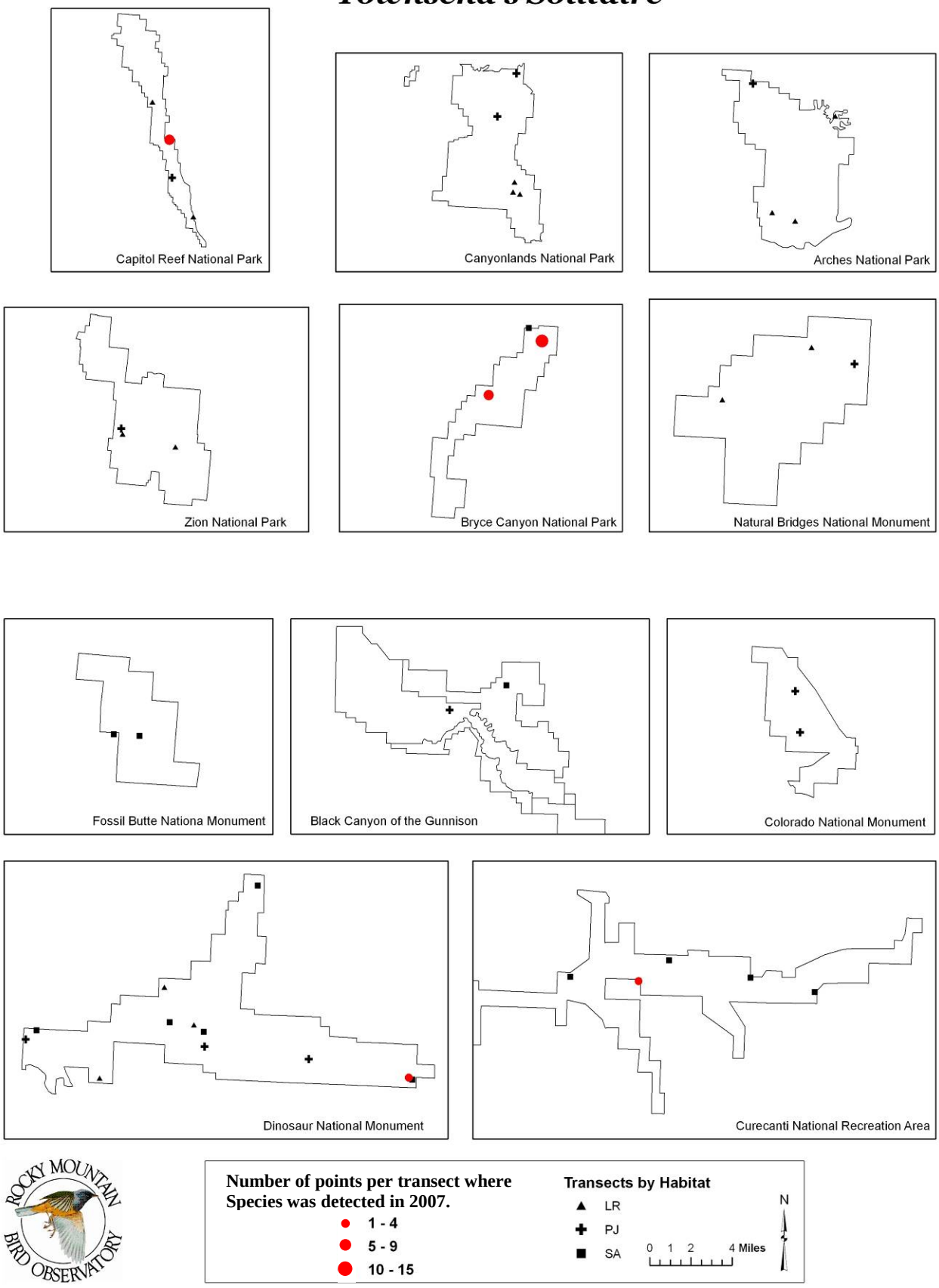
Townsend's Solitaires nest in all types of montane woodlands and forests. However, they generally prefer habitat higher in elevation than those that we sample in the NCPN. In 2007, we detected thirteen individual Townsend's Solitaires in two habitat types. Given the specific habitat requirements of Townsend's Solitaire, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Townsend's Solitaire on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	8
Sage Shrubland	ID	--	--	--	--	5

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Townsend's Solitaire



Virginia's Warbler
(*Vermivora virginiae)*

*PIF BCR 16 Species of Continental Concern, Regional Concern, and Regional Stewardship
*USFWS Region 6 Species of Conservation Concern

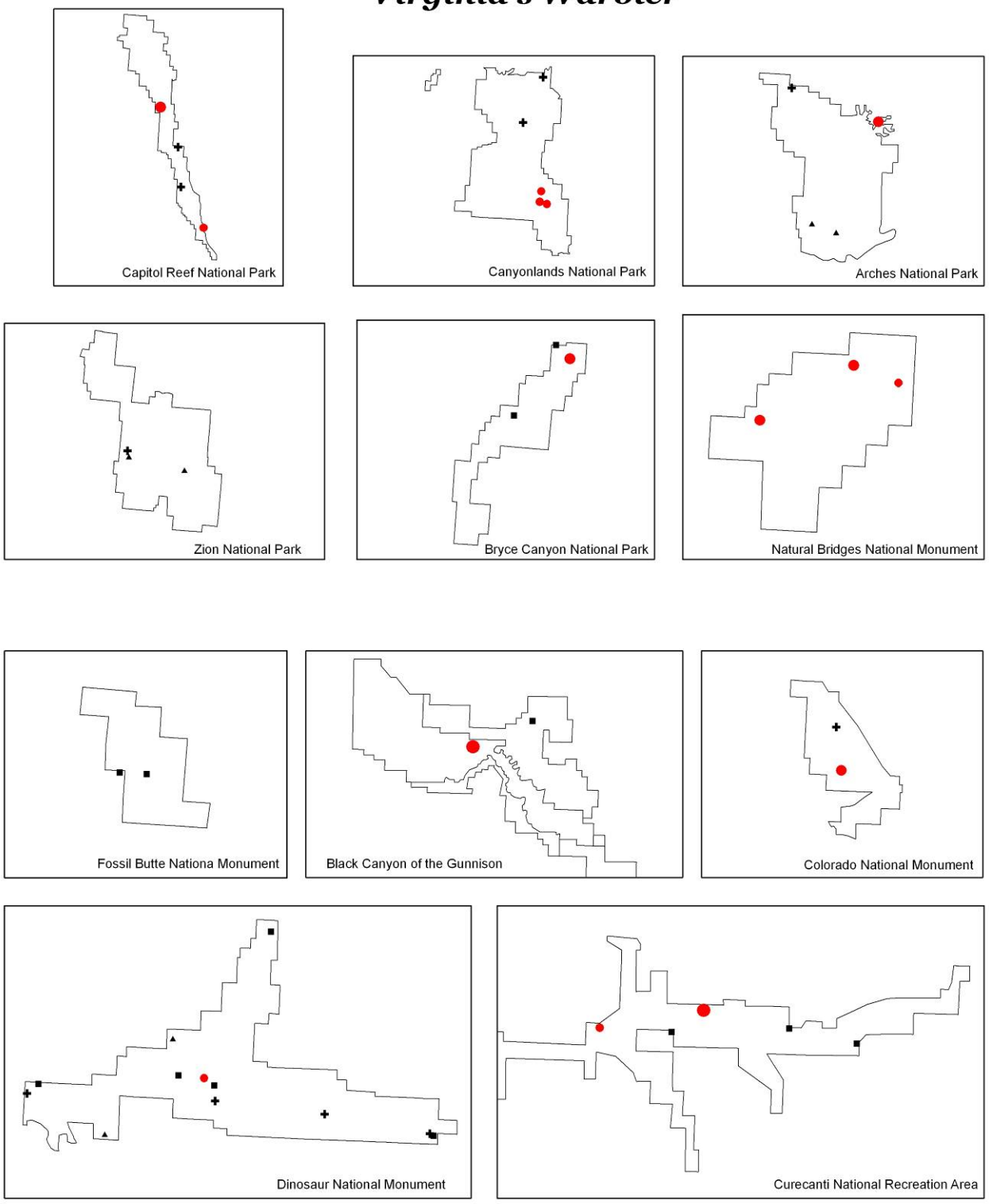
Virginia's warblers nest in dense shrublands, usually on the slopes of mesas and in open ravines (Righter et al. 2004). In 2007, we detected 103 individual Virginia's Warblers in three habitats on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Virginia's Warbler in all three habitats that we survey in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Virginia's Warbler on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	16.0	8.8	29.2	36	37	40
Pinyon-Juniper	4.0	1.3	11.9	70	34	44
Sage Shrubland	1.0	0.2	4.1	96	17	19

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Virginia's Warbler



Black-throated Gray Warbler (*Dendroica nigrescens*)

*PIF BCR 16 Species of Regional Concern

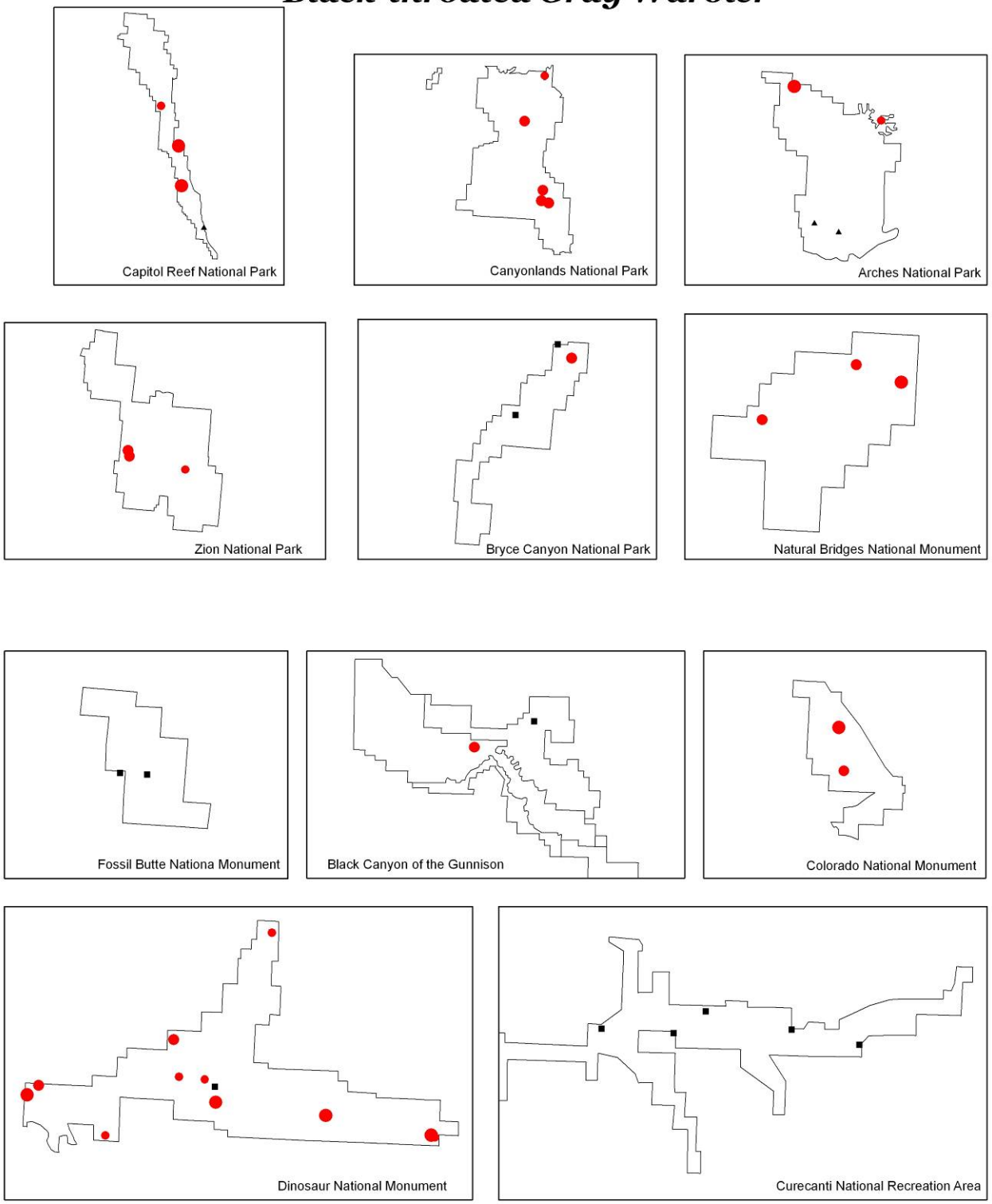
On the Colorado Plateau, Black-throated Gray Warblers prefer large stands of pinyon-dominated woodland. It is very rare to find the species outside of pinyon-juniper habitat during the breeding season (Righter et al 2004). In 2007, we detected 453 individual Black-throated Gray Warblers in three habitats on NCPN transects. Black-throated Gray Warbler is one of the the most abundant species in the NCPN. While it seems to be common in all three habitats, when the species was detected in either low-elevation riparian or sage shrubland habitat, there was always nearby pinyon-juniper habitat. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Black-throated Gray Warbler in all three habitats that we survey in the NCPN. However, it should be noted that while we give density estimates for all three habitats, the estimates for sage shrubland and riparian are highly dependent upon pinyon-juniper stands bordering those habitats.

Total number of detections, number of individuals, and habitat-specific density estimates for Black-throated Gray Warbler on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	9.2	6.2	13.6	23	59	63
Pinyon-Juniper	92.1	66.3	127.9	19	323	376
Sage Shrubland	3.9	1.4	10.8	65	13	14

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Black-throated Gray Warbler



Grace's Warbler
(*Dendroica graciae*)

*PIF BCR 16 Species of Continental Concern and Regional Concern

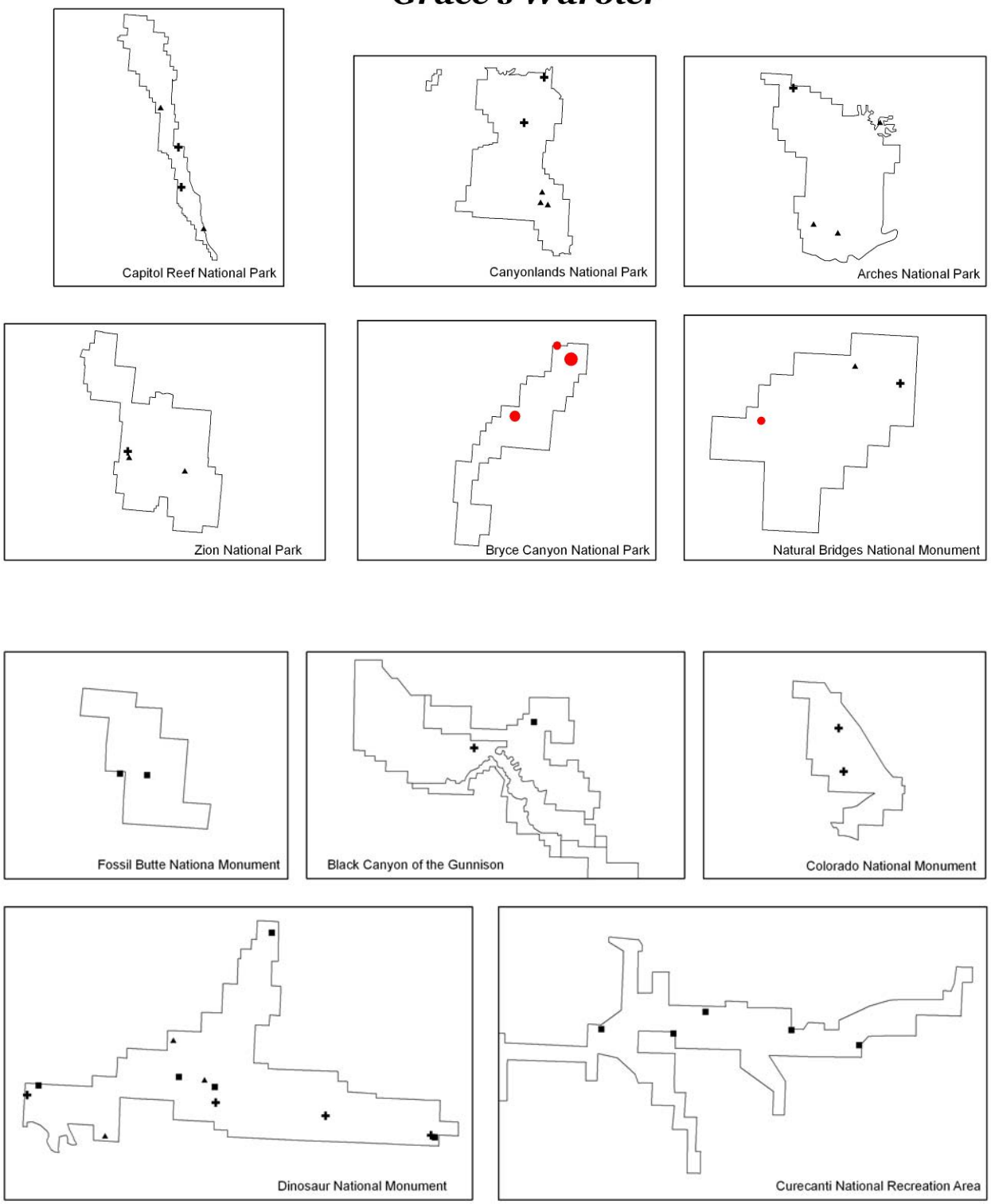
Grace's Warblers nest in open, mature ponderosa pine forests that typically have understories of scrub oak (Righter et al. 2004). In 2007, we detected 40 individual Grace's Warblers in three habitats on NCPN transects. All of our detections of this species were from ponderosa pine stands bordering our sage shrubland and pinyon-juniper transects. Given the specific habitat requirements of Grace's Warbler, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Grace's Warbler on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	3
Pinyon-Juniper	ID	--	--	--	--	20
Sage Shrubland	ID	--	--	--	--	17

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Grace's Warbler



Green-tailed Towhee
(*Pipilo chlorurus)*

*PIF BCR 16 Species of Continental Stewardship and Regional stewardship

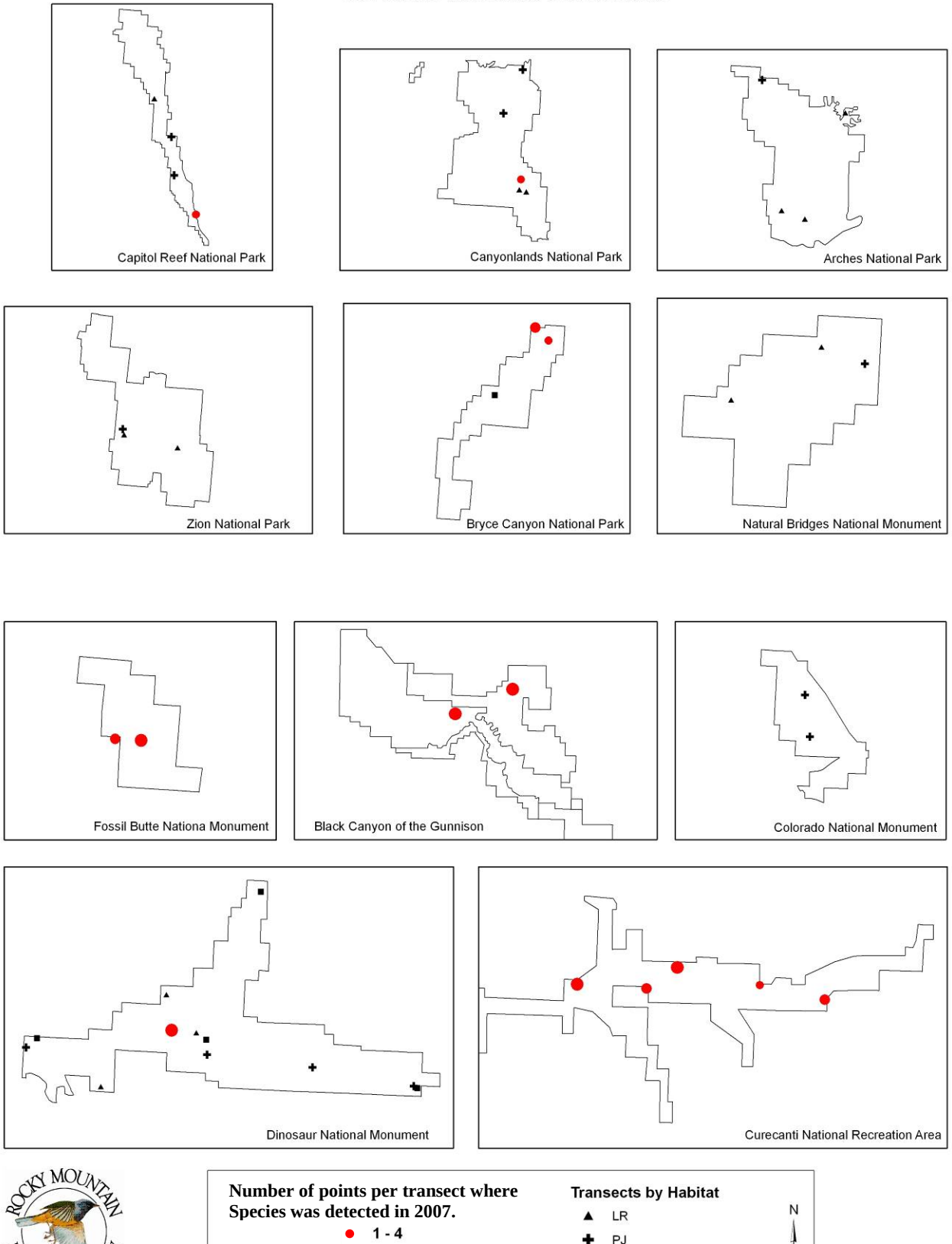
On the Colorado Plateau, Green-tailed Towhee is one of the most abundant breeding birds of sagebrush habitats (Righter et al. 2004). In 2007, we detected 366 individual Green-tailed Towhees in 3 habitats on NCPN transects; an overwhelming majority of the detections were in sage shrubland habitat. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Green-tailed Towhee in sage shrubland habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Green-tailed Towhee on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	3
Pinyon-Juniper	ID	--	--	--	--	30
Sage Shrubland	33.0	17.4	62.7	39.3	284	333

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Green-tailed Towhee



Brewer's Sparrow
(*Spizella breweri)*

*PIF BCR 16 Species Continental Concern and Regional Concern
*PIF BCR 10 Species of Continental Concern and Regional Concern
*USFWS Region 6 Species of Conservation Concern

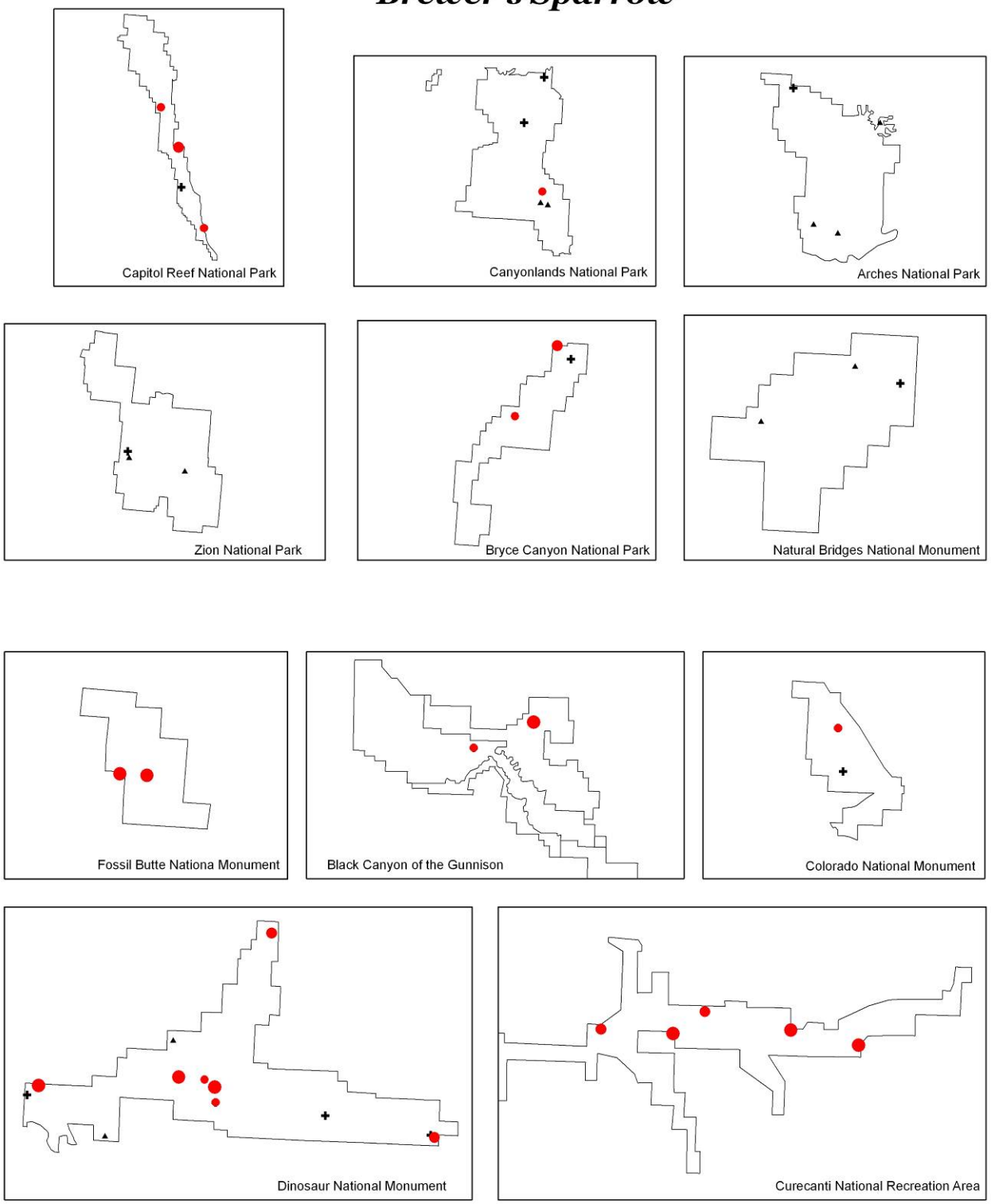
On the Colorado Plateau, Brewer's Sparrows prefer sagebrush but will also breed in greasewood, rabbitbrush, and other shrubby habitats (Righter et al. 2004). In 2007, we detected 600 individual Brewer's Sparrows in three habitats on NCPN transects. We detected Brewer's Sparrow almost exclusively in sage habitat on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Brewer's Sparrow in sage shrubland habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Brewer's Sparrow on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	4
Pinyon-Juniper	ID	--	--	--	--	21
Sage Shrubland	69.0	50.5	94.4	18.1	496	575

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Brewer's Sparrow



Black-chinned Sparrow
(*Spizella atrogularis*)

*PIF BCR 16 Species of Continental Concern

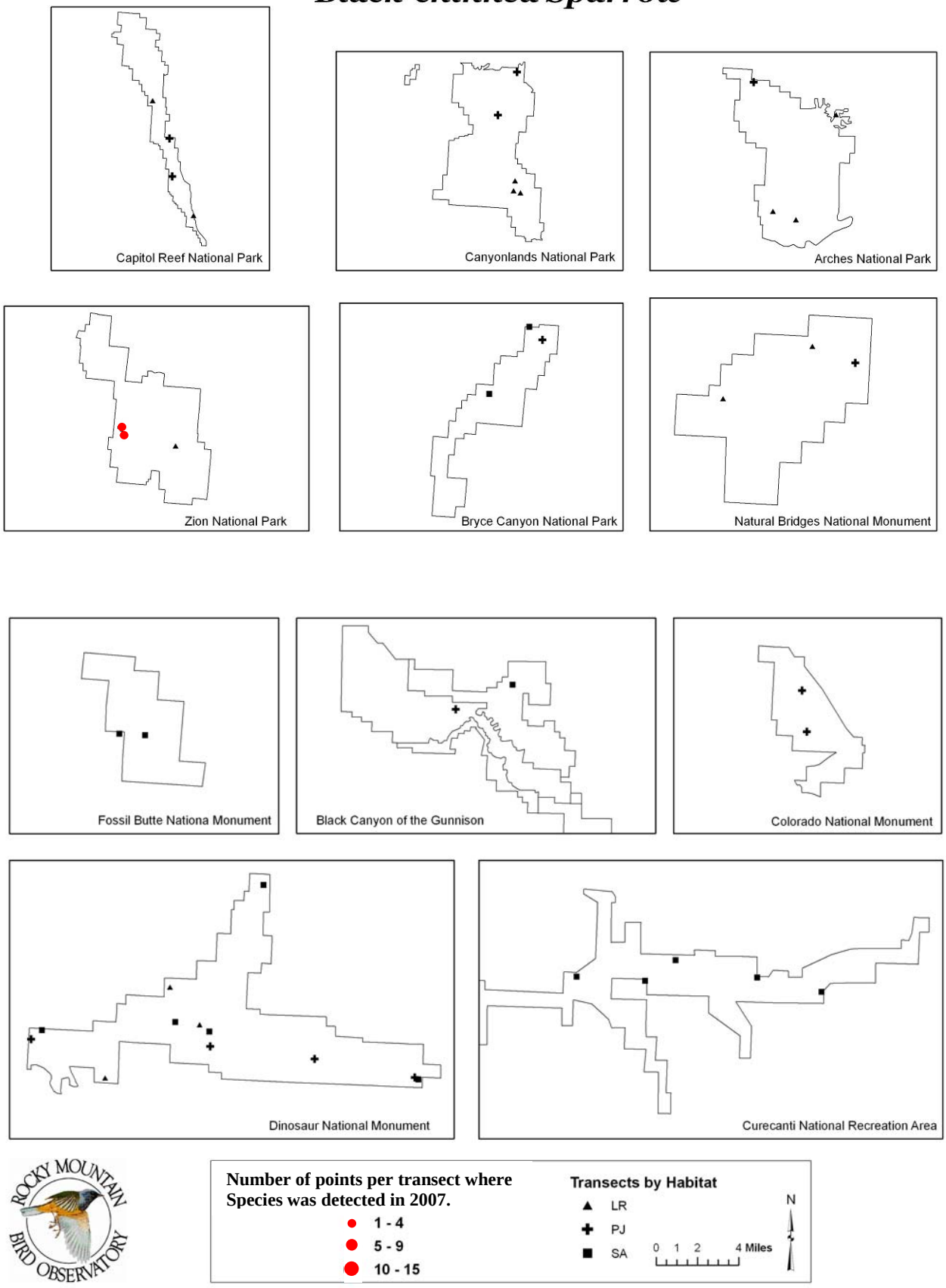
Black-chinned Sparrows prefer arid shrublands on rugged slopes that are often south-facing (Righter et al. 2004). The species is considered rare in the areas that we currently survey in the NCPN. In 2007, we detected four individual Black-chinned Sparrows in two habitats on NCPN transects. All of the Black-chinned Sparrow detections on NCPN transects were in Zion National Park, which is at the northern extreme of the species' normal breeding range. Due to its rarity in the NCPN, we will probably not be able to monitor the species, but we will continue to note its presence there. Repeat visits and nest searches at the locations that the species is detected could provide more information on the breeding status of this species in the NCPN.

Total number of detections, number of individuals, and habitat-specific density estimates for Black-chinned Sparrow on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	1
Pinyon-Juniper	ID	--	--	--	--	3
Sage Shrubland	ID	--	--	--	--	--

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Black-chinned Sparrow



Black-throated Sparrow
(*Amphispixza bilineata)*

*PIF BCR 16 Species of Regional Concern

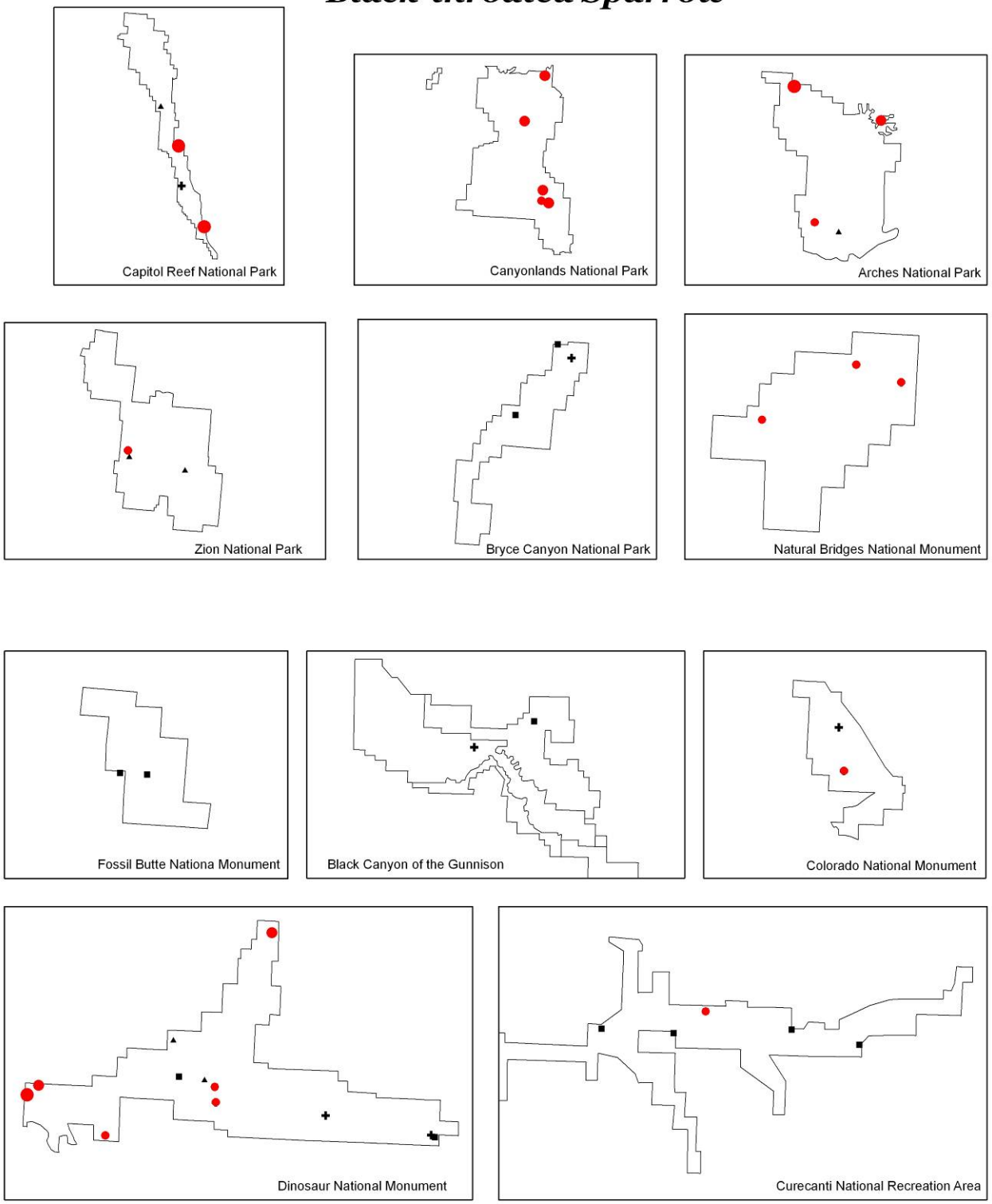
On the Colorado Plateau, Black-throated Sparrows nest in arid low-elevation habitats with widely scattered shrubs and trees (Righter et al. 2004). In 2007, we detected 197 individual Black-throated Sparrows in three habitats on NCPN transects. Although we detected Black-throated Sparrows in all three habitats, they were typically using very arid areas within those habitats. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Black-throated Sparrow in pinyon-juniper and low-elevation riparian, and perhaps sage shrubland habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Black-throated Sparrow on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	5.9	2.2	16.1	62	66	69
Pinyon-Juniper	13.6	6.4	28.6	45	102	109
Sage Shrubland	1.6	0.6	3.8	54.3	18	19

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Black-throated Sparrow



Sage Sparrow
(*Amphispiza belli)*

*PIF BCR 16 Species of Regional Concern

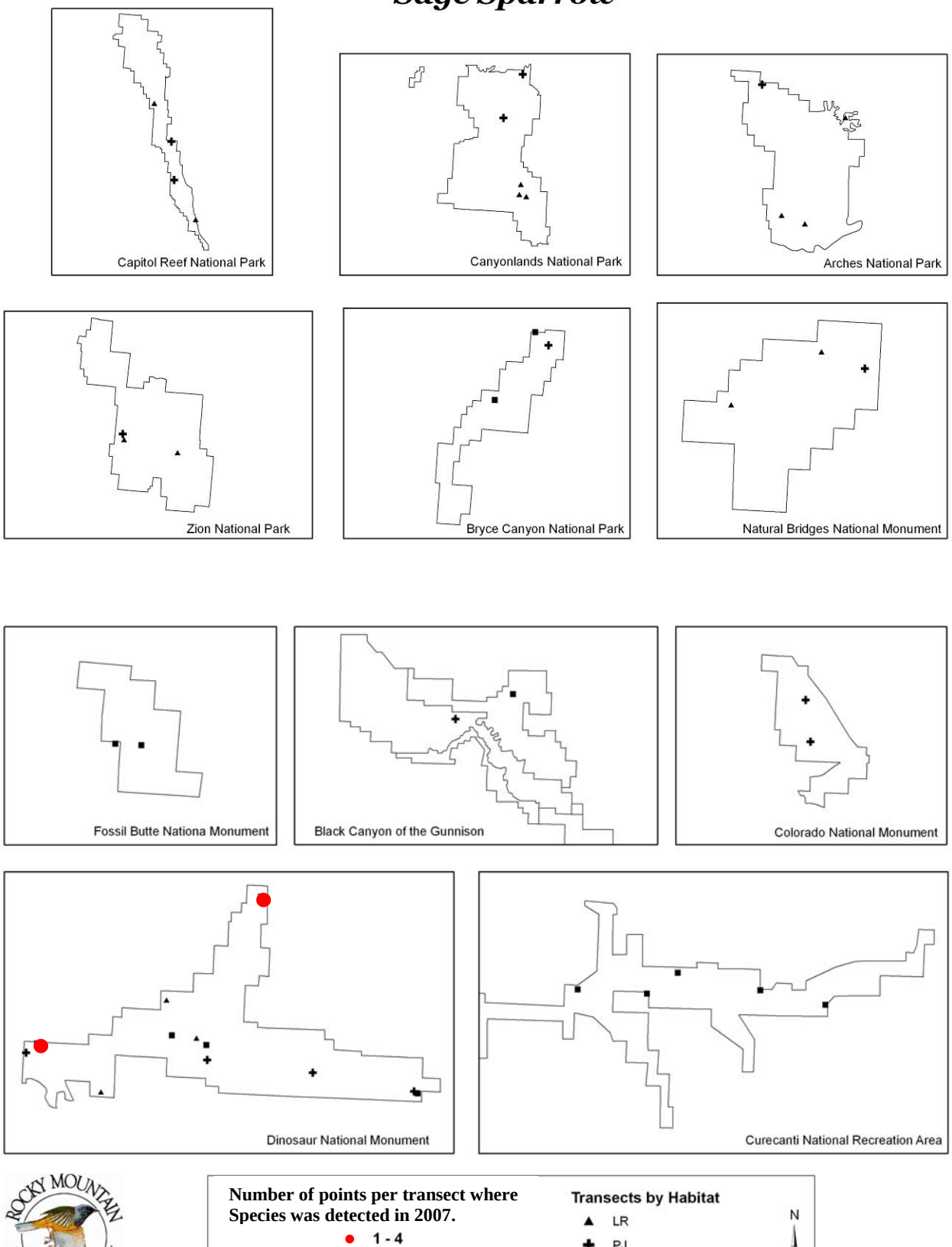
Sage Sparrows nest primarily in large, unbroken stands of sagebrush (Righter et al. 2004). In 2007, we detected 31 individual Sage Sparrows in sage shrubland habitat on NCPN transects. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Sage Sparrow in sage shrubland habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Sage Sparrow on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	--
Sage Shrubland	3.2	1.0	9.8	71.8	31	31

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Sage Sparrow



Lazuli Bunting
(*Psserina amoena*)

*PIF BCR 10 Species of Regional Stewardship

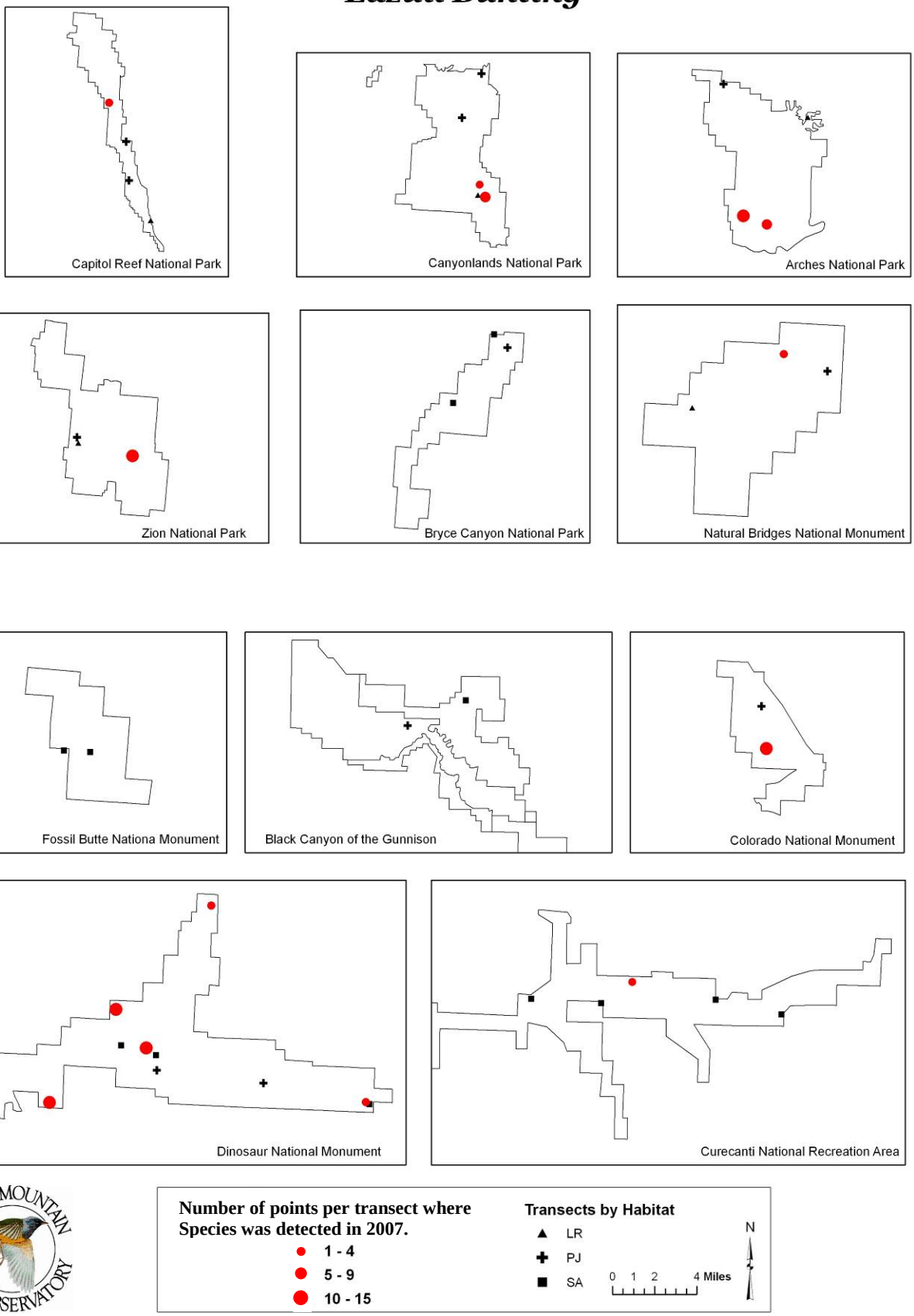
Lazuli Bunting nests throughout the Colorado Plateau region along rivers and streams. In 2007, we detected 222 individual Lazuli Buntings in three habitats in the NCPN; most were detected in low-elevation riparian habitat. If the 2005-2007 data are indicative of the abundance and distribution of the species in the NCPN, we should be able to monitor density of Lazuli Bunting in low-elevation riparian habitat.

Total number of detections, number of individuals, and habitat-specific density estimates for Lazuli Bunting on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	60.4	33.0	110.5	35	155	201
Pinyon-Juniper	ID	--	--	--	--	16
Sage Shrubland	ID	--	--	--	--	5

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Lazuli Bunting



Cassin's Finch
(*Carpodacus cassinii*)

*PIF BCR 16 Species of Regional Concern
*PIF BCR 10 Species of Regional Concern, Continental Stewardship, and Regional Stewardship

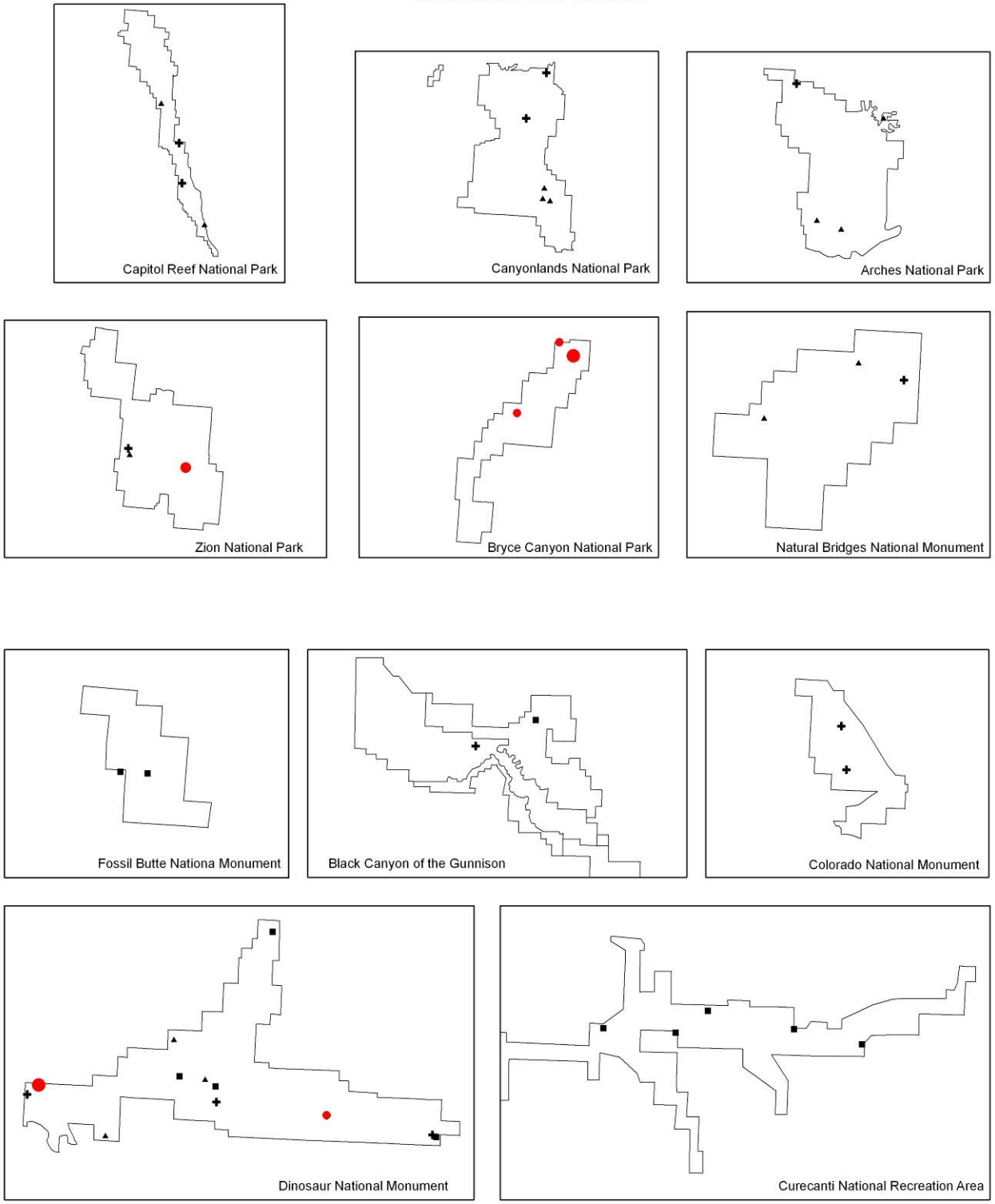
Cassin's Finches nest in all coniferous forests, but they prefer high elevation conifers and are typically found above 7,000 feet during the breeding season (Righter et al. 2004). In 2007, we detected 17 individual Cassin's Finches in three habitats on NCPN transects. Given the specific habitat requirements of Cassin's Finch, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Cassin's Finch on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	2
Pinyon-Juniper	ID	--	--	--	--	5
Sage Shrubland	ID	--	--	--	--	10

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Cassin's Finch



Red Crossbill
(*Loxia curvirostra*)

*PIF BCR 10 Species of Regional Stewardship

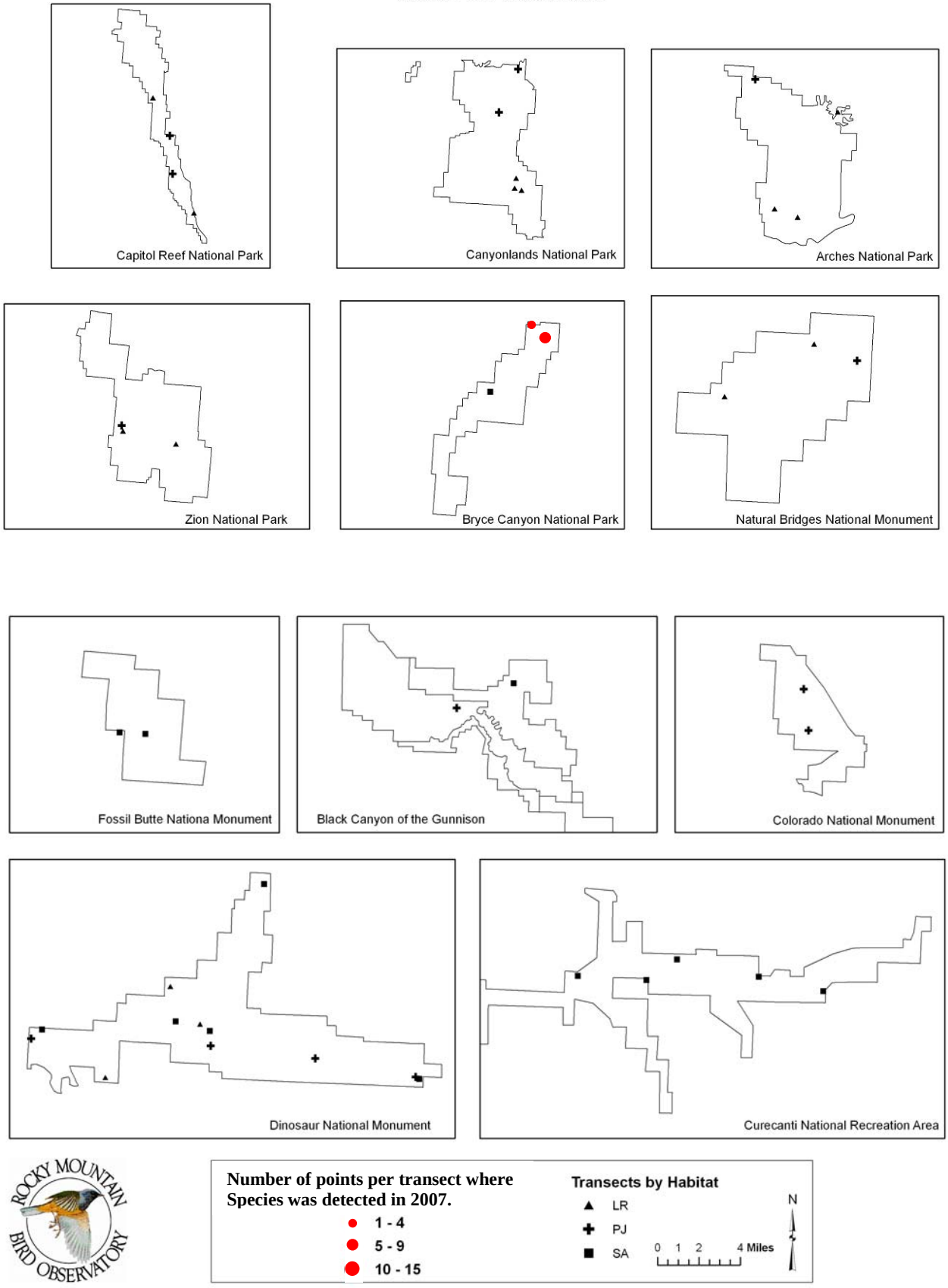
Red Crossbills breed irregularly throughout the Colorado Plateau region, typically in spruce-fir, ponderosa, and Douglas fir habitats, but they wander occasionally into other habitats including pinyon-juniper. In 2007, we detected 11 individual Red Crossbills in two habitats. All of the detections in sage shrubland habitat were from nearby stands of ponderosa pine. Given the specific habitat requirements of Red Crossbill, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Red Crossbill on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	--
Pinyon-Juniper	ID	--	--	--	--	8
Sage Shrubland	ID	--	--	--	--	3

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Red Crossbill



Pine Siskin
(*Carduelis pinus)*

*PIF BCR 16 Species of Regional Concern and Regional Stewardship

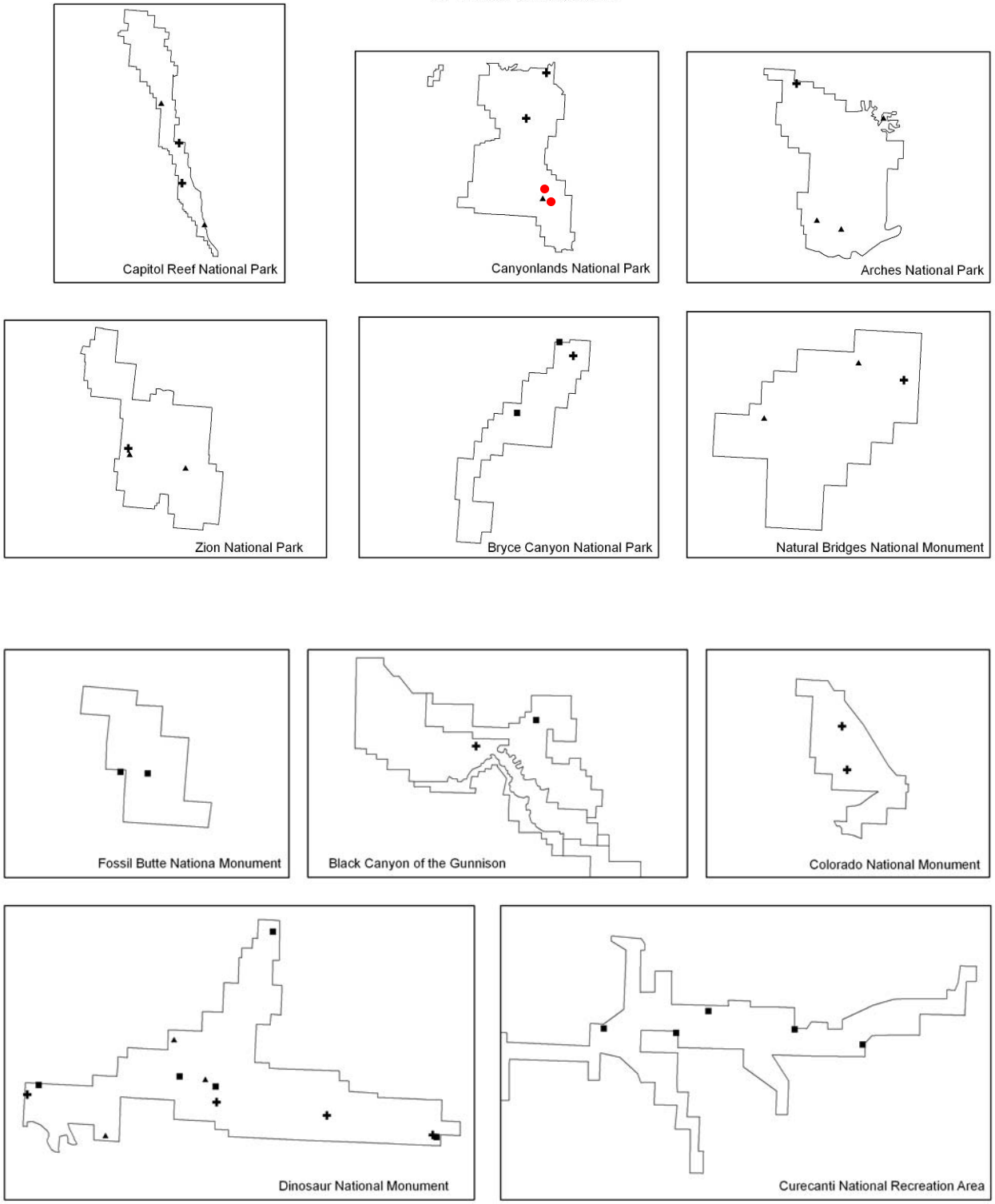
Pine Siskins nest primarily in spruce-fir forests, but may use a variety of coniferous forests, including pinyon-juniper (Righter et al. 2004). In 2007, we detected five individual Pine Siskins in Low-elevation Riparian habitat on NCPN transects. Given the specific habitat requirements of Pine Siskin, it is unlikely we will ever detect the species in large enough numbers to estimate its density in the NCPN habitats that we survey. We will, however, be able to track the species' presence there.

Total number of detections, number of individuals, and habitat-specific density estimates for Pine Siskin on the NCPN monitoring project, 2007.

Habitat	D	LCL	UCL	CV	n	N
Low-elevation Riparian	ID	--	--	--	--	5
Pinyon-Juniper	ID	--	--	--	--	0
Sage Shrubland	ID	--	--	--	--	0

D = Density (birds/square kilometer); LCL = lower 90% confidence interval of the density; UCL = upper 90% confidence interval of the density; CV(%) = coefficient of variation of the density; n = number of observations used to estimate D; N = number of individuals observed on transects; ID = insufficient data.

Pine Siskin


Capitol Reef National Park
Canyonlands National Park
Arches National Park
Zion National Park
Bryce Canyon National Park
Natural Bridges National Monument
Fossil Butte Nationa Monument
Black Canyon of the Gunnison
Colorado National Monument
Dinosaur National Monument
Curecanti National Recreation Area
Number of points per transect where Species was detected in 2007.
1 - 4
5 - 9
10 - 15
Transects by Habitat
LR
PJ
SA
0 1 2 4 Miles
N

APPENDIX B. List of all bird species observed during point transects in the Northern Colorado Plateau Network (NCPN), 2007, with management designation and species totals.

Common Name	Management Designation			Individuals Detected			
	PIF BCR 16	PIF BCR 10	USFWS	LR	PJ	SA	Total
Canada Goose				57	20	69	146
Gadwall				4	0	0	4
Mallard				4	0	0	4
Northern Shoveler				4	0	0	4
Common Merganser				3	0	7	10
Chukar				0	7	0	7
Greater Sage-Grouse	CC,RC	CC,RC,CS,RS		0	0	1	1
Wild Turkey				2	0	0	2
Great Blue Heron				0	0	2	2
Turkey Vulture				7	10	11	28
Northern Harrier		RC	BCC	0	0	5	5
Sharp-shinned Hawk				0	1	0	1
Cooper's Hawk				9	1	4	14
Red-tailed Hawk				2	4	5	11
Golden Eagle	RC		BCC	0	2	2	4
American Kestrel				1	3	7	11
Peregrine Falcon			BCC	4	3	0	7
Prairie Falcon				1	0	0	1
Killdeer				0	0	2	2
Spotted Sandpiper				6	0	0	6
Ring-billed Gull				0	0	1	1
Rock Pigeon				0	3	0	3
Eurasian Collared-Dove				1	0	0	1
Mourning Dove				188	244	84	516
Common Nighthawk	RC			0	1	0	1
Common Poorwill				0	1	0	1
White-throated Swift	CC,RS	CC		563	212	40	815
Black-chinned Hummingbird				35	15	0	50
Broad-tailed Hummingbird	RS			5	14	27	46
Belted Kingfisher				1	0	0	1
Williamson's Sapsucker				0	0	1	1
Downy Woodpecker				1	1	1	3
Hairy Woodpecker				18	2	2	22
Northern Flicker				24	18	18	60
Olive-sided Flycatcher	CC	CC,RC		0	2	2	4
Western Wood-Pewee				36	2	25	63
Willow Flycatcher	CC,RC	CC,RS		2	0	0	2
Hammond's Flycatcher				0	6	3	9
Gray Flycatcher				5	96	7	108
Dusky Flycatcher		CS,RS		1	32	66	99
Cordilleran Flycatcher	RS			1	0	0	1
Black Phoebe				30	0	0	30
Say's Phoebe	RS			46	12	9	67

Common Name	Management Designation			Individuals Detected			
	PIF BCR 16	PIF BCR 10	USFWS	LR	PJ	SA	Total
Ash-throated Flycatcher				221	131	13	365
Western Kingbird				2	0	0	2
Gray Vireo	CC,RC,RS		BCC	19	79	4	102
Plumbeous Vireo	RS			80	56	6	142
Warbling Vireo	RS			38	8	23	69
Gray Jay				0	1	0	1
Steller's Jay				0	7	9	16
Western Scrub-Jay				32	50	0	82
Pinyon Jay	CC,RC,CS	CC		49	174	7	230
Clark's Nutcracker	CS,RS	CS,RS		0	15	11	26
Black-billed Magpie	RS			1	0	63	64
American Crow				0	1	1	2
Common Raven				44	83	69	196
Horned Lark				0	1	41	42
Tree Swallow				17	7	4	28
Violet-green Swallow	RS			377	122	43	542
Rough-winged Swallow				2	0	4	6
Bank Swallow				0	1	1	2
Cliff Swallow				31	0	18	49
Barn Swallow				1	0	3	4
Black-capped Chickadee				4	0	0	4
Mountain Chickadee				4	16	5	25
Juniper Titmouse	RC			43	90	6	139
Bushtit				12	38	8	58
Red-breasted Nuthatch				0	1	7	8
White-breasted Nuthatch				0	22	8	30
Pygmy Nuthatch	RC			0	17	6	23
Brown Creeper				0	0	2	2
Rock Wren	RS			149	107	91	347
Canyon Wren	RC			45	22	0	67
Bewick's Wren			BCC	62	133	3	198
House Wren				38	1	0	39
American Dipper		RS		1	0	0	1
Ruby-crowned Kinglet				0	2	2	4
Blue-gray Gnatcatcher				136	145	14	295
Western Bluebird	RS			0	7	13	20
Mountain Bluebird	RC,CS,RS			28	51	95	174
Townsend's Solitaire		RS		0	8	5	13
Hermit Thrush				0	1	1	2
American Robin				44	40	62	146
Northern Mockingbird				2	5	7	14
Sage Thrasher				0	1	86	87
European Starling				2	1	8	11
Cedar Waxwing				0	3	0	3
Orange-crowned Warbler				1	1	0	2
Virginia's Warbler	CC,RC,RS		BCC	40	44	19	103

Common Name	Management Designation			Individuals Detected			
	PIF BCR 16	PIF BCR 10	USFWS	LR	PJ	SA	Total
Lucy's Warbler				11	0	0	11
Yellow Warbler				146	1	3	150
Yellow-rumped Warbler				3	13	16	32
Black-throated Gray Warbler	RC			63	376	14	453
Grace's Warbler	CC,RC			3	20	17	40
MacGillivray's Warbler				0	1	0	1
Common Yellowthroat				30	0	1	31
Wilson's Warbler				1	0	0	1
Yellow-breasted Chat				55	0	3	58
Western Tanager				11	33	28	72
Green-tailed Towhee	CS,RS			3	30	333	366
Spotted Towhee				306	136	58	500
Chipping Sparrow				38	101	59	198
Brewer's Sparrow	CC,RC	CC,RC	BCC	4	21	575	600
Black-chinned Sparrow	CC			1	3	0	4
Vesper Sparrow				1	16	473	490
Lark Sparrow				10	20	75	105
Black-throated Sparrow	RC			69	109	19	197
Sage Sparrow	RC			0	0	31	31
Savannah Sparrow				0	0	1	1
Song Sparrow				55	0	8	63
White-crowned Sparrow				5	0	0	5
Dark-eyed Junco				3	21	23	47
Black-headed Grosbeak				19	18	3	40
Blue Grosbeak				5	1	0	6
Lazuli Bunting		RS		201	16	5	222
Red-winged Blackbird				1	0	0	1
Western Meadowlark				1	29	152	182
Brewer's Blackbird				2	0	28	30
Brown-headed Cowbird				16	16	12	44
Bullock's Oriole				15	1	0	16
Scott's Oriole				0	1	0	1
Cassin's Finch	RC	RC,CS,RS		2	5	10	17
House Finch				225	180	44	449
Red Crossbill		RS		0	8	3	11
Pine Siskin	RC,RS			5	0	0	5
Lesser Goldfinch				122	1	1	124
American Goldfinch				5	1	6	12
Evening Grosbeak				0	0	1	1

[1] Common names are from the A.O.U. Check-list of North American Birds, Seventh Edition (2007).
[2] Special management designations: USFS=United States Forest Service, PIF=Partners In Flight (from the Species Assessment Database version 2005 found at www.rmbo.org, CC=Continental Concern Species, RC=Regional Concern Species, CS=Continental Stewardship Species, RS = Regional Stewardhip Species, USFWS=U.S. Fish and Wildlife Service, BCC = Bird of Conservation Concern.
[4] Habitats: LR=low-elevation riparian; PJ=pinyon-juniper; SA=Sage Shrubland