



Landbird Monitoring in the Sonoran Desert Network

2013 Annual Report

Natural Resource Technical Report NPS/SODN/NRTR—2014/888



ON THE COVER

Male Scott's Oriole (*Icterus parisorum*) at Coronado National Memorial. Photo by Moez Ali.

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Acronyms

CAGR	Casa Grande Ruins National Monument
CHIR	Chiricahua National Monument
CORO	Coronado National Memorial
FOBO	Fort Bowie National Historic Site
GICL	Gila Cliff Dwellings National Monument
MOCA	Montezuma Castle National Monument
NHS	National Historic Site
NHP	National Historical Park
NM	National Monument
NMem	National Memorial
NP	National Park
NPS	National Park Service
ORPI	Organ Pipe Cactus National Monument
RMBO	Rocky Mountain Bird Observatory
SAGE	Saguaro National Park–Rincon Mountain District
SAGU	Saguaro National Park
SAGW	Saguaro National Park–Tucson Mountain District
SODN	Sonoran Desert Network
TONT	Tonto National Monument
TUMA	Tumacácori National Historical Park
TUZI	Tuzigoot National Monument

Executive Summary

In 2013, landbirds were surveyed within all 11 of the Sonoran Desert Network (SODN) parks. Sample points were located along a transect (in most cases) or a grid. In total, 45 transects or grids were surveyed in 2013. Survey efforts were focused on the breeding season, when increased territorial behavior by songbirds results in higher detection rates and greater sampling efficiency. The window of primary breeding and, therefore, sampling, was from April into June, with adjustments made for individual park visits based on latitude and elevation. We used point-transect surveys to estimate and monitor landbird population parameters. Surveys were conducted twice for each transect or grid to facilitate estimates of occupancy, which rely on an encounter-history matrix derived from repeated visits, rather than a detection function to account for detectability.

We conducted a total of 627 point counts (the number of counts from a given point during a given sampling occasion) on the 45 transects or grids. Of these, we conducted 457 point counts in upland habitat and 170 point counts in riparian habitat. We recorded a total of 11,321 individual birds (including unidentified birds) of 173 species during our point counts, with one additional bird counted as a flyover. The number and species of birds varied widely among the parks surveyed. Saguaro National Park (NP) had the highest number of birds counted ($n = 3,310$), as well as the greatest number of point counts. Coronado National Memorial (NMem) had the lowest number of birds counted ($n = 403$). We observed the greatest number of species at Saguaro NP ($n = 112$) and the fewest at Casa Grande Ruins National Monument (NM) ($n = 39$).

Gila Woodpecker had the greatest number of individuals counted within the SODN in 2013 ($n = 702$), followed by Mourning Dove ($n = 540$), and Gambel's Quail ($n = 490$). Thirty-two species were recorded at only one of the 11 parks surveyed. Seven species, Ash-throated Flycatcher, Common Raven, House Finch, Mourning Dove, Northern Mockingbird, Red-tailed Hawk, and Yellow-rumped Warbler, were recorded at all 11 parks surveyed. Numerous species were observed at two or more parks. Eight new species (previously unverified in a given park) were recorded at eight parks: Cassin's Vireo at Organ Pipe Cactus NM; Costa's Hummingbird at Chiricahua NM; Double-crested Cormorant at Casa Grande Ruins NM; Eurasian Collared-Dove at Coronado NMem, Gila Cliff Dwellings NM, and Organ Pipe Cactus NM; Franklin's Gull at Casa Grande Ruins NM, Tonto NM, and Tumacácori National Historical Park (NHP); Greater Pewee at Tonto NM; Hooded Oriole at Gila Cliff Dwellings NM; and Swamp Sparrow at Tuzigoot NM. Also, Broad-winged Hawk (an incidental detection outside of regular surveys) was observed for the first time at Tumacácori NHP.

The Rocky Mountain Bird Observatory (RMBO), our primary cooperater for this project, and the U.S. Fish and Wildlife Service (USFWS) collected the bird monitoring data in 2013. The SODN and other networks using RMBO have found their data management service to be efficient and effective. This enables SODN data to be in the same database as those of several other networks and organizations, which in turn allows for a more comprehensive regional assessment. To view interactive maps showing survey and detection locations, as well as species counts and survey effort, visit RMBO's Avian Data Center at <http://rmbo.org/v3/avian/Home>.

1 Introduction

1.1 Background

The mission of the National Park Service (NPS) is to preserve “unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations.” Protecting and managing some of our nation’s most significant natural resources requires knowledge of the condition of ecosystems and species that occur in national parks. In order to better meet this mission, the Inventory & Monitoring (I&M) Program was established to determine status and trends in ecological resources (NPS 1992). Established in 2001, the Sonoran Desert Inventory & Monitoring Network (SODN) includes 11 parks in southern Arizona and New Mexico (Table 1.1-1). Collectively, these parks are representative of most of the ecological communities present within the Sonoran Desert and Apache Highlands Ecoregions (NPS 2005).

Monitoring changes in landbird population and community parameters can be an important element of a comprehensive, long-term monitoring program, such as that being implemented for the SODN parks. Landbirds are a conspicuous component of many ecosystems, and they occupy high trophic levels. As such, changes in landbird populations may be indicators of changes in the biotic or abiotic components of the environment upon which they depend (Canterbury et al. 2000; Bryce et al. 2002). Relative to other vertebrates, landbirds are also highly detectable and can be ef-

ficiently surveyed with the use of numerous standardized methods (Bibby et al. 2000; Buckland et al. 2001).

Birds select habitat based on the presence of behavioral cues triggered by the environment (Hutto 1985; Alcock 2005). In some environments, however, especially those that vary unpredictably, habitat may not be saturated and changes in resources may not always be tracked by changes in animal populations (Wiens 1985). In these situations, relating changes in bird populations to environmental features can be complex, especially when confounded by time lags that are characteristic of site-tenacious bird species. Additional complications occur if birds respond more sensitively to environmental change than we can detect, and when cyclical environmental changes result in erratic changes in population size that are ultimately inconsequential. However, the utility of monitoring landbirds is strengthened by concurrent monitoring of a broad suite of environmental parameters (Dale and Beyeler 2001) that may assist with elucidating changes in the bird community to other environmental factors. Such a broad-based approach is now being undertaken by the SODN (NPS 2008) and other organizations/initiatives (e.g., Ringold et al. 1996; Stevens and Gold 2003; Barrows et al. 2005).

Perhaps the most compelling reason to monitor landbird communities is that birds themselves are inherently valuable. The high aesthetic and spiri-

Table 1.1-1. Parks in the Sonoran Desert Inventory & Monitoring Network (SODN)

Park	Park Acronym	Area (Acres)	Area (Hectares)
Casa Grande Ruins National Monument (NM)	CAGR	472	191
Chiricahua National Monument (NM)	CHIR	11,984	4,852
Coronado National Memorial (NMem)	CORO	4,750	1,923
Fort Bowie National Historic Site (NHS)	FOBO	1,000	404
Gila Cliff Dwellings National Monument (NM)	GICL	533	216
Montezuma Castle National Monument (NM)	MOCA	858	347
Organ Pipe Cactus National Monument (NM)	ORPI	330,688	133,882
Saguaro National Park (NP)	SAGU	102,011	41,300
Tonto National Monument (NM)	TONT	1,120	453
Tumacácori National Historical Park (NHP)	TUMA	356	144
Tuzigoot National Monument (NM)	TUZI	373	149

tual values that humans place on native wildlife are acknowledged in the agency's Organic Act: "to conserve . . . the wild life therein . . . unimpaired for the enjoyment of future generations." Birdwatching, in particular, is a popular, long-standing recreational pastime in the U.S., and it forms the basis of a large and sustainable industry (Sekercioglu 2002).

The SODN began monitoring birds in spring 2007. This effort is now part of a collaboration among the Southern Plains, Sonoran Desert, and Chihuahuan Desert networks to interpret monitoring information in a more comprehensive manner across the southwestern U.S.

1.2 Program Goals and Objectives

The overall goal of the SODN landbird monitoring program is to detect biologically significant changes in population parameters over time. This collaborative program is intended to maximize the strength of inferences within the context of finite resources. The monitoring design is a multitiered, flexible framework that will enable efficient estimation and monitoring of population parameters, periodic evaluation of assumptions, and the opportunity for adaptation to meet additional needs.

We have selected three primary monitoring objectives, described below, that are complementary and together provide a comprehensive assessment of changing bird populations and communities. Although we have selected these objectives, it is neither practical nor useful to conduct comprehensive analyses for each objective on an annual basis. Instead, we will provide annual basic data summaries and, once every five years, a comprehensive synthesis report that will go into much greater depth, including analyses for all objectives and interpretations in a broader ecological context.

1.2.1 Objective 1: Occupancy

We will estimate the proportion of points occupied for the most common breeding species in

most parks. Occupancy is a measure of presence of a species in space that indicates changes in the distribution of a species when evaluated across time. Recent advancements in occupancy theory and modeling have provided sound justification of its application in monitoring programs (MacKenzie et al. 2003; Field et al. 2005; MacKenzie et al. 2006).

1.2.2 Objective 2: Bird species richness and composition

We will estimate parameters related to community dynamics, particularly species richness and species composition. Monitoring the richness and composition of native communities of concern, and the changes occurring within and among these communities, provides a valuable complement to population-based parameters. Species richness data are essential to understanding the effects of changing landscapes on native biodiversity. Species composition helps us to understand the effects of management and other changes by assessing which species are or are not responding to changes in the environment.

1.2.3 Objective 3: Density (when feasible)

We will estimate density of the most common breeding species using the point-transect distance-sampling method at fixed points and the Distance program (Thomas et al. 2005) for subsequent analyses. Provided that assumptions are reasonably met, distance-sampling methods allow researchers to model a detection function that adjusts for imperfect detectability; the methods are robust and widely accepted for estimating landbird abundance (Buckland et al. 2001). With reasonable effort, we will likely only be able to estimate density annually for the most common species in larger parks.

2 Methods

2.1 Methods

2.1.1 Sampling design

The details of our sampling design and field methods are presented in Powell et al. (2007) and Beaupré et al. (2013). Our intention for monitoring landbirds extends beyond the birds themselves, and includes a broader vision of landbirds as indicators of the ecosystems they inhabit. This dual purpose influences our sampling design, especially in light of our funding and logistical limitations. In some cases, trade-offs have been made to accommodate particular habitat types or park resources that are considered particularly important to a given park.

We stratified most parks by mesic riparian and upland habitat classes, although SODN parks contain a wide range of upland vegetation (and, by extension, bird) communities. The dominant vegetation communities represented by upland areas in SODN parks can be further stratified into three major habitat types: desert scrub, grassland/savanna, and forest and woodland (Table 2.1.1-1).

Table 2.1.1-2. Number of transects or grids of each habitat class surveyed in each SODN park unit, 2013

Park unit	Riparian	Upland
Casa Grande Ruins NM	--	1
Chiricahua NM	--	6
Coronado NMem	--	2
Fort Bowie NHS	1	1
Gila Cliff Dwellings NM	1	1
Montezuma Castle NM– Castle Unit	2	1
Montezuma Castle NM–Well Unit	1	--
Organ Pipe Cactus NM	2	4
Saguaro NP–SAGE	1	10
Saguaro NP–SAGW	--	5
Tonto NM	1	1
Tumacácori NHP	2	--
Tuzigoot NM	1	1

Table 2.1.1-1. Habitat classes and major types by park

Habitat class	Major habitat types	Parks
Upland	Desert scrub	<ul style="list-style-type: none"> • Casa Grande Ruins NM • Montezuma Castle NM • Organ Pipe Cactus NM • Saguaro NP–Tucson Mountain District (SAGW) at <4,000 feet in Saguaro NP–Rincon Mountain District (SAGE) and Tonto NM • Tumacácori NHP • Tuzigoot NM
Upland	Grassland/savanna	<ul style="list-style-type: none"> • Chiricahua NM • Coronado NMem • Fort Bowie NHS
Upland	Forest and Woodland	<ul style="list-style-type: none"> • Chiricahua NM • Coronado NMem • Gila Cliff Dwellings NM • Saguaro NP–SAGE
Riparian	Riparian	<ul style="list-style-type: none"> • Fort Bowie NHS • Gila Cliff Dwellings NM • Montezuma Castle NM–Castle Unit • Montezuma Castle NM–Well Unit • Organ Pipe Cactus NM • Saguaro NP–SAGE • Tonto NM • Tumacácori NHP • Tuzigoot NM

In 2013, we surveyed landbirds within all of the 11 SODN parks. Sample points were located along a transect (in most cases) or a grid. A total of 45 transects or grids were surveyed in 2013 (Table 2.1.1-2). In most parks, we used sites selected with methodology outlined in Powell et al. (2007). Exceptions occurred at Organ Pipe Cactus National Monument (NM) and Saguaro National Park (NP), because of safety concerns related to undocumented immigration and smuggling. Details of these exceptions are presented in Beaupré et al. (2013).

2.1.2 Seasonal timing of surveys

During the breeding season, increased territorial behavior by songbirds results in higher detection rates and greater sampling efficiency. Additionally, occupancy estimates assume that a bird detected is present for the entire period being surveyed (in this case, both survey periods). Thus, our surveys were focused on the primary breeding season in order to account for the greatest number of species in each park, recognizing that some species (e.g., migrants, wintering birds) may not have been adequately surveyed because of this restricted window. Although migrants are certainly an important component of bird communities,

their presence can be highly variable and substantially influenced by external factors. Focusing on the breeding population is expected to provide the most reliable information about changes in bird populations related to changes in condition of SODN parks.

The timing of breeding varies among species and depends on a number of factors, including latitude and elevation. Birds at southern latitudes and lower elevations tend to breed earlier than those at higher latitudes and elevations. Consequently, parks with a wide elevation range (e.g., Saguaro NP) also had a wide range of sampling dates. The window of primary breeding and sampling was from April through June, with adjustments, as described above, for individual park visits based on latitude and elevation (Figure 2.1.2).

2.2 Bird Surveys

We used point-transect surveys to estimate and monitor landbird population parameters (Buckland et al. 2001). The point-transect approach evolved from the variable circular plot approach (Reynolds et al. 1980) and distance sampling of line transects (Burnham et al. 1980). A point-transect is a line transect of zero length (i.e., a

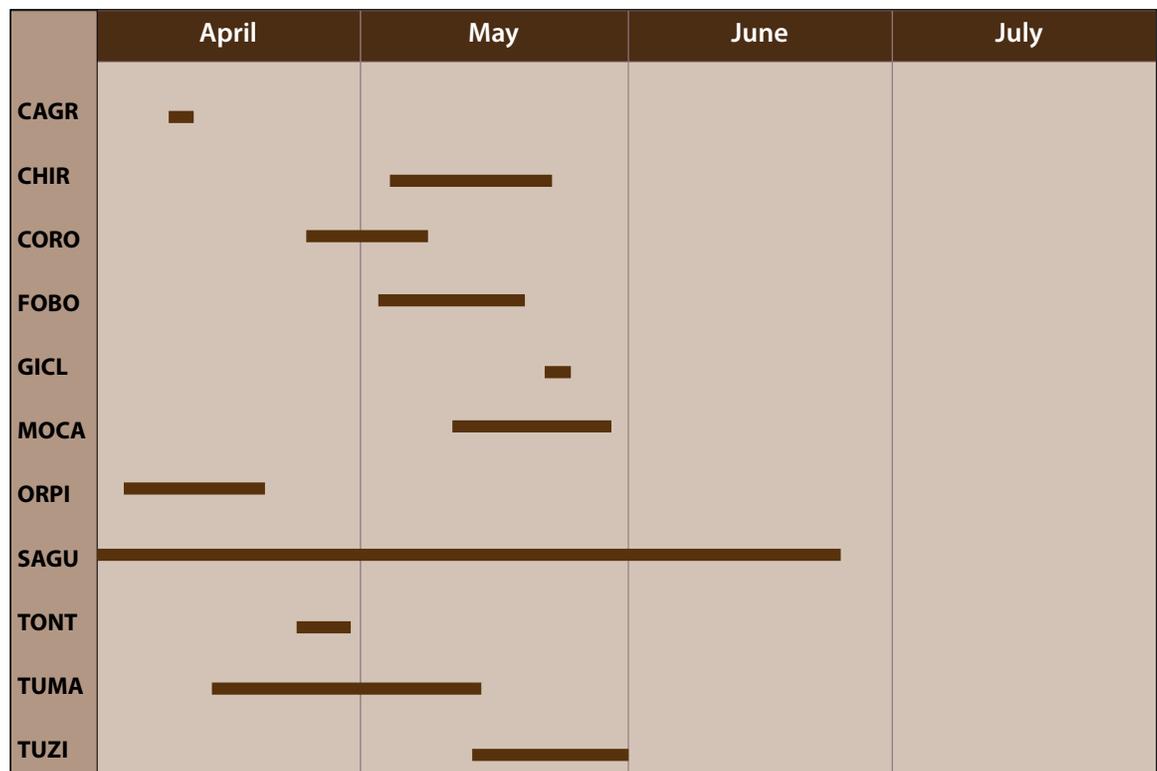


Figure 2.1.2. Dates when sampling was conducted in SODN parks, 2013.

point) (Buckland et al. 2001). For density estimates, the method involves estimating the linear distance to individual birds while standing for a predetermined period of time at a fixed point in space (Figure 2.2). For groups of birds, we estimated the distance to the group and the number of birds in the group. Estimating the distance to each bird allows the observer to approximate density via a species-specific detection function that accounts for variation in detectability due to surveyor, environmental, or weather-related factors (Buckland et al. 2001; Diefenbach et al. 2003).

All birds detected at a given point were recorded. Survey points were located by observers using a GPS (Global Positioning System) loaded with the pre-determined coordinates for each point. While walking between points, observers recorded species previously unconfirmed in a particular park.

Surveys were conducted twice for each transect or grid to facilitate occupancy estimates, which rely on an encounter-history matrix derived from repeated visits, rather than a detection function to account for detectability.

We conducted six-minute point-counts at each point along the transect or grid, and used a range-finder to measure the linear distance to each bird or group detected. Six-minute counts are consistent with region-wide bird monitoring efforts being conducted by Rocky Mountain Bird Observatory (RMBO) and its partners.

2.3 Additional Monitoring to Augment Bird Sampling

It is well known that landbird populations are particularly influenced by changes in vegetation structure and composition (Holmes and Sherry 2001; Krueper et al. 2003). Considering environmental data, such as vegetation, will allow us to aggregate (i.e., to stratify, post-hoc) survey sites that share similar characteristics. For this purpose, we will use data collected through the network's vegetation monitoring efforts. We will also use other data (e.g., climate) collected by SODN and other organizations as covariates when assessing population trends for birds. Finally, landbird population parameters, coupled with detailed environmental information, can be used to

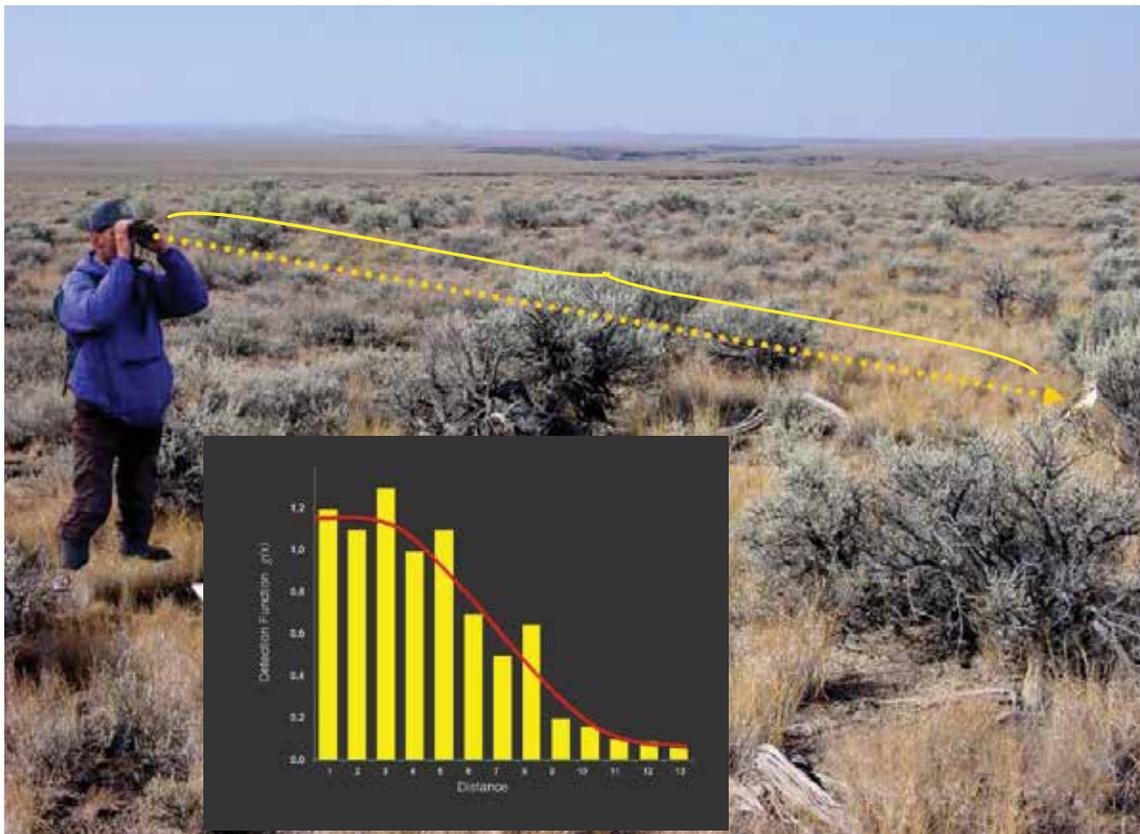


Figure 2.2. Distance sampling works by estimating a detection profile (graph) as a function of distance from which either individual or groups of birds are observed from the transect.

build habitat-association models (e.g., Manley et al. 2004) that can inform conservation efforts and scientific inquiry throughout the region.

2.4 Reporting

The primary monitoring objectives focus on long-term changes and trends, and monitoring must be conducted for a number of years before meaningful estimates related to trends are feasible. Consequently, it is neither practical nor useful to conduct comprehensive analyses for each objective on an annual basis. Instead, we will provide annual basic data summaries and, once every five years, a comprehensive synthesis report that will go into much greater depth, including analyses for all objectives and interpretations in a broader ecological context.

Field methods for estimating all three primary objectives are essentially the same; analyses and evaluation procedures used to estimate trends will differ.

It is neither practical nor useful to conduct comprehensive analyses for each objective on an annual basis. Instead, we will provide annual basic data summaries and, once every five years, a comprehensive synthesis report that will go into much greater depth, including analyses for all objectives and interpretations in a broader ecological context.

2.5 Accessing the Data

RMBO, our primary cooperator for this project, manages the bird monitoring data they (and U.S. Fish and Wildlife Service in 2013) collect. Other networks using RMBO also use this data management service and have found it to be efficient and effective. This enables SODN data to be stored in the same database as that of several other networks and organizations, which in turn allows for a more comprehensive regional assessment. To view interactive maps showing survey and detection locations, as well as species counts and survey effort, visit RMBO's Avian Data Center at <http://rmbo.org/v3/avian/Home.aspx>.

3 Results and Discussion

We conducted a total of 627 point counts (the number of counts from a given point during a given sampling occasion) on 45 transects or grids. Of these, 457 point counts were in upland habitats and 170 point counts were in riparian habitats (Table 3-1). We recorded a total of 11,321 birds (including unidentified birds) of 173 species on our survey points, with one additional bird detected as a flyover.

Saguaro NP had the highest number of birds counted (n = 3,310), as well as the highest number of point counts. Coronado NMem had the lowest number of birds counted (n = 403). We observed the greatest number of species at Saguaro NP (n = 112) and the fewest at Casa Grande Ruins NM (n = 39) (Table 3-2). Although species richness and community composition will be estimated in our synthesis reports, observations suggest that these varied widely among the parks surveyed. The number of individuals or species counted is influenced not only by the number of survey points and visits, but also by the size and diversity of available habitats.

Gila Woodpecker had the greatest number of individuals counted within the SODN (n = 702), followed by Mourning Dove (n = 540), and Gambel's Quail (n = 490) (Table 3-3). Thirty-two species were recorded at only one of the 11 parks

Table 3-2. Number of species observed in each habitat class at each park, 2013

Park	Species detected		
	Upland	Riparian	Total ¹
Casa Grande Ruins NM	39	--	39
Chiricahua NM	82	--	82
Coronado NMem	60	--	60
Fort Bowie NHS	34	56	63
Gila Cliff Dwellings NM	36	55	63
Montezuma Castle NM	55	62	73
Organ Pipe Cactus NM	52	50 ²	63
Saguaro NP	100	52	112
Tonto NM	52	51	67
Tumacácori NHP	--	76	76
Tuzigoot NM	46	50	61
Total¹	160	132	173

¹ Totals do not necessarily equal the sum of the numbers shown for parks or habitat classes, as a single species may have been observed in more than one park or habitat class; #s do not include incidental observations.

² Riparian habitat sampled at ORPI was xeroriparian, thus not directly comparable to more mesic habitats.

surveyed (see Table 3-4). Seven species, Ash-throated Flycatcher, Common Raven, House Finch, Mourning Dove, Northern Mockingbird, Red-tailed Hawk, and Yellow-rumped Warbler, were recorded at all 11 parks surveyed.

Table 3-1. Numbers of point counts (# of counts from a given point during a given sampling occasion) and individual birds counted in each habitat class at each SODN park, 2013

Park	Upland		Riparian		Total birds counted
	# Point counts	Birds counted	# Point counts	Birds counted	
Casa Grande Ruins NM	18	600	--	--	600
Chiricahua NM	84	1,152	--	--	1,152
Coronado NMem	30	403	--	--	403
Fort Bowie NHS	14	169	16	319	488
Gila Cliff Dwellings NM	12	164	14	320	484
Montezuma Castle NM	16	337	38	892	1,229
Organ Pipe Cactus NM	56	819	28	583	1,402
Saguaro NP	195	2,894	16	416	3,310
Tonto NM	18	361	16	286	647
Tumacácori NHP	--	--	28	857	857
Tuzigoot NM	14	344	14	405	749
Total	457	7,243	170	4,078	11,321

Note: No. of birds counted does not include flyovers. No. of point counts represents the sum of point counts conducted.

Table 3-3. Total number of birds observed of each species during surveys in all SODN parks, 2013

Common name	# of birds	Common name	# of birds
Gila Woodpecker	702	Black-throated Gray Warbler	76
Mourning Dove	540	Canyon Wren	76
Gambel's Quail	490	Rock Wren	76
Ash-throated Flycatcher	471	Black-chinned Hummingbird	68
Cactus Wren	467	Violet-green Swallow	67
White-winged Dove	461	Blue Grosbeak	65
House Finch	366	Cedar Waxwing	65
Bewick's Wren	335	Pyrrhuloxia	62
Verdin	305	Eurasian Collared-Dove	60
Lucy's Warbler	280	Abert's Towhee	55
Phainopepla	271	Bell's Vireo	51
Curve-billed Thrasher	212	Western Wood-Pewee	51
Black-throated Sparrow	203	Gray Flycatcher	48
Brewer's Sparrow	198	House Wren	47
Brown-crested Flycatcher	197	Great-tailed Grackle	46
Red-winged Blackbird	182	Bridled Titmouse	45
Turkey Vulture	164	Blue-gray Gnatcatcher	43
Mexican Jay	158	Cliff Swallow	43
Brown-headed Cowbird	142	Rufous-winged Sparrow	43
Northern Mockingbird	138	American Robin	42
Gilded Flicker	129	Vermilion Flycatcher	42
Rock Pigeon	128	Western Tanager	42
Lesser Goldfinch	121	Dusky-capped Flycatcher	41
Canyon Towhee	119	Hepatic Tanager	41
Cassin's Kingbird	119	Song Sparrow	41
Yellow-rumped Warbler	117	Wilson's Warbler	41
Northern Cardinal	115	Red-tailed Hawk	39
Rufous-crowned Sparrow	113	Bullock's Oriole	38
Scott's Oriole	109	Western Scrub-Jay	38
Yellow-breasted Chat	109	Bushtit	37
Spotted Towhee	108	Lazuli Bunting	36
Black-headed Grosbeak	101	Green-tailed Towhee	35
White-crowned Sparrow	99	Pygmy Nuthatch	35
Black-tailed Gnatcatcher	98	Anna's Hummingbird	34
White-throated Swift	94	Eastern Meadowlark	33
Pine Siskin	89	Greater Roadrunner	32
Common Raven	86	Warbling Vireo	32
Yellow Warbler	84	Wood Duck	32
Franklin's Gull	83	Yellow-eyed Junco	32
Summer Tanager	81	White-breasted Nuthatch	31
Ladder-backed Woodpecker	79	Ruby-crowned Kinglet	30
Broad-tailed Hummingbird	77	Northern Rough-winged Swallow	29
Common Yellowthroat	77	Botteri's Sparrow	27

Table 3-3. Total number of birds observed of each species during surveys in all SODN parks, 2013, cont.

Common name	# of birds	Common name	# of birds
Purple Martin	27	Gray Vireo	6
Hooded Oriole	25	House Sparrow	6
Chipping Sparrow	24	Lincoln's Sparrow	6
Hairy Woodpecker	24	Tropical Kingbird	6
Painted Redstart	24	Virginia Rail	6
Hammond's Flycatcher	23	Western Bluebird	6
Western Kingbird	23	Black Phoebe	5
Arizona Woodpecker	21	Brown Creeper	5
European Starling	21	Cassin's Vireo	5
Lark Sparrow	21	Common Ground-Dove	5
Plumbeous Vireo	19	Double-crested Cormorant	5
Horned Lark	18	Great Blue Heron	5
Northern Flicker	18	Hutton's Vireo	5
Gray Hawk	17	Olive-sided Flycatcher	5
Hermit Thrush	16	Vesper Sparrow	5
Cordilleran Flycatcher	15	Bronzed Cowbird	4
Montezuma Quail	15	Nashville Warbler	4
Steller's Jay	15	Peregrine Falcon	4
Costa's Hummingbird	14	Prairie Falcon	4
Indigo Bunting	14	Rufous Hummingbird	4
Loggerhead Shrike	14	Scaled Quail	4
Say's Phoebe	14	Cassin's Sparrow	2
Broad-billed Hummingbird	13	Dusky Flycatcher	2
MacGillivray's Warbler	13	Harris's Hawk	2
Mallard	13	Inca Dove	2
Band-tailed Pigeon	12	Killdeer	2
Black-chinned Sparrow	11	Lesser Nighthawk	2
Greater Pewee	11	Magnificent Hummingbird	2
Red-faced Warbler	11	Mountain Chickadee	2
American Kestrel	10	Spotted Sandpiper	2
Cooper's Hawk	10	Townsend's Warbler	2
Orange-crowned Warbler	10	Wild Turkey	2
Common Black-Hawk	9	American Pipit	1
Crissal Thrasher	9	Bank Swallow	1
Pacific-slope Flycatcher	9	Grasshopper Sparrow	1
Barn Swallow	8	Hermit Warbler	1
Grace's Warbler	8	Juniper Titmouse	1
Great Horned Owl	7	Marsh Wren	1
Zone-tailed Hawk	7	Mexican Whip-poor-will	1
Acorn Woodpecker	6	Northern Beardless-Tyrannulet	1
Belted Kingfisher	6	Northern Harrier	1
Canada Goose	6	Swamp Sparrow	1

Table 3-3. Total number of birds observed of each species during surveys in all SODN parks, 2013, cont.

Common name	# of birds
Thick-billed Kingbird	1
Virginia's Warbler	1
Willow Flycatcher	1
<i>Unidentified birds</i>	6
Total	11,321

Note: Species are listed in rank order from most to least commonly detected. Number of birds is the total number of individuals counted. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead/not using the habitat. Unidentified birds were included in the total number of birds recorded during surveys, but these birds were not included in counts of the number of species detected per park. Incidental sightings (i.e., species identified by our birding team, but not as part of our regular survey) are not included in this table; they are included in individual park species tables only when they were newly recorded for the park.



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Red-tailed Hawks (*Buteo jamaicensis*) were recorded at every park in the SODN in 2013.

Table 3-4. Parks where each species was observed, April through June 2013

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Abert's Towhee	<i>Melospiza aberti</i>						●	○	●	●	●	●
Acorn Woodpecker	<i>Melanerpes formicivorus</i>		●	○	○	○		○	●			
American Avocet	<i>Recurvirostra americana</i>							○				
American Coot	<i>Fulica americana</i>						○	○				○
American Crow	<i>Corvus brachyrhynchos</i>											○
American Goldfinch	<i>Spinus tristis</i>					○	○	○				
American Kestrel	<i>Falco sparverius</i>	●	○	○	○	●	○	●	●	●	●	○
American Pipit	<i>Anthus rubescens</i>	●			○		○	○			○	○
American Redstart	<i>Setophaga ruticilla</i>		○					○				○
American Robin	<i>Turdus migratorius</i>		●	○	○	●	○	○	●	○	○	○
American White Pelican	<i>Pelecanus erythrorhynchos</i>							○		○		
American Wigeon	<i>Anas americana</i>						○	○				○
Anna's Hummingbird	<i>Calypte anna</i>	●	●	○	○		○	●	●	●	●	●
Arizona Woodpecker	<i>Picoides arizonae</i>		●	●					●			
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	●	●	●	●	●	●	●	●	●	●	●
Baird's Sandpiper	<i>Calidris bairdii</i>						○	○				
Bald Eagle	<i>Haliaeetus leucocephalus</i>		○		○	○				○		○
Baltimore Oriole	<i>Icterus galbula</i>										○	
Band-tailed Pigeon	<i>Patagioenas fasciata</i>		○	○		○		○	●			
Bank Swallow	<i>Riparia riparia</i>	●				○	○	○		○	○	○
Barn Owl	<i>Tyto alba</i>	○		○	○	○	○	○	○	○	○	○
Barn Swallow	<i>Hirundo rustica</i>	○	○	○	○	○	●	○	○	○	●	○
Bell's Vireo	<i>Vireo bellii</i>			○	○	○	●	○	●	●	●	○
Belted Kingfisher	<i>Megasceryle alcyon</i>						●		○		○	●
Bendire's Thrasher	<i>Toxostoma bendirei</i>	○			○			○	○			○
Bewick's Wren	<i>Thryomanes bewickii</i>	○	●	●	●	●	●	○	●	●	●	●
Black Phoebe	<i>Sayornis nigricans</i>	○	○	○	○	●	●	○	●	○	●	●
Black Rail	<i>Laterallus jamaicensis</i>							○				
Black Tern	<i>Chlidonias niger</i>							○				○
Black Vulture	<i>Coragyps atratus</i>			○	○			○	○		○	
Black-and-white Warbler	<i>Mniotilta varia</i>							○				
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>										○	
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	○	●	○	●	○	●	●	●	●	●	●
Black-chinned Sparrow	<i>Spizella atrogularis</i>	○	●	○	○		○	○	●	○		

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>						o	o			o	o
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>		●	●	●	●	●	●	●	●	●	●
Black-necked Stilt	<i>Himantopus mexicanus</i>	o						o				
Blackpoll Warbler	<i>Dendroica striata</i>							o				
Black-tailed Gnatcatcher	<i>Polioptila melanura</i>	o	o		o		●	●	●	●	o	o
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>							o				
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	o	●	●	●	●	●	●	●	●	o	o
Black-throated Green Warbler	<i>Dendroica virens</i>							o				
Black-throated Sparrow	<i>Amphispiza bilineata</i>	o	●	●	●		●	●	●	●	o	●
Blue Grosbeak	<i>Passerina caerulea</i>		●	o	o	●	●	o	o	o	●	●
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	●	●	o	o	o	o	●	●	●	o	o
Blue-headed Vireo	<i>Vireo solitarius</i>						o		o			
Blue-throated Hummingbird	<i>Lampornis clemenciae</i>		o	o								
Blue-winged Teal	<i>Anas discors</i>						o	o				o
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>							o				o
Botteri's Sparrow	<i>Peucaea botterii</i>		●	●	o							
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	o			o	o	o	o	o	o	o	o
Brewer's Sparrow	<i>Spizella breweri</i>	●	o	●	●	o	●	●	●	●	o	●
Bridled Titmouse	<i>Baeolophus wollweberi</i>		●	●	o	o	●		●		●	o
Broad-billed Hummingbird	<i>Cynanthus latirostris</i>		o	o	●			o	●		●	
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>		●	●	●	●	●	o	●	●	o	o
Bronzed Cowbird	<i>Molothrus aeneus</i>	o	o	o	●		o	o	o	o	●	o
Brown Creeper	<i>Certhia americana</i>		●	o	o	o	o	o	●		o	o
Brown Pelican	<i>Pelecanus occidentalis</i>							o				
Brown Thrasher	<i>Toxostoma rufum</i>							o				
Brown-crested Flycatcher	<i>Myiarchus tyrannulus</i>	o	●	o	●		●	●	●	●	●	●
Brown-headed Cowbird	<i>Molothrus ater</i>	o	●	●	●	●	●	●	●	●	●	●
Buff-breasted Flycatcher	<i>Empidonax fulvifrons</i>		o						o			
Buff-collared Nightjar	<i>Caprimulgus ridgwayi</i>							o				
Bufflehead	<i>Bucephala albeola</i>						o	o				o
Bullock's Oriole	<i>Icterus bullockii</i>	o	o	●	●	●	●	o	●	●	●	●

● = species detected in 2013 survey

o = species not detected in 2013 survey, but known to occur in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Burrowing Owl	<i>Athene cunicularia</i>	o						o				
Bushtit	<i>Psaltriparus minimus</i>		●	●	●	o	o	o	●	●	o	o
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>	o	o	●	●		o	●	●	●	o	o
California Gull	<i>Larus californicus</i>							o				o
Calliope Hummingbird	<i>Stellula calliope</i>		o	o	o	o	o	o			o	o
Canada Goose	<i>Branta canadensis</i>						●	o				o
Canvasback	<i>Aythya valisineria</i>						o	o				o
Canyon Towhee	<i>Melospiza fusca</i>	o	●	●	●	●	●	●	●	●	o	o
Canyon Wren	<i>Catherpes mexicanus</i>		●	●	●	●	●	o	●	●		●
Cassin's Finch	<i>Carpodacus cassinii</i>		o	o	o		o		o	o		
Cassin's Kingbird	<i>Tyrannus vociferans</i>	●	●	●	●	●	●	o	●	o	●	●
Cassin's Sparrow	<i>Peucaea cassinii</i>		o	●	o				o		o	
Cassin's Vireo	<i>Vireo cassinii</i>		●	o	●			●	●	o	o	
Cattle Egret	<i>Bubulcus ibis</i>						o	o				o
Cedar Waxwing	<i>Bombus cedrorum</i>		●	o	o		●	o	o	o	●	●
Chestnut-collared Longspur	<i>Calcarius ornatus</i>			o								
Chihuahuan Raven	<i>Corvus cryptoleucus</i>		o	o	o						o	
Chipping Sparrow	<i>Spizella passerina</i>	o	●	●	●	o	o	o	o	o	●	o
Chukar	<i>Alectoris chukar</i>									o		
Cinnamon Teal	<i>Anas cyanoptera</i>						o	o				o
Clapper Rail	<i>Rallus longirostris</i>											o
Clark's Nutcracker	<i>Nucifraga columbiana</i>		o			o		o	o			
Clay-colored Sparrow	<i>Spizella pallida</i>							o				
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	●	o		o	o	●	o	o	o	●	o
Common Black-Hawk	<i>Buteogallus anthracinus</i>		o		o	o	●	o	o		o	o
Common Goldeneye	<i>Bucephala clangula</i>							o				o
Common Ground-Dove	<i>Columbina passerina</i>	o	o	o	o			o	o	o	●	
Common Loon	<i>Gavia immer</i>						o	o				
Common Merganser	<i>Mergus merganser</i>					o	o	o				o
Common Moorhen	<i>Gallinula chloropus</i>							o				o
Common Nighthawk	<i>Chordeiles minor</i>		o	o	o	o	o		o			o
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	o	o	o	o	o	o	o	o	o	o	o
Common Raven	<i>Corvus corax</i>	●	●	●	●	●	●	●	●	●	●	●

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Common Snipe	<i>Gallinago gallinago</i>						o	o			o	o
Common Tern	<i>Sterna hirundo</i>							o				
Common Yellowthroat	<i>Geothlypis trichas</i>					●	●	o	●		●	●
Cooper's Hawk	<i>Accipiter cooperii</i>	●	o	●	o	o	●	●	●	●	o	●
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>		●	o		●		o	●			
Costa's Hummingbird	<i>Calypte costae</i>	o	●	o	o		o	●	●	●	o	o
Crested Caracara	<i>Caracara cheriway</i>							o	o			
Crissal Thrasher	<i>Toxostoma crissale</i>	o	o	o	●		o	●	●	●	o	o
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	o	o	●	o	o	o	●	●	●	o	
Dark-eyed Junco	<i>Junco hyemalis</i>		o	o	o	o	o	o	o	o	o	o
Dickcissel	<i>Spiza americana</i>							o				
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	●						o		●	o	o
Dusky Flycatcher	<i>Empidonax oberholseri</i>		●	o	o	●	o		o	o	o	o
Dusky-capped Flycatcher	<i>Myiarchus tuberculifer</i>		●	●	o	o	o		●		●	o
Eared Grebe	<i>Podiceps nigricollis</i>							o				o
Eastern Bluebird	<i>Sialia sialis</i>		o	o					o			
Eastern Meadowlark	<i>Sturnella magna</i>		o	●	o		o	o	o			o
Eastern Phoebe	<i>Sayornis phoebe</i>							o			o	
Elegant Trogon	<i>Trogon elegans</i>		o	o			o		o			
Elf Owl	<i>Micrathene whitneyi</i>	o	o	o	o	o	o	o	o	o	o	o
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	●	●	●		●	●	●	●	o	●	●
European Starling	<i>Sturnus vulgaris</i>	●					o	o	o	o	●	●
Evening Grosbeak	<i>Coccothraustes vespertinus</i>		o				o	o	o			
Ferruginous Hawk	<i>Buteo regalis</i>	o	o				o	o				
Ferruginous Pygmy-Owl	<i>Glaucidium brasilianum</i>							o				
Flammulated Owl	<i>Otus flammeolus</i>		o	o		o			o			
Forster's Tern	<i>Sterna forsteri</i>							o				
Fox Sparrow	<i>Passerella iliaca</i>			o				o	o			
Franklin's Gull	<i>Larus pipixcan</i>	●								●	●	o
Gadwall	<i>Anas strepera</i>						o	o				o
Gambel's Quail	<i>Callipepla gambelii</i>	●	●	o	●	●	●	●	●	●	●	●

● = species detected in 2013 survey

o = species not detected in 2013 survey, but known to occur in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Gila Woodpecker	<i>Melanerpes uropygialis</i>	○	○	●	○		●	●	●	●	●	●
Gilded Flicker	<i>Colaptes chrysoides</i>	●						●	●	●	○	
Golden Eagle	<i>Aquila chrysaetos</i>		○	○	○	○	○	○	○	○	○	○
Golden-crowned Kinglet	<i>Regulus satrapa</i>		○					○	○			
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>							○				
Golden-winged Warbler	<i>Vermivora chrysoptera</i>							○				
Grace's Warbler	<i>Dendroica graciae</i>		●			○		○	●			
Grasshopper Sparrow	<i>Ammodramus savannarum</i>		○	●	○							
Gray Catbird	<i>Dumetella carolinensis</i>					○						
Gray Flycatcher	<i>Empidonax wrightii</i>	○	●	●	●	●	○	●	●	●	●	●
Gray Hawk	<i>Buteo nitidus</i>		○						●	○	●	
Gray Vireo	<i>Vireo vicinior</i>		○		○		○	○	●	●	○	○
Great Blue Heron	<i>Ardea herodias</i>	○	○			●	●	○	○	●	○	○
Great Egret	<i>Ardea alba</i>	○					○	○			○	○
Great Horned Owl	<i>Bubo virginianus</i>	●	●	○	○	○	○	○	●	○	○	○
Greater Pewee	<i>Contopus pertinax</i>		○	○		○			●	●		
Greater Roadrunner	<i>Geococcyx californianus</i>	●	●	●	○	○	○	●	●	●	○	○
Greater White-fronted Goose	<i>Anser albifrons</i>						○					○
Greater Yellowlegs	<i>Tringa melanoleuca</i>						○	○				○
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	●	○		○		○	○	○	○	●	●
Green Heron	<i>Butorides virescens</i>						○	○				○
Green Kingfisher	<i>Chloroceryle americana</i>										○	
Green-tailed Towhee	<i>Pipilo chlorurus</i>	○	●	●	●	○	●	●	●	●	●	●
Green-winged Teal	<i>Anas crecca</i>						○	○				○
Hairy Woodpecker	<i>Picoides villosus</i>		●	○		●			●			
Hammond's Flycatcher	<i>Empidonax hammondii</i>	○	●	○	●	○	○	○	○	●	○	○
Harris's Hawk	<i>Parabuteo unicinctus</i>	○		○				○	●	○	○	
Heermann's Gull	<i>Larus heermanni</i>							○				
Hepatic Tanager	<i>Piranga flava</i>		●	●	○	●	○		●		○	
Hermit Thrush	<i>Catharus guttatus</i>		●	○	●	●	○	○	●	○	○	○
Hermit Warbler	<i>Dendroica occidentalis</i>	○	○	●			○	○	○			
Herring Gull	<i>Larus argentatus</i>							○				
Hooded Merganser	<i>Lophodytes cucullatus</i>							○	○			○

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Hooded Oriole	<i>Icterus cucullatus</i>	o	o	o	●	●	●	●	●	●	o	o
Horned Lark	<i>Eremophila alpestris</i>	●	o	o	o		o	o				o
House Finch	<i>Carpodacus mexicanus</i>	●	●	●	●	●	●	●	●	●	●	●
House Sparrow	<i>Passer domesticus</i>	●		o			o	o	o	o	●	o
House Wren	<i>Troglodytes aedon</i>		●	o	o	●	o	●	●	o	o	o
Hutton's Vireo	<i>Vireo huttoni</i>		●	o	o	o	o	o	o	o	o	o
Inca Dove	<i>Columbina inca</i>	o		o			o	o	●		o	o
Indigo Bunting	<i>Passerina cyanea</i>				o	o	●	o	o	●	●	●
Juniper Titmouse	<i>Baeolophus ridgwayi</i>		o		o	●	o		o			
Killdeer	<i>Charadrius vociferus</i>	●	o		o	o	●	o	o		o	o
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	o	o	●	●	o	●	●	●	●	●	●
Lark Bunting	<i>Calamospiza melanocorys</i>	o		o	o	o	o	o	o			o
Lark Sparrow	<i>Chondestes grammacus</i>	o	o	●	o	o	●	o	●	●	●	o
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>							o	o			
Lazuli Bunting	<i>Passerina amoena</i>	o	●	●	●	●	●	●	●	●	●	●
Le Conte's Thrasher	<i>Toxostoma lecontei</i>							o				
Least Bittern	<i>Ixobrychus exilis</i>							o				o
Least Grebe	<i>Tachybaptus dominicus</i>							o				
Least Sandpiper	<i>Calidris minutilla</i>						o	o				o
Least Tern	<i>Sterna antillarum</i>							o				
Lesser Goldfinch	<i>Carduelis psaltria</i>	●	o	●	●	●	●	●	●	●	●	●
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	●			o		o	●	o	o	o	o
Lesser Scaup	<i>Aythya affinis</i>						o	o				o
Lesser Yellowlegs	<i>Tringa flavipes</i>						o	o				o
Lewis's Woodpecker	<i>Melanerpes lewis</i>					o	o	o	o		o	
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	o	o	o	o	o	o	●	●	o	o	o
Loggerhead Shrike	<i>Lanius ludovicianus</i>	o	o	o	o		o	●	●	o	o	o
Long-billed Curlew	<i>Numenius americanus</i>							o				
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>							o				
Long-eared Owl	<i>Asio otus</i>		o		o	o		o	o			
Louisiana Waterthrush	<i>Parkesia motacilla</i>										o	

● = species detected in 2013 survey

o = species not detected in 2013 survey, but known to occur in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Lucifer Hummingbird	<i>Calothorax lucifer</i>			o								
Lucy's Warbler	<i>Oreothlypis luciae</i>	●	o	o	●	o	●	●	●	●	●	●
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	o	o	o	●	●	●	●	●	o	●	●
Magnificent Hummingbird	<i>Eugenes fulgens</i>		●	o					o			
Magnolia Warbler	<i>Dendroica magnolia</i>							o				
Mallard	<i>Anas platyrhynchos</i>	o				o	●	o	●	o	●	o
Marsh Wren	<i>Cistothorus palustris</i>						o	o	o		o	●
Merlin	<i>Falco columbarius</i>	o		o	o	o	o	o	o	o	o	o
Mexican Chickadee	<i>Poecile sclateri</i>		o									
Mexican Jay	<i>Aphelocoma ultramarina</i>		●	●	o	o	o		●			
Mississippi Kite	<i>Ictinia mississippiensis</i>										o	
Montezuma Quail	<i>Cyrtonyx montezumae</i>		●	●	●	o			●			
Mountain Bluebird	<i>Sialia currucoides</i>		o	o			o	o	o		o	o
Mountain Chickadee	<i>Poecile gambeli</i>					o			●			
Mourning Dove	<i>Zenaida macroura</i>	●	●	●	●	●	●	●	●	●	●	●
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	o	o	o	o		o	●	o	o	●	o
Northern Beardless-Tyrannulet	<i>Camptostoma imberbe</i>		o				●	o	o	o	o	o
Northern Cardinal	<i>Cardinalis cardinalis</i>	o	o	o	●		●	o	●	●	●	●
Northern Flicker	<i>Colaptes auratus</i>	o	●	o	●	●	o	o	●	o	●	o
Northern Goshawk	<i>Accipiter gentilis</i>		o	o		o	o		o			
Northern Harrier	<i>Circus cyaneus</i>	●	o	o	o		o	o	o	o	o	o
Northern Mockingbird	<i>Mimus polyglottos</i>	●	●	●	●	●	●	●	●	●	●	●
Northern Parula	<i>Parula americana</i>								o		o	
Northern Pintail	<i>Anas acuta</i>						o	o				o
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>		o	o	o	o	o		o			
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	o	●		o	o	●	o	o	o	●	●
Northern Saw-whet Owl	<i>Aegolius acadicus</i>		o	o		o	o		o			
Northern Shoveler	<i>Anas clypeata</i>						o	o				o
Northern Waterthrush	<i>Parkesia noveboracensis</i>				o		o	o			o	o
Olive Warbler	<i>Peucedramus taeniatus</i>		o			o			o			
Olive-sided Flycatcher	<i>Contopus cooperi</i>		●		●		o	o	o	o	o	o
Orange-crowned Warbler	<i>Oreothlypis celata</i>	o	o	o	●	o	o	●	●	o	o	o
Osprey	<i>Pandion haliaetus</i>		o		o		o	o	o	o		o

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Ovenbird	<i>Seiurus aurocapilla</i>		o	o				o			o	
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>		●	o	●		o	●	o	●	●	o
Painted Bunting	<i>Passerina ciris</i>							o			o	
Painted Redstart	<i>Myioborus pictus</i>	o	●	●		●	o	o	●	o		
Peregrine Falcon	<i>Falco peregrinus</i>	o	o	o	o	o	o	o	●	o	o	o
Phainopepla	<i>Phainopepla nitens</i>	o	o	o	o		●	●	●	●	●	●
Pied-billed Grebe	<i>Podilymbus podiceps</i>						o	o				o
Pine Siskin	<i>Spinus pinus</i>		●	●	●	●	●	o	●	●	●	o
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>		o	o		o	o		o			
Plain-capped Starthroat	<i>Heliomaster constantii</i>			o								
Plumbeous Vireo	<i>Vireo plumbeus</i>		●	o	o	●	o		●	●	o	o
Prairie Falcon	<i>Falco mexicanus</i>	o	●	o	o	o	o	o	●	o		o
Purple Finch	<i>Carpodacus purpureus</i>							o	o			
Purple Martin	<i>Progne subis</i>		o			●	o	o	o	o	o	o
Pygmy Nuthatch	<i>Sitta pygmaea</i>		o			●			●			
Pyrrhuloxia	<i>Cardinalis sinuatus</i>	o	o	o	●			●	●	o	o	
Red Crossbill	<i>Loxia curvirostra</i>		o			o	o		o			o
Red Phalarope	<i>Phalaropus fulicarius</i>							o				
Red-breasted Merganser	<i>Mergus serrator</i>							o				
Red-breasted Nuthatch	<i>Sitta canadensis</i>		o	o		o	o	o	o			
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>							o				
Red-eyed Vireo	<i>Vireo olivaceus</i>							o				
Red-faced Warbler	<i>Cardellina rubrifrons</i>		●	o		o			●			
Redhead	<i>Aythya americana</i>						o	o				o
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>		o	o	o	o	o	o	o	o		o
Red-necked Phalarope	<i>Phalaropus lobatus</i>							o				
Red-tailed Hawk	<i>Buteo jamaicensis</i>	●	●	●	●	●	●	●	●	●	●	●
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	●					●	o	o	o	●	●
Ring-billed Gull	<i>Larus delawarensis</i>							o				o
Ring-necked Duck	<i>Aythya collaris</i>							o				o
Rock Pigeon	<i>Columba livia</i>	●		o			o	o	o		o	o

● = species detected in 2013 survey

o = species not detected in 2013 survey, but known to occur in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Rock Wren	<i>Salpinctes obsoletus</i>	o	●	●	o	o	●	o	●	●	o	●
Roseate Spoonbill	<i>Platalea ajaja</i>							o				
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			o				o				
Rose-throated Becard	<i>Pachyramphus aglaiae</i>										o	
Rough-legged Hawk	<i>Buteo lagopus</i>		o								o	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	o	●	o	●	●	●	●	●	●	●	o
Ruddy Duck	<i>Oxyura jamaicensis</i>						o	o				o
Rufous Hummingbird	<i>Selasphorus rufus</i>		o	o	o	o	o	●	●	o	o	o
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>		●	●	●	●	o	o	●	●	o	o
Rufous-winged Sparrow	<i>Aimophila carpalis</i>	o			o			●	●	o	●	
Sabine's Gull	<i>Xema sabini</i>											o
Sagebrush Sparrow ¹	<i>Artemisiospiza nevadensis</i> ¹						o	o				o
Sage Thrasher	<i>Oreoscoptes montanus</i>					o	o	o	o			
Sandhill Crane	<i>Grus canadensis</i>	o	o		o			o				
Savannah Sparrow	<i>Passerculus sandwichensis</i>		o	o	o			o			o	
Say's Phoebe	<i>Sayornis saya</i>	●	o	o	o	●	o	●	o	●	●	●
Scaled Quail	<i>Callipepla squamata</i>		o	●	o				o			
Scarlet Tanager	<i>Piranga olivacea</i>							o				
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>							o				
Scott's Oriole	<i>Icterus parisorum</i>		●	●	●		o	●	●	●	o	o
Semipalmated Plover	<i>Charadrius semipalmatus</i>							o				
Sharp-shinned Hawk	<i>Accipiter striatus</i>	o	o	o	o	o	o	o	o	o	o	o
Short-eared Owl	<i>Asio flammeus</i>						o					
Short-tailed Hawk	<i>Buteo brachyurus</i>		o								o	
Snow Goose	<i>Chen caerulescens</i>						o					
Snowy Egret	<i>Egretta thula</i>						o	o			o	o
Solitary Sandpiper	<i>Tringa solitaria</i>						o	o				o
Song Sparrow	<i>Melospiza melodia</i>				o	o	●	o	o		●	●
Sora	<i>Porzana carolina</i>							o				o
Spotted Owl	<i>Strix occidentalis</i>		o						o			
Spotted Sandpiper	<i>Actitis macularius</i>				o	o	o	o	o		o	●
Spotted Towhee	<i>Pipilo maculatus</i>		●	●	o	●	o	●	●	o	o	o
Steller's Jay	<i>Cyanocitta stelleri</i>		●	o	o	●		o	●	o		

¹ = Prior to 2013, this species was lumped with Bell's Sparrow and was called Sage Sparrow (*Artemisiospiza* [*Amphispiza*] *belli*)

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Stilt Sandpiper	<i>Calidris himantopus</i>							o				
Streak-backed Oriole	<i>Icterus pustulatus</i>										o	
Sulphur-bellied Flycatcher	<i>Myiodynastes luteiventris</i>		o	o					o			
Summer Tanager	<i>Piranga rubra</i>		o	o	●	●	●	o	●	●	●	●
Swainson's Hawk	<i>Buteo swainsoni</i>	o	o	o	o	o	o	o	o	o	o	o
Swainson's Thrush	<i>Catharus ustulatus</i>		o	o	o	o	o	o		o	o	o
Swamp Sparrow	<i>Melospiza georgiana</i>							o				●
Tennessee Warbler	<i>Oreothlypis peregrina</i>							o				
Thick-billed Kingbird	<i>Tyrannus crassirostris</i>							o		o	●	
Townsend's Solitaire	<i>Myadestes townsendi</i>		o	o	o	o	o	o	o	o	o	o
Townsend's Warbler	<i>Dendroica townsendi</i>		●	o	o	o	o	o	o	o	o	o
Tree Swallow	<i>Tachycineta bicolor</i>	o				o	o	o	o		o	o
Tropical Kingbird	<i>Tyrannus melancholicus</i>							o			●	
Turkey Vulture	<i>Cathartes aura</i>	o	●	●	●	●	●	●	●	●	●	o
Varied Bunting	<i>Passerina versicolor</i>							o	o		o	
Varied Thrush	<i>Ixoreus naevius</i>							o				
Vaux's Swift	<i>Chaetura vauxi</i>				o		o	o	o	o	o	
Verdin	<i>Auriparus flaviceps</i>	●	o	o	●		●	●	●	●	●	●
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	o	o	o	o	o	o	●	●	o	●	●
Vesper Sparrow	<i>Poocetes gramineus</i>	o	o	o	o	o	o	●	●		o	o
Violet-crowned Hummingbird	<i>Amazilia violiceps</i>			o							o	
Violet-green Swallow	<i>Tachycineta thalassina</i>	o	●	●	●	●	●	●	●	o	o	o
Virginia Rail	<i>Rallus limicola</i>											●
Virginia's Warbler	<i>Oreothlypis virginiae</i>	o	o	o	o	●	o	o	o	o	o	o
Warbling Vireo	<i>Vireo gilvus</i>		o	o	●	●	●	●	o	o	●	●
Western Bluebird	<i>Sialia mexicana</i>		o	o	o	●	o	o	o	o		o
Western Grebe	<i>Aechmophorus occidentalis</i>							o				
Western Kingbird	<i>Tyrannus verticalis</i>	●	●	●	●	●	●	●	o	o	●	●
Western Meadowlark	<i>Sturnella neglecta</i>	o	o	o	o		o	o	o	o	o	o
Western Sandpiper	<i>Calidris mauri</i>	o					o	o				o
Western Screech-Owl	<i>Megascops kennicottii</i>	o	o	o	o	o	o	o	o	o	o	o

● = species detected in 2013 survey

o = species not detected in 2013 survey, but known to occur in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April through June 2013, cont.

Common name	Scientific name	CAGR	CHIR	CORO	FOBO	GICL	MOCA	ORPI	SAGU	TONT	TUMA	TUZI
Western Scrub-Jay	<i>Aphelocoma californica</i>		●	●	●	●	○		●	○	○	○
Western Tanager	<i>Piranga ludoviciana</i>	○	●	●	●	●	●	○	●	○	●	●
Western Wood-Pewee	<i>Contopus sordidulus</i>	○	●	●	●	●	●	○	●	○	●	●
Whip-poor-will ²	<i>Caprimulgus vociferus</i> ²		●	○		○			○			
Whiskered Screech-Owl	<i>Megascops trichopsis</i>		○	○					○			
White-breasted Nuthatch	<i>Sitta carolinensis</i>		●	●	○	●	●		●		○	○
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	●	○	●	●	○	●	●	●	●	●	○
White-eared Hummingbird	<i>Hylocharis leucotis</i>		○	○							○	
White-faced Ibis	<i>Plegadis chihi</i>	○						○			○	○
White-tailed Kite	<i>Elanus leucurus</i>			○				○				
White-throated Sparrow	<i>Zonotrichia albicollis</i>				○			○			○	
White-throated Swift	<i>Aeronautes saxatalis</i>	○	●	●	○	○	●	○	●	●	○	○
White-winged Dove	<i>Zenaida asiatica</i>	●	●	●	●	○	○	●	●	●	●	○
Wild Turkey	<i>Meleagris gallopavo</i>		○	○		●			○			
Willet	<i>Tringa semipalmata</i>						○	○				
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>		○	○		○	○		○			
Willow Flycatcher	<i>Empidonax traillii</i>					○		○				●
Wilson's Phalarope	<i>Phalaropus tricolor</i>						○	○				○
Wilson's Warbler	<i>Wilsonia pusilla</i>	○	●	○	●	●	●	●	●	●	●	●
Wood Duck	<i>Aix sponsa</i>						●	○				●
Wood Stork	<i>Mycteria americana</i>							○				
Worm-eating Warbler	<i>Helmitheros vermivorum</i>										○	
Yellow Warbler	<i>Dendroica petechia</i>	○	○	○	○	●	●	○	●	●	●	●
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>									○		
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>		○	○	○	○	○		○	○	○	○
Yellow-breasted Chat	<i>Icteria virens</i>			○	●	●	●	○	○	○	●	●
Yellow-eyed Junco	<i>Junco phaeonotus</i>		●	○					●			
Yellow-green Vireo	<i>Vireo flavoviridis</i>								○			
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	○				○	○	○	○	○	○	○
Yellow-rumped Warbler	<i>Dendroica coronata</i>	●	●	●	●	●	●	●	●	●	●	●
Yellow-throated Vireo	<i>Vireo flavifrons</i>						○			○	○	
Zone-tailed Hawk	<i>Buteo albonotatus</i>	○	●	○	●	●	○	○	○	○	○	○

● = species detected in 2013 survey; ○ = species not detected in 2013 but known to occur in the park, including migrant and wintering species

¹ = Prior to 2013, this species was lumped with Bell's Sparrow and was called Sage Sparrow (*Artemisiospiza [Amphispiza] belli*)

² = Whip-poor-wills in SODN are now known as Mexican Whip-poor-wills (*Antrostomus vociferus*)

3.1 Casa Grande Ruins National Monument

3.1.1 2013 sampling

During April of 2013, we sampled one grid at Casa Grande Ruins NM (Figure 3.1.1). The grid was in upland (desert scrub) habitat (Table 3.1.1). The nine points on the grid were surveyed two times for a total of 18 point counts at the park in 2013.

3.1.2 Results

During 2013, 600 birds of 39 species were counted at Casa Grande Ruins NM (Table 3.1.2). Rock Pigeon had the highest number of individuals counted (21% of the total number of birds counted), followed by Mourning Dove (14%), Red-winged Blackbird (9%), Great-tailed Grackle (7%), Cliff Swallow (6%), and Franklin's Gull (6%). Two new species were added to the park list in 2013, a single Double-crested Cormorant and a migrant flock of Franklin's Gulls.

3.1.3 Field Observations

As in previous years, high numbers of Mourning Dove, Great-tailed Grackle, Rock Pigeon, Red-winged Blackbird, and European Starling were recorded, with House Finch, White-winged Dove and Gambel's Quail also quite numerous. Gilded Flicker, American Kestrel, Common Raven, Great Horned Owl, Killdeer, Anna's Hummingbird, and Greater Roadrunner were observed with young, and although Burrowing Owl was not detected on the surveys, a pair was present on a breeding territory traditionally occupied in summer. Notable detections were American Pipit, Horned Lark, Northern Harrier, Bank Swallow, and Cassin's Kingbird, all irregular migrant species within the park. Wintering sparrow flocks were impressive, with White-crowned Sparrow and Brewer's Sparrow the most common. Spring migrant diversity was very low, with Blue-gray Gnatcatcher, Bullock's Oriole, Yellow-rumped Warbler (Audubon's Warbler), and Wilson's Warbler the most notable.

Table 3.1.1. Habitat type, number of points, and sampling dates for each transect or grid at Casa Grande Ruins NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
U	Upland	Desert scrub	9	2	4/11/2013	4/12/2013



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Mourning Dove (*Zenaida macroura*) accounted for 14% of the birds observed at Casa Grande Ruins NM in 2013.

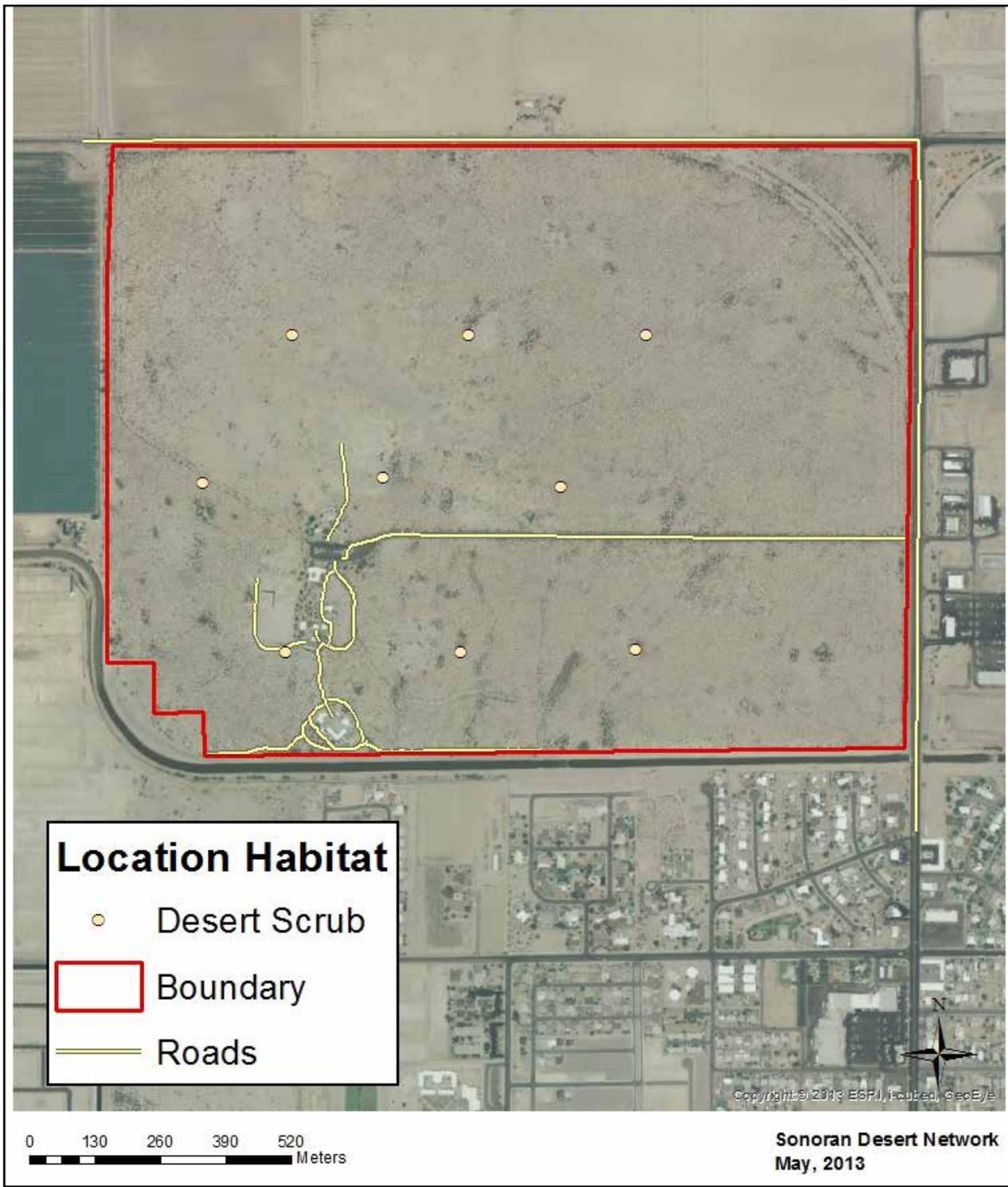


Figure 3.1.1. Point locations targeted for annual sampling at Casa Grande Ruins NM.

Table 3.1.2. Number of birds counted of each species in desert scrub habitat, Casa Grande Ruins NM, 2013.

Species	# of birds counted		Species	# of birds counted	
	Total (desert scrub habitat)	% of total		Total (desert scrub habitat)	% of total
Rock Pigeon	128	21	Northern Harrier	1	0
Mourning Dove	83	14	Say's Phoebe	1	0
Red-winged Blackbird	53	9	Western Kingbird	1	0
Great-tailed Grackle	42	7	Total	600	100
Cliff Swallow	33	6	<i>Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.</i>		
Franklin's Gull	33	6			
House Finch	28	5			
Eurasian Collared-Dove	22	4			
Gambel's Quail	21	4			
European Starling	18	3			
Horned Lark	18	3			
Brewer's Sparrow	17	3			
White-crowned Sparrow	17	3			
Anna's Hummingbird	11	2			
Ash-throated Flycatcher	10	2			
Verdin	10	2			
Yellow-rumped Warbler	8	1			
Lucy's Warbler	5	1			
Greater Roadrunner	4	1			
Northern Mockingbird	4	1			
White-winged Dove	4	1			
American Kestrel	3	1			
Blue-gray Gnatcatcher	3	1			
Common Raven	3	1			
Gilded Flicker	3	1			
Great Horned Owl	3	1			
Red-tailed Hawk	3	1			
House Sparrow	2	0			
American Pipit	1	0			
Bank Swallow	1	0			
Cassin's Kingbird	1	0			
Cooper's Hawk	1	0			
Double-crested Cormorant	1	0			
Killdeer	1	0			
Lesser Goldfinch	1	0			
Lesser Nighthawk	1	0			

3.2 Chiricahua National Monument

3.2.1 2013 sampling

During May of 2013, we sampled six transects/grids, each with seven points, two times for a total sample of 84 point counts at Chiricahua NM (Figure 3.2.1). All transects were in the upland habitat class of either grassland/savanna or woodland habitat types (Table 3.2.1).

3.2.2 Results

During 2013, 1,152 birds of 82 species were counted at Chiricahua NM (Table 3.2.2). Mexican Jay had the highest number of individuals counted (8% of the total number of birds counted). The next species counted in the highest numbers were Bewick's Wren (7%), Broad-tailed Hummingbird (5%), Spotted Towhee (4%), Ash-throated Flycatcher (4%), Black-headed Grosbeak (4%), Black-throated Gray Warbler (4%), and Yellow-rumped Warbler (4%). A migrant male Costa's Hummingbird was a new species for

the park, and a territorial Northern Pygmy-Owl was recorded as an incidental observation.

3.2.3 Field Observations

Healthy post-fire regeneration in Whitetail and Pickett Canyons may have accounted for the relatively high diversity of birds, especially for hummingbirds (seven species), with the abundance of wildflowers, and for mixed species flocks in the lush new growth. Montezuma Quail was more numerous than in previous years, and Brown-crested, Dusky-capped, and Ash-throated Flycatchers were recorded in relatively high numbers. Interesting species not regularly recorded included Wild Turkey, Dusky Flycatcher, Olive-sided Flycatcher, Mexican Chickadee, Cedar Waxwing, Brown Creeper, Red-faced Warbler, Western Scrub-Jay, and Yellow-eyed Junco. Notable observations included a Prairie Falcon in suitable nesting habitat in Pickett Canyon, several territorial Botteri's Sparrows in the grassland, and a pair of Vermilion Flycatchers.



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Broad-tailed Hummingbird (*Selasphorus platycercus*) accounted for 5% of all birds counted at Chiricahua NM in 2013.

Table 3.2.1. Habitat type, number of points, and sampling dates for each transect or grid, Chiricahua NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
High3	Upland	Woodland	7	2	5/4/2013	5/24/2013
High4	Upland	Woodland	7	2	5/4/2013	5/22/2013
Mid1	Upland	Grassland/Savanna	7	2	5/5/2013	5/24/2013
Mid2	Upland	Grassland/Savanna	7	2	5/3/2013	5/23/2013
Picket	Upland	Woodland	7	2	5/3/2013	5/23/2013
White	Upland	Woodland	7	2	5/5/2013	5/22/2013

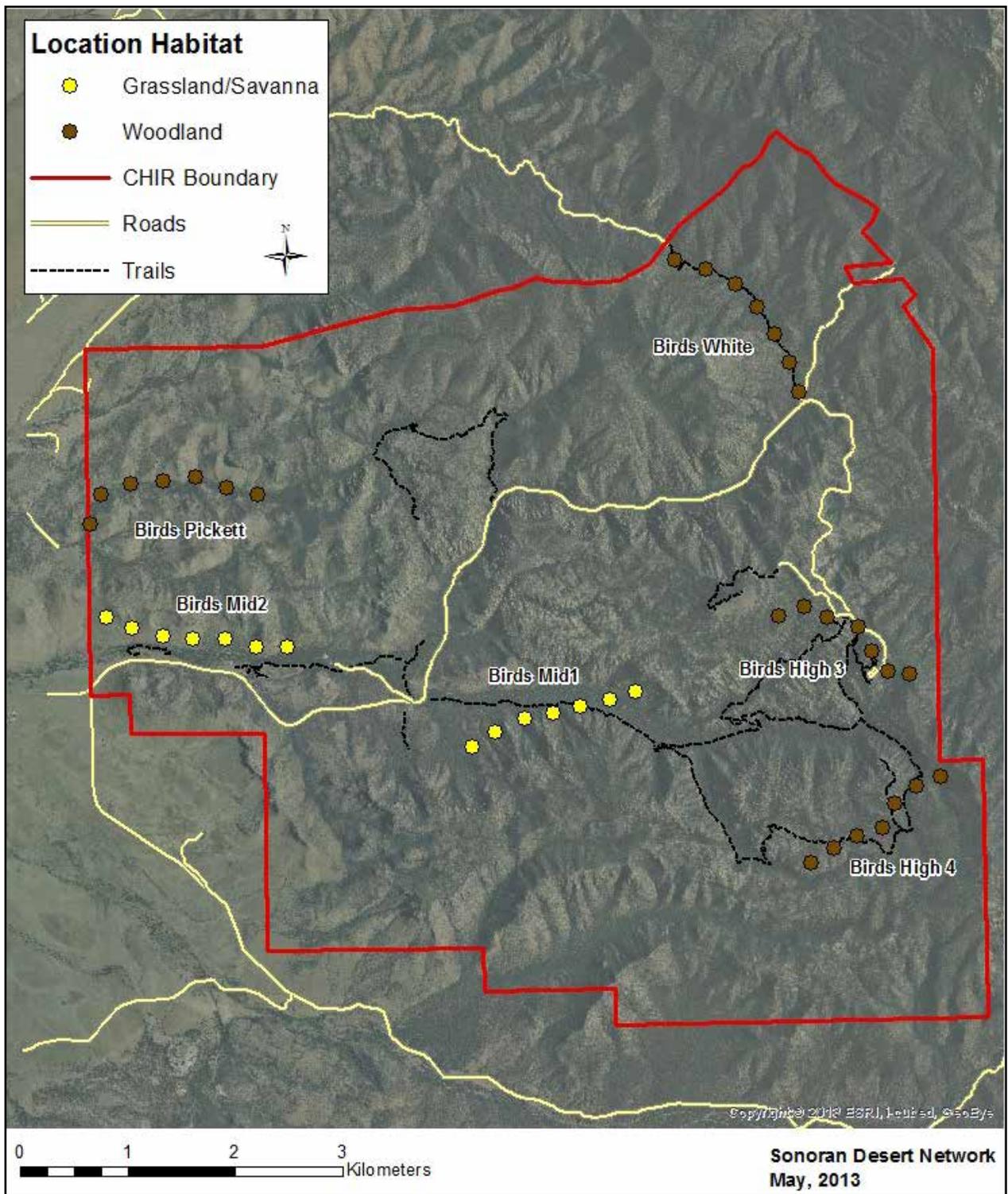


Figure 3.2.1. Point locations targeted for annual sampling at Chiricahua NM.

Table 3.2.2. Number of birds counted of each species in each habitat type, Chiricahua NM, 2013

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Woodland	Total	% of total
Mexican Jay	42	52	94	8
Bewick's Wren	30	50	80	7
Broad-tailed Hummingbird	8	45	53	5
Spotted Towhee	2	49	51	4
Ash-throated Flycatcher	21	28	49	4
Black-headed Grosbeak	25	21	46	4
Black-throated Gray Warbler	12	34	46	4
Yellow-rumped Warbler	12	30	42	4
Rufous-crowned Sparrow	19	21	40	3
Pine Siskin	6	32	38	3
Rock Wren	13	22	35	3
White-throated Swift	24	8	32	3
Canyon Wren	17	12	29	3
Scott's Oriole	6	23	29	3
Dusky-capped Flycatcher	13	13	26	2
Cassin's Kingbird	11	11	22	2
Common Raven	11	9	20	2
Hepatic Tanager	10	10	20	2
Western Tanager	4	16	20	2
Turkey Vulture	7	12	19	2
Arizona Woodpecker	6	12	18	2
Hammond's Flycatcher	2	16	18	2
Western Wood-Pewee	6	11	17	1
Canyon Towhee	11	5	16	1
Chipping Sparrow	2	13	15	1
Cedar Waxwing	---	14	14	1
Brown-headed Cowbird	4	8	12	1
Bushtit	---	12	12	1
Mourning Dove	9	3	12	1
Ruby-crowned Kinglet	2	10	12	1
House Finch	3	8	11	1
Blue-gray Gnatcatcher	1	9	10	1
Montezuma Quail	2	8	10	1
Plumbeous Vireo	4	6	10	1
Black-throated Sparrow	1	8	9	1
Hairy Woodpecker	3	6	9	1
Painted Redstart	6	3	9	1
White-winged Dove	8	1	9	1
Eurasian Collared-Dove	8	---	8	1
Red-faced Warbler	1	7	8	1
American Robin	---	7	7	1

Table 3.2.2. Number of birds counted of each species in each habitat type, Chiricahua NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Woodland	Total	% of total
Black-chinned Hummingbird	3	4	7	1
Northern Flicker	1	6	7	1
White-breasted Nuthatch	3	4	7	1
Wilson's Warbler	---	6	6	1
Yellow-eyed Junco	---	6	6	1
Hermit Thrush	---	5	5	0
Hutton's Vireo	1	4	5	0
Western Scrub-Jay	---	5	5	0
Acorn Woodpecker	3	1	4	0
Bridled Titmouse	1	3	4	0
Grace's Warbler	1	3	4	0
Brown Creeper	---	3	3	0
Brown-crested Flycatcher	3	---	3	0
Cordilleran Flycatcher	---	3	3	0
Gray Flycatcher	---	3	3	0
Greater Roadrunner	1	2	3	0
Olive-sided Flycatcher	---	3	3	0
Pacific-slope Flycatcher	---	3	3	0
Violet-green Swallow	---	3	3	0
Anna's Hummingbird	---	2	2	0
Black-chinned Sparrow	---	2	2	0
Cassin's Vireo	---	2	2	0
Green-tailed Towhee	---	2	2	0
House Wren	---	2	2	0
Lazuli Bunting	---	2	2	0
Magnificent Hummingbird	---	2	2	0
Townsend's Warbler	1	1	2	0
Zone-tailed Hawk	---	2	2	0
Blue Grosbeak	1	---	1	0
Botteri's Sparrow	1	---	1	0
Costa's Hummingbird	---	1	1	0
Dusky Flycatcher	---	1	1	0
Gambel's Quail	1	---	1	0
Great Horned Owl	1	---	1	0
Mexican Whip-poor-will	1	---	1	0
Northern Mockingbird	---	1	1	0
Northern Rough-winged Swallow	---	1	1	0
Prairie Falcon	---	1	1	0
Red-tailed Hawk	---	1	1	0
Steller's Jay	---	1	1	0

Table 3.2.2. Number of birds counted of each species in each habitat type, Chiricahua NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Woodland	Total	% of total
Western Kingbird	1	---	1	0
Total	396	756	1,152	100

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.



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Acorn Woodpeckers (*Melanerpes formicivorus*) were observed in both grassland/savanna and woodland habitat at Chiricahua NM in 2013.

3.3 Coronado National Memorial

3.3.1 2013 sampling

During April and May of 2013, we sampled two transects at Coronado NMem with seven or eight points each (Figure 3.3.1). The transects, one grassland/savanna and one woodland, were sampled twice (Table 3.3.1), for a total of 30 point counts at the park.

3.3.2 Results

During 2013, 403 birds of 60 species were counted at Coronado NMem (Table 3.3.2). Mexican Jay had the highest number of individuals counted (9% of the total number of birds counted). The next species counted in the highest numbers were Eastern Meadowlark (8%), White-winged Dove (7%), Botteri's Sparrow (6%), Bewick's Wren (5%), and Rufous-crowned Sparrow (5%). Eurasian Collared-Dove was a new species for the park.

3.3.3 Field Observations

The mesquite grassland transect had regenerated quite well post-fire (after the fire in June 2011), and several species were observed there in relatively high numbers, especially Botteri's Sparrow, Eastern Meadowlark, Mourning Dove, Western Kingbird, and Ash-throated Flycatcher.

Cassin's Sparrow, Grasshopper Sparrow, Black-throated Sparrow, Vesper Sparrow, and Canyon Towhee were also more numerous than last year. Scaled Quail, which had not been recorded in recent years, was territorial and present in suitable breeding habitat. This species is also a good indicator that the grassland is doing well. Wild Turkey was not recorded on surveys, but fresh tracks and droppings confirmed its presence.

Observations at the montane transect were similar to last year. Bewick's Wren, Spotted Towhee, Mexican Jay, and Rufous-crowned Sparrow were the most numerous, and Scott's Oriole was quite common. Interesting species included Painted Redstart, Pine Siskin, Hermit Warbler, Arizona Woodpecker, Greater Roadrunner, Cooper's Hawk, Acorn Woodpecker, White-breasted Nuthatch, and Western Scrub-Jay. Montezuma Quail was also recorded after several seasons of absence, but Black-chinned Sparrow was still surprisingly scarce in prime habitat for the species. Common migrants included Townsend's Warbler, Western Tanager, Black-headed Grosbeak, Violet-green Swallow, Lazuli Bunting, Broad-tailed Hummingbird, Warbling Vireo, and Bullock's Oriole.

In addition to Eurasian Collared-Dove (a new species for the park), Rock Pigeon was observed. Both species breed just outside the park, but the likelihood of an invasion is low due to limited nesting substrates within the park.



Scott's Oriole (*Icterus parisorum*) was one of the species observed in the highest numbers at Coronado NMem in 2013.

Table 3.3.1. Habitat type, number of points, and sampling dates for each transect or grid, Coronado NMem, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
401	Upland	Grassland/Savanna	8	2	4/26/2013	5/8/2013
502	Upland	Woodland	7	2	4/25/2013	5/7/2013

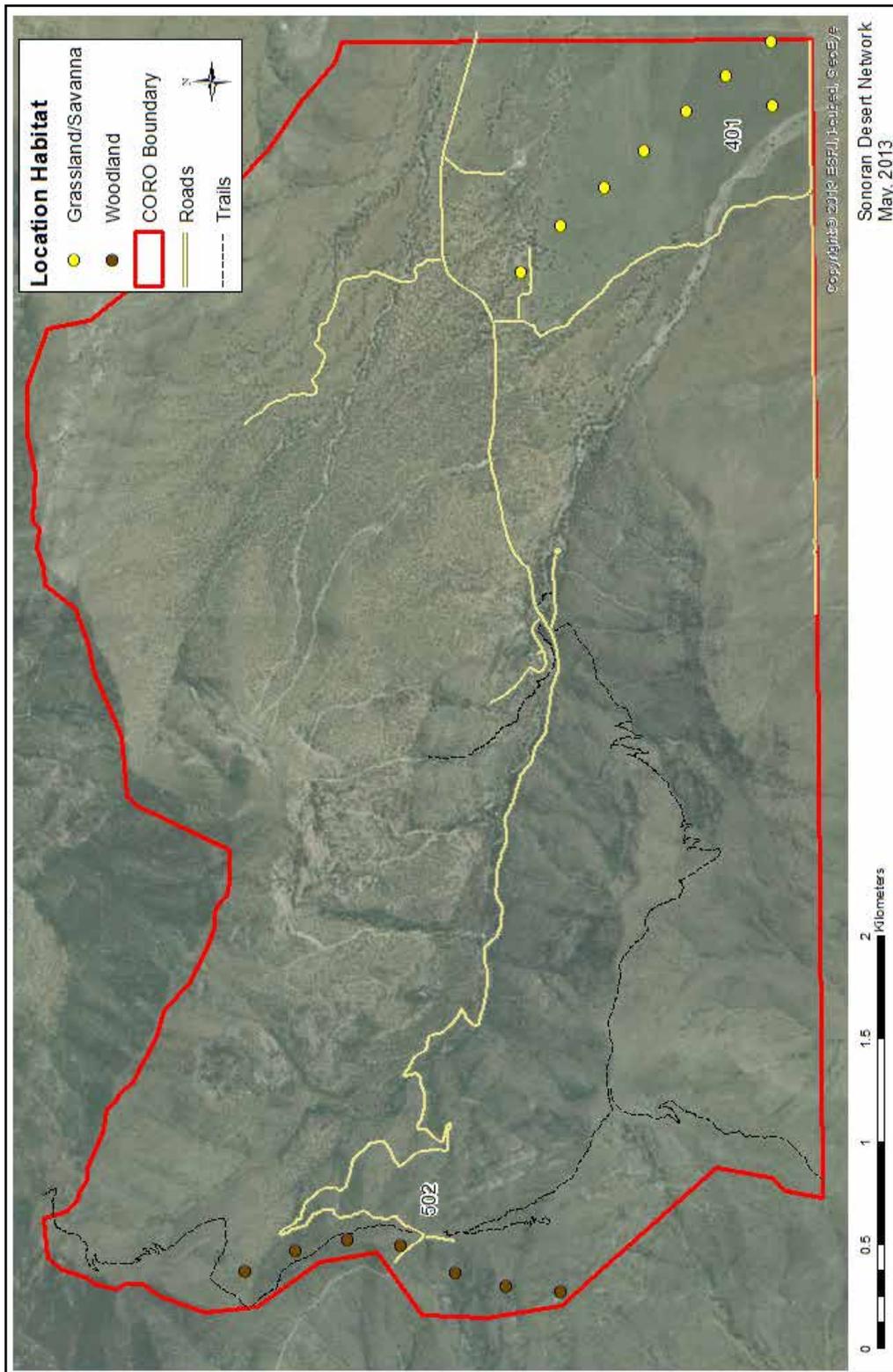


Figure 3.3.1. Point locations targeted for annual sampling at Coronado NM.

Table 3.3.2. Number of birds counted of each species in each habitat type, Coronado NMem, 2013

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Woodland	Total	% of total
Mexican Jay	12	25	37	9
Eastern Meadowlark	33	---	33	8
White-winged Dove	21	8	29	7
Botteri's Sparrow	26	---	26	6
Bewick's Wren	4	18	22	5
Rufous-crowned Sparrow	---	20	20	5
Scott's Oriole	3	17	20	5
House Finch	12	7	19	5
Ash-throated Flycatcher	12	5	17	4
Mourning Dove	13	1	14	3
Rock Wren	---	12	12	3
Eurasian Collared-Dove	10	---	10	2
Spotted Towhee	---	10	10	2
Northern Mockingbird	8	1	9	2
Western Kingbird	8	---	8	2
Cassin's Kingbird	5	2	7	2
Lark Sparrow	7	---	7	2
Yellow-rumped Warbler	1	6	7	2
Canyon Wren	---	6	6	1
Black-throated Gray Warbler	---	5	5	1
Black-throated Sparrow	5	---	5	1
Pine Siskin	---	5	5	1
White-throated Swift	---	5	5	1
Black-headed Grosbeak	1	3	4	1
Curve-billed Thrasher	---	4	4	1
Scaled Quail	4	---	4	1
Violet-green Swallow	2	2	4	1
Western Scrub-Jay	---	4	4	1
Common Raven	---	3	3	1
Hepatic Tanager	1	2	3	1
Turkey Vulture	---	3	3	1
Bridled Titmouse	1	1	2	0
Broad-tailed Hummingbird	2	---	2	0
Bushtit	---	2	2	0
Cactus Wren	1	1	2	0
Cassin's Sparrow	2	---	2	0
Chipping Sparrow	2	---	2	0
Dusky-capped Flycatcher	---	2	2	0
Ladder-backed Woodpecker	---	2	2	0
Lazuli Bunting	---	2	2	0

Table 3.3.2. Number of birds counted of each species in each habitat type, Coronado NMem, 2013, cont.

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Woodland	Total	% of total
Western Wood-Pewee	2	---	2	0
White-crowned Sparrow	---	2	2	0
Arizona Woodpecker	---	1	1	0
Brewer's Sparrow	1	---	1	0
Brown-headed Cowbird	1	---	1	0
Bullock's Oriole	1	---	1	0
Canyon Towhee	1	---	1	0
Cooper's Hawk	1	---	1	0
Gila Woodpecker	1	---	1	0
Grasshopper Sparrow	1	---	1	0
Gray Flycatcher	1	---	1	0
Greater Roadrunner	1	---	1	0
Green-tailed Towhee	---	1	1	0
Hermit Warbler	---	1	1	0
Lesser Goldfinch	---	1	1	0
Montezuma Quail	---	1	1	0
Painted Redstart	---	1	1	0
Red-tailed Hawk	---	1	1	0
Western Tanager	1	---	1	0
White-breasted Nuthatch	---	1	1	0
<i>Unidentified Raptor</i>	---	1	1	0
Total	208	195	403	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.4 Fort Bowie National Historic Site

3.4.1 2013 sampling

During May of 2013, we sampled two transects/ grids at Fort Bowie NHS (Figure 3.4.1). One transect, with eight points, was in the riparian habitat class, and the other transect, with seven points, was in the upland habitat class (grassland/savanna habitat type; Table 3.4.1). Each transect was visited twice for a total of 30 point counts at the park.

3.4.2 Results

During 2013, 488 birds of 63 species were counted at Fort Bowie NHS (Table 3.4.2). Turkey Vulture had the highest number of individuals counted (9% of the total number of birds counted). Other species counted in relatively high numbers included White-winged Dove (8%), Black-throated Sparrow (5%), Northern Cardinal (5%), Ash-throated Flycatcher (5%), and Lucy's Warbler (5%). No new species were observed for the park.

3.4.3 Field Observations

Both the riparian and upland transects were quite active with breeders and migrants and yielded high detections and diversity. Ash-throated Flycatcher, White-winged Dove, House Finch, Lucy's Warbler, Mourning Dove, and Northern Mockingbird were recorded in high numbers on both transects. Riparian breeders such as Bell's Vireo, Hooded Oriole, Summer Tanager, Black-chinned Hummingbird, Northern Cardinal, and Cassin's Kingbird were numerous in Siphon Canyon and at Apache Spring. The Zone-tailed Hawk nest site was again in use by a pair of adults, and the Turkey Vulture roost was in use and larger this year. Both Scaled Quail and Montezuma Quail were recorded. Migrant Broad-tailed Hummingbirds were especially numerous in the flower-



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Northern Cardinal (*Cardinalis cardinalis*) was the fourth most common species during sampling at Fort Bowie NHS in 2013.

ing desert willows along the washes, and large numbers of wintering sparrows (e.g., Chipping, Brewer's, White-crowned, and Lark Sparrows) lingered in the lush vegetation. Interesting, low-density migrant species were Olive-sided Flycatcher, Yellow-breasted Chat, Pacific-slope Flycatcher, Hammond's Flycatcher, Pine Siskin, Hermit Thrush, and MacGillivray's Warbler. Rare, breeding Crissal Thrasher, Western Scrub-Jay, and Gray Vireo were also noted in varied habitats.

Table 3.4.1. Habitat type, number of points, and sampling dates for each transect or grid, Fort Bowie NHS, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
SPN	Riparian	Riparian	8	2	5/2/2013	5/21/2013
UpW	Upland	Grassland/Savanna	7	2	5/2/2013	5/21/2013

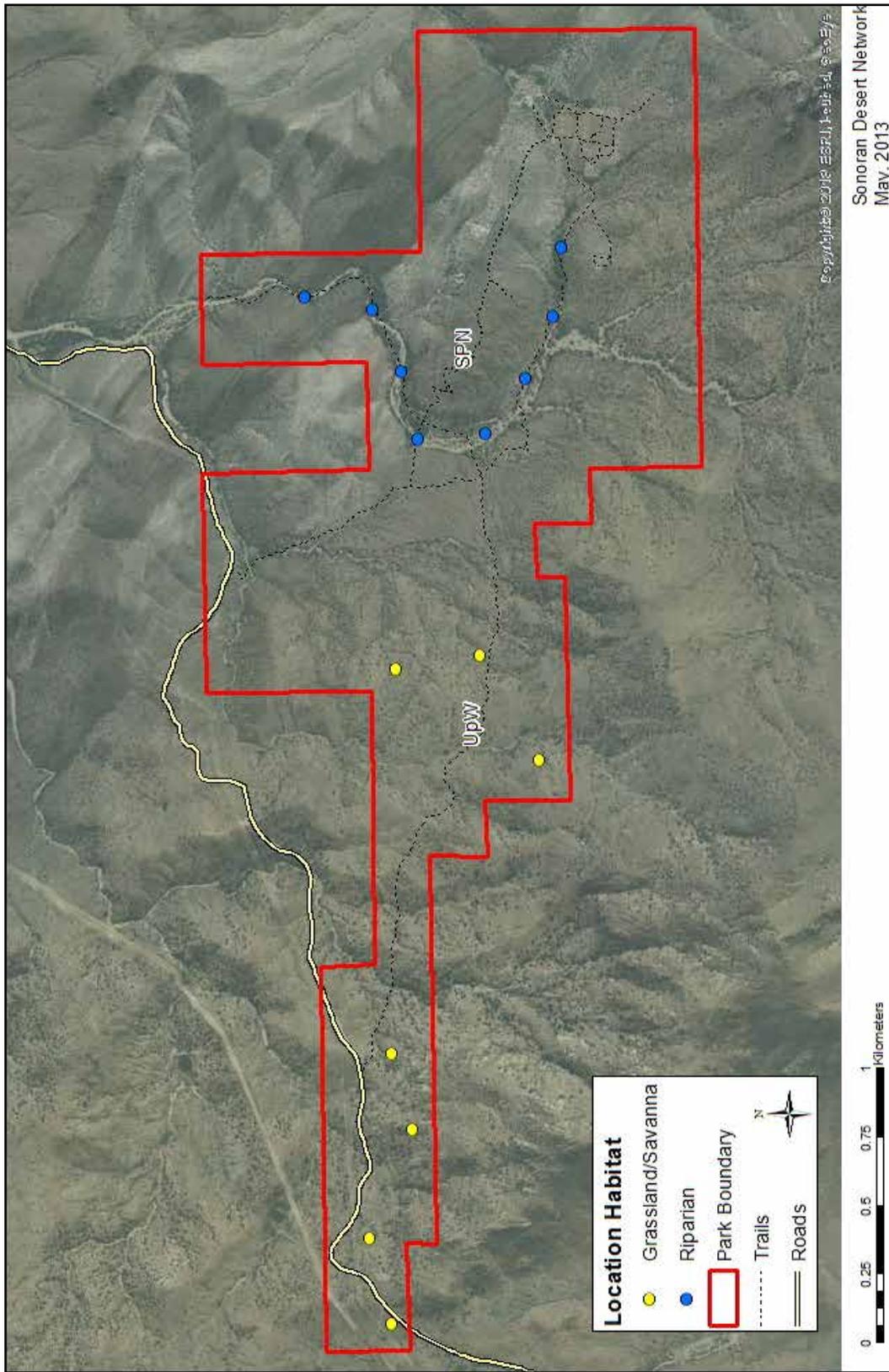


Figure 3.4.1. Point locations targeted for annual sampling at Fort Bowie NHS.

Table 3.4.2. Number of birds counted of each species in each habitat type, Fort Bowie NHS, 2013

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Riparian	Total	% of total
Turkey Vulture	11	31	42	9
White-winged Dove	12	28	40	8
Black-throated Sparrow	18	8	26	5
Northern Cardinal	---	24	24	5
Ash-throated Flycatcher	13	10	23	5
Lucy's Warbler	6	17	23	5
Rufous-crowned Sparrow	15	5	20	4
Bewick's Wren	11	6	17	3
Canyon Towhee	7	10	17	3
House Finch	11	6	17	3
Wilson's Warbler	1	15	16	3
Yellow-rumped Warbler	2	13	15	3
Mourning Dove	6	8	14	3
Verdin	4	8	12	2
Ladder-backed Woodpecker	5	6	11	2
Gambel's Quail	---	10	10	2
Pine Siskin	4	6	10	2
Scott's Oriole	6	4	10	2
Black-chinned Hummingbird	---	9	9	2
Broad-tailed Hummingbird	3	6	9	2
Black-headed Grosbeak	---	7	7	1
Brown-headed Cowbird	3	4	7	1
Cactus Wren	4	3	7	1
Chipping Sparrow	2	4	6	1
Cassin's Kingbird	1	4	5	1
Gray Flycatcher	1	4	5	1
Red-tailed Hawk	5	---	5	1
Violet-green Swallow	---	5	5	1
Western Scrub-Jay	1	4	5	1
Black-throated Gray Warbler	3	1	4	1
Brewer's Sparrow	4	---	4	1
Hammond's Flycatcher	---	4	4	1
Hooded Oriole	---	4	4	1
Lazuli Bunting	1	3	4	1
Ruby-crowned Kinglet	1	3	4	1
Zone-tailed Hawk	---	4	4	1
Green-tailed Towhee	---	3	3	1
MacGillivray's Warbler	---	3	3	1
Summer Tanager	---	3	3	1
Bushtit	---	2	2	0

Table 3.4.2. Number of birds counted of each species in each habitat type, Fort Bowie NHS, 2013, cont.

Species	Habitat type		# of birds counted	
	Grassland/ Savanna	Riparian	Total	% of total
Canyon Wren	1	1	2	0
Common Raven	2	---	2	0
Northern Mockingbird	2	---	2	0
Olive-sided Flycatcher	---	2	2	0
Pacific-slope Flycatcher	---	2	2	0
Warbling Vireo	---	2	2	0
Western Tanager	---	2	2	0
Western Wood-Pewee	---	2	2	0
White-crowned Sparrow	---	2	2	0
Broad-billed Hummingbird	---	1	1	0
Bronzed Cowbird	---	1	1	0
Brown-crested Flycatcher	---	1	1	0
Bullock's Oriole	---	1	1	0
Cassin's Vireo	---	1	1	0
Crissal Thrasher	---	1	1	0
Hermit Thrush	---	1	1	0
Lesser Goldfinch	---	1	1	0
Montezuma Quail	1	---	1	0
Northern Flicker	1	---	1	0
Orange-crowned Warbler	---	1	1	0
Pyrrhuloxia	1	---	1	0
Western Kingbird	---	1	1	0
Yellow-breasted Chat	---	1	1	0
Total	169	319	488	100

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.5 Gila Cliff Dwellings National Monument

3.5.1 2013 sampling

During May of 2013, we sampled two transects/grids at Gila Cliff Dwellings NM (Figure 3.5.1). One transect, with seven points, was in the riparian habitat class, and the other transect, with six points, was in the upland habitat class (woodland habitat type; Table 3.5.1). Each transect was visited twice for a total of 26 point counts at the park.

3.5.2 Results

During 2013, 484 birds of 63 species were counted at Gila Cliff Dwellings NM (Table 3.5.2). Mourning Dove had the highest number of individuals counted (6% of the total number of birds counted). Other species counted in relatively high numbers included Spotted Towhee (6%), Violet-green Swallow (6%), Purple Martin (6%), House Wren (5%), Yellow-breasted Chat (5%), and House Finch (5%). Eurasian Collared-Dove, a non-native species, was a new species for the park, as was Hooded Oriole.

3.5.3 Field Observations

The Miller Fire of May 2011 burned most sections of the park, including the upland transect and the

riparian transect. In 2013, post-fire regeneration along the riparian transect was conspicuous, with dense understory succession. Species such as Yellow-breasted Chat, Common Yellowthroat, and House Wren were present in higher numbers in this habitat in 2013 than in other years. In contrast, Abert's Towhee and Song Sparrow were absent in the shrubby new growth and were not detected on surveys. The open areas and abundance of tree cavities likely accounted for good numbers of Purple Martin, Violet-green Swallow, White-breasted Nuthatch, Western Bluebird, and Red-naped Sapsucker. Both the upland and riparian transects seemed active and had relatively high diversity. Interesting species recorded included Juniper Titmouse, Zone-tailed Hawk, Steller's Jay, Wild Turkey, Pine Siskin, Ruby-crowned Kinglet, and Western Scrub-Jay. Gray Flycatchers were more numerous during 2013 surveys than they have been in many years. Breeding for this species was indicated in various habitats. The Turkey Vulture roost was also larger than last year, and hummingbird numbers were quite high throughout the park. No Great Blue Heron nests were observed this year, although a pair was present in suitable habitat.



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Violet-green Swallow (*Tachycineta thalassina*) was one of the species observed in the highest numbers at Gila Cliff Dwellings NM in 2013.

Table 3.5.1. Habitat type, number of points, and sampling dates for each transect or grid, Gila Cliff Dwellings NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
RIP	Riparian	Riparian	7	2	5/25/2013	5/26/2013
Up	Upland	Woodland	6	2	5/25/2013	5/26/2013

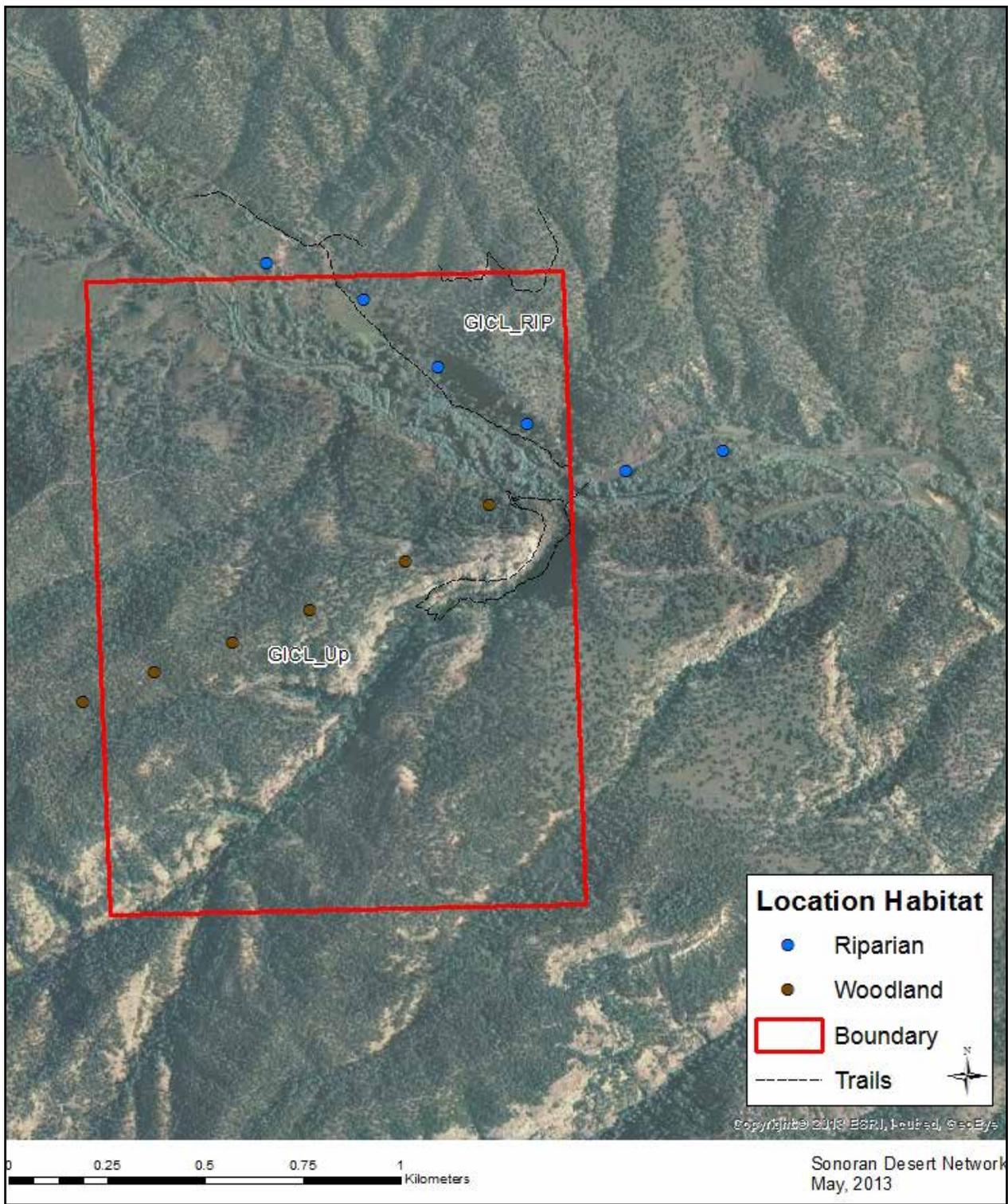


Figure 3.5.1. Point locations targeted for annual sampling at Gila Cliff Dwellings NM. Four points beyond park boundaries were included to ensure a minimum number of sampling points per transect.

Table 3.5.2. Number of birds counted of each species in each habitat type, Gila Cliff Dwellings NM, 2013

Species	Habitat type		# of birds counted	
	Riparian	Woodland	Total	% of total
Mourning Dove	20	10	30	6
Spotted Towhee	27	2	29	6
Violet-green Swallow	18	10	28	6
Purple Martin	26	1	27	6
House Wren	16	9	25	5
Yellow-breasted Chat	20	5	25	5
House Finch	17	5	22	5
Cassin's Kingbird	17	---	17	4
Western Wood-Pewee	9	7	16	3
Black-headed Grosbeak	13	2	15	3
Black-throated Gray Warbler	3	11	14	3
American Robin	11	2	13	3
Bewick's Wren	4	8	12	2
Ash-throated Flycatcher	3	8	11	2
Gray Flycatcher	3	8	11	2
Hepatic Tanager	1	10	11	2
Brown-headed Cowbird	9	1	10	2
Painted Redstart	1	8	9	2
Western Tanager	3	6	9	2
White-breasted Nuthatch	2	7	9	2
Yellow Warbler	9	---	9	2
Blue Grosbeak	8	---	8	2
Hairy Woodpecker	3	5	8	2
Warbling Vireo	6	2	8	2
Common Yellowthroat	7	---	7	1
Steller's Jay	---	7	7	1
Common Raven	6	---	6	1
Western Bluebird	6	---	6	1
Broad-tailed Hummingbird	3	2	5	1
Canyon Wren	1	4	5	1
Pine Siskin	2	3	5	1
Plumbeous Vireo	1	4	5	1
Rufous-crowned Sparrow	3	2	5	1
Bullock's Oriole	4	---	4	1
Northern Flicker	3	1	4	1
Western Kingbird	4	---	4	1
Yellow-rumped Warbler	1	3	4	1
Ruby-crowned Kinglet	---	3	3	1
Turkey Vulture	3	---	3	1
Canyon Towhee	2	---	2	0

Table 3.5.2. Number of birds counted of each species in each habitat type, Gila Cliff Dwellings NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Riparian	Woodland	Total	% of total
Gambel's Quail	2	---	2	0
Hooded Oriole	2	---	2	0
Lazuli Bunting	2	---	2	0
MacGillivray's Warbler	2	---	2	0
Pygmy Nuthatch	---	2	2	0
Red-tailed Hawk	2	---	2	0
Say's Phoebe	2	---	2	0
Summer Tanager	2	---	2	0
Western Scrub-Jay	2	---	2	0
Wild Turkey	---	2	2	0
American Kestrel	1	---	1	0
Black Phoebe	1	---	1	0
Cordilleran Flycatcher	1	---	1	0
Dusky Flycatcher	---	1	1	0
Eurasian Collared-Dove	1	---	1	0
Great Blue Heron	1	---	1	0
Hermit Thrush	1	---	1	0
Juniper Titmouse	---	1	1	0
Lesser Goldfinch	1	---	1	0
Northern Mockingbird	1	---	1	0
Virginia's Warbler	---	1	1	0
Wilson's Warbler	1	---	1	0
Zone-tailed Hawk	---	1	1	0
Total	320	164	484	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.6 Montezuma Castle National Monument

3.6.1 2013 sampling

During May of 2013, we sampled four transects/grids at Montezuma Castle NM (Figures 3.6.1-1 and 3.6.1-2). Three transects were located at the Castle Unit: two in riparian habitat and one in upland desert scrub. Six points were sampled on each of the riparian transects and eight points were sampled on the upland desert scrub transect. The one transect at the Well Unit, with seven points, was in riparian habitat. Each point was surveyed twice for a total of 54 point counts at Montezuma Castle NM (Table 3.6.1).

3.6.2 Results

During 2013, 1,229 birds of 73 species were counted at Montezuma Castle NM (Tables 3.6.2-1 and 3.6.2-2). Overall, Lucy's Warbler had the highest number of individuals counted, followed by Brown-crested Flycatcher, Phainopepla, Bewick's Wren, and Gila Woodpecker. At the Castle Unit, Lucy's Warbler had the highest number of individuals counted (9% of the total number of birds counted at the Castle Unit), followed by Phainopepla (8%), Bewick's Wren (7%), Brown-crested Flycatcher (6%), and Gila Woodpecker (6%). At the Well Unit, Yellow Warbler had the highest number of individuals counted (11%), followed by Brown-crested Flycatcher (9%), Mourning Dove (7%), Gila Woodpecker (6%), Summer Tanager (6%), and Yellow-breasted Chat (6%). There was one new addition to the park list in 2013— Myrtle Warbler (an incidental observation), the eastern subspecies of Yellow-rumped Warbler that is distinct from the western subspecies (Audubon's Warbler). Note that this observation is not shown in the park table because we do not list subspecies there.

3.6.3 Field Observations

Riparian breeders were well represented, with those observed in the highest numbers including Brown-crested Flycatcher, Summer Tanager, Bell's Vireo, Yellow-breasted Chat, House Finch,



Hooded Orioles (*Icterus cucullatus*) were observed at both units of the National Monument in 2013.

Bullock's Oriole, Song Sparrow, and Yellow Warbler. Three pairs of Common Black-Hawk occupied nest sites from last year, two pairs of Belted Kingfisher were present, and Wood Duck and Killdeer with young were again confirmed breeding at the Castle Unit. The wastewater ponds also held numerous Mallards and a single Green-winged Teal. On the upland transect at the Castle Unit, Black-throated Sparrow, Verdin, Blue Grosbeak, and Ladder-backed Woodpecker were detected in higher numbers (compared to last year). Interesting species included a pair of Canada Geese, Spotted Sandpiper, Red-winged Blackbird, Northern Beardless-Tyrannulet, Indigo Bunting, Anna's Hummingbird, and Cedar Waxwing. At the Well Unit, Eurasian Collared-Dove was numerous, probably moving in from the adjacent neighborhood but unlikely to breed within the park. Migrants were quite numerous at both units and notables included Warbling Vireo, Violet-Green Swallow, Orange-crowned Warbler, Wilson's Warbler, Western Tanager, Black-headed Grosbeak, Lazuli Bunting, and MacGillivray's Warbler. Great-Horned Owl and Western Screech-Owl were recorded as incidentals at the Well Unit.

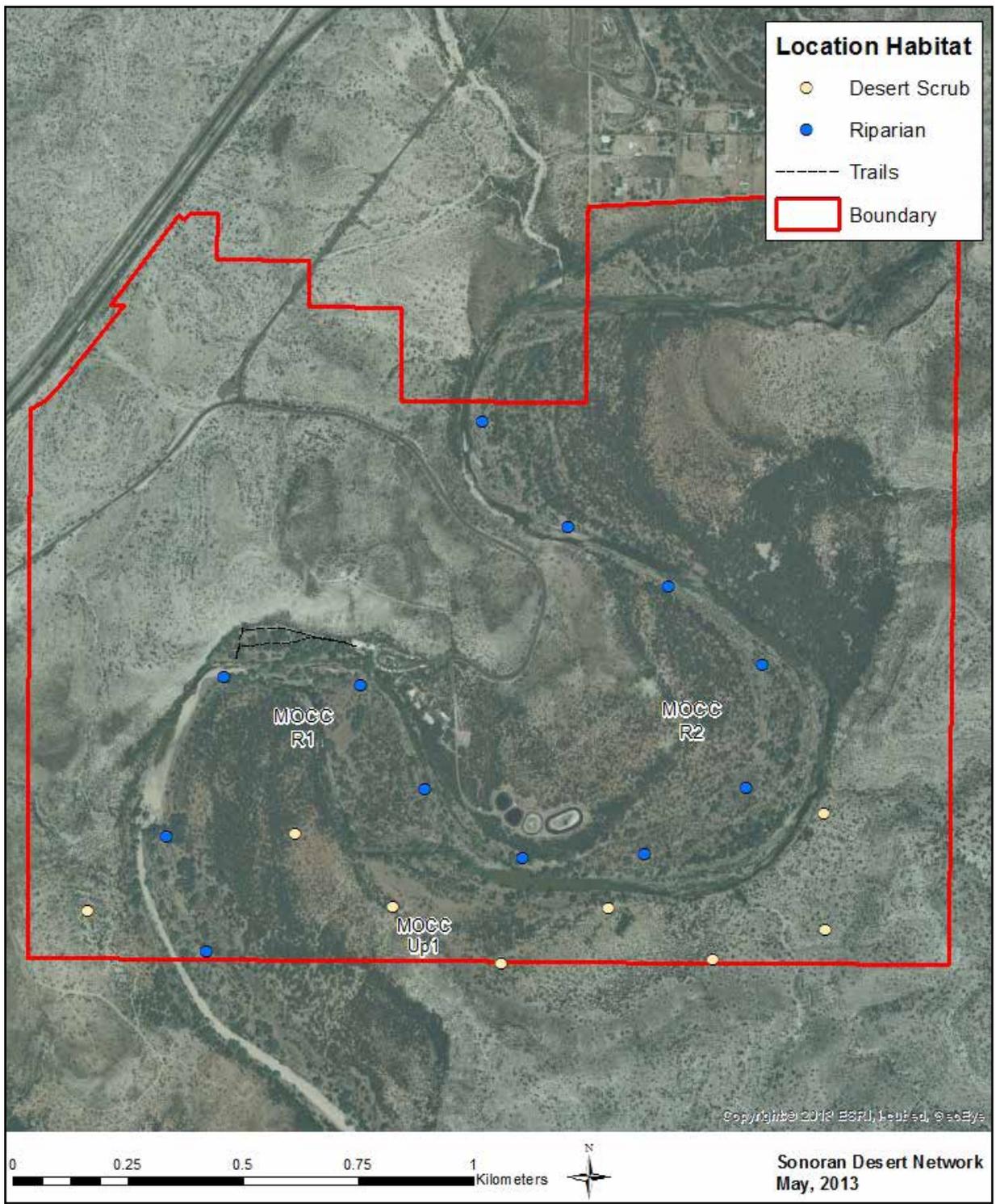


Figure 3.6.1-1. Point locations targeted for annual sampling at Montezuma Castle NM, Castle Unit.

Table 3.6.1. Habitat type, number of points, and sampling dates for each transect or grid, Montezuma Castle NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
R1 (Castle Unit)	Riparian	Riparian	6	2	5/11/2013	5/29/2013
R2 (Castle Unit)	Riparian	Riparian	6	2	5/11/2013	5/29/2013
Up1 (Castle Unit)	Upland	Desert scrub	8	2	5/12/2013	5/30/2013
R (Well Unit)	Riparian	Riparian	7	2	5/12/2013	5/30/2013

Table 3.6.2-1. Number of birds counted of each species in each habitat type, Montezuma Castle NM–Castle Unit, 2013

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Lucy's Warbler	29	54	83	9
Phainopepla	34	46	80	8
Bewick's Wren	18	49	67	7
Brown-crested Flycatcher	11	49	60	6
Gila Woodpecker	17	38	55	6
House Finch	17	33	50	5
Mourning Dove	18	26	44	5
Brown-headed Cowbird	14	18	32	3
Ash-throated Flycatcher	14	16	30	3
Wood Duck	---	30	30	3
Blue Grosbeak	9	19	28	3
Summer Tanager	4	21	25	3
Violet-green Swallow	15	8	23	2
Gambel's Quail	10	12	22	2
Lesser Goldfinch	4	16	20	2
Yellow-breasted Chat	7	13	20	2
Abert's Towhee	---	18	18	2
Bullock's Oriole	4	13	17	2
Verdin	10	6	16	2
Black-chinned Hummingbird	8	7	15	2
Ladder-backed Woodpecker	6	8	14	1
Bridled Titmouse	2	11	13	1
Common Raven	5	8	13	1
Yellow Warbler	3	10	13	1
Northern Rough-winged Swallow	3	7	10	1
Song Sparrow	---	10	10	1
Warbling Vireo	3	7	10	1
White-throated Swift	6	4	10	1
Cassin's Kingbird	2	7	9	1
Common Yellowthroat	1	8	9	1
Mallard	---	9	9	1
Hooded Oriole	3	5	8	1
Indigo Bunting	1	6	7	1

Table 3.6.2-1. Number of birds counted of each species in each habitat type, Montezuma Castle NM–Castle Unit, 2013, cont.

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Turkey Vulture	6	1	7	1
Canada Goose	2	4	6	1
Cliff Swallow	2	4	6	1
Common Black-Hawk	3	3	6	1
Northern Cardinal	5	1	6	1
Western Wood-Pewee	2	4	6	1
Yellow-rumped Warbler	1	5	6	1
Belted Kingfisher	1	4	5	1
Black-throated Sparrow	4	1	5	1
Canyon Towhee	4	---	4	0
Cedar Waxwing	4	---	4	0
Red-tailed Hawk	3	1	4	0
Western Kingbird	3	1	4	0
Black-headed Grosbeak	2	1	3	0
Northern Mockingbird	2	1	3	0
Pine Siskin	---	3	3	0
White-crowned Sparrow	3	---	3	0
Black-tailed Gnatcatcher	2	---	2	0
Brewer's Sparrow	2	---	2	0
Canyon Wren	---	2	2	0
Lark Sparrow	---	2	2	0
Red-winged Blackbird	---	2	2	0
Black Phoebe	---	1	1	0
Black-throated Gray Warbler	1	---	1	0
Broad-tailed Hummingbird	---	1	1	0
Cooper's Hawk	---	1	1	0
Great Blue Heron	1	---	1	0
Green-tailed Towhee	1	---	1	0
Killdeer	1	---	1	0
Lazuli Bunting	---	1	1	0
MacGillivray's Warbler	1	---	1	0
Northern Beardless-Tyrannulet	---	1	1	0
Rock Wren	1	---	1	0
Ruby-crowned Kinglet	---	1	1	0
Western Tanager	1	---	1	0
Wilson's Warbler	1	---	1	0
Total	337	638	975	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

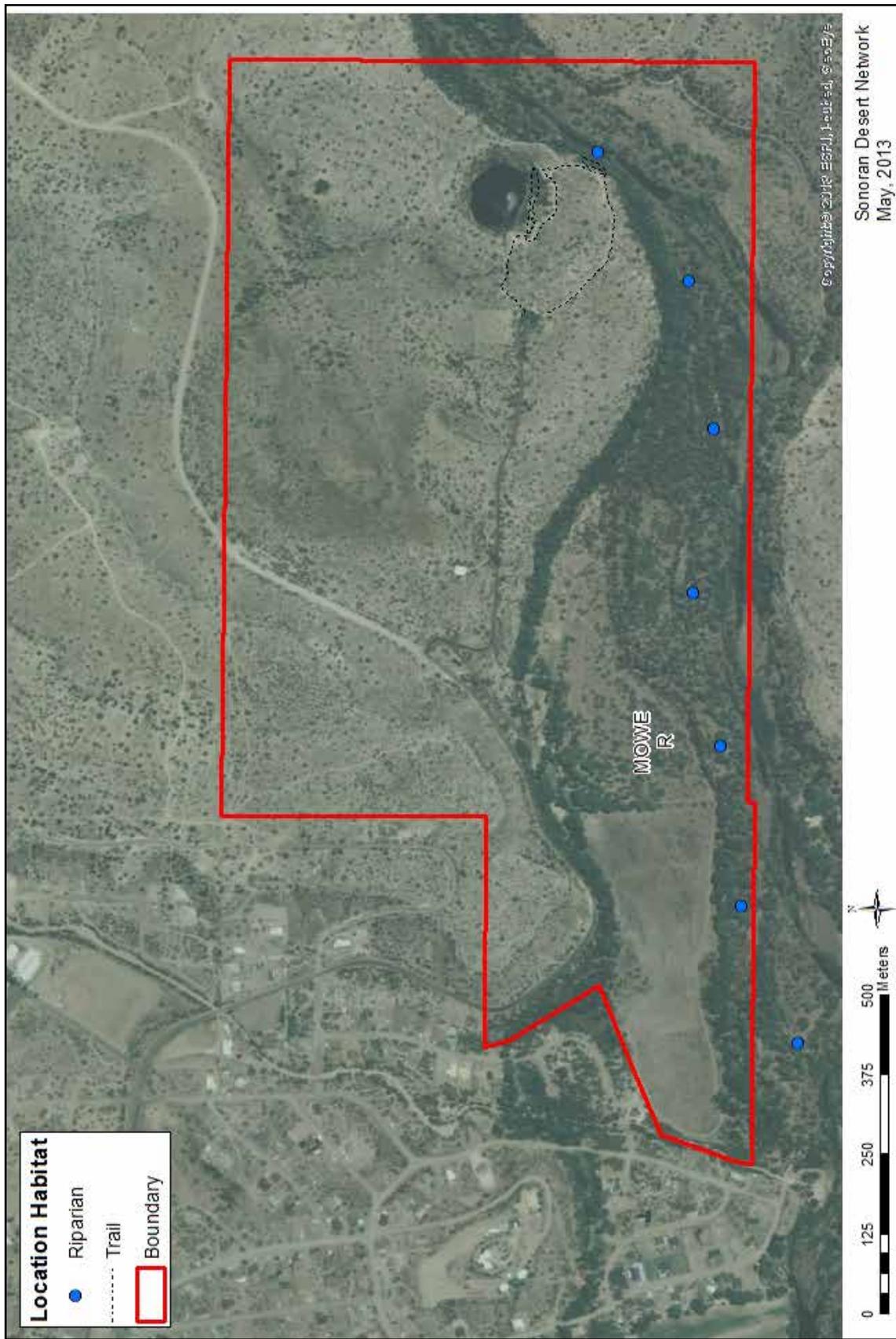


Figure 3.6.1-2. Point locations targeted for annual sampling at Montezuma Castle NM, Well Unit. One point beyond park boundaries was included to ensure a minimum number of sampling points per transect.

Table 3.6.2-2. Number of birds counted in riparian habitat, Montezuma Castle NM–Well Unit, 2013

Species	# of birds counted		Species	# of birds counted	
	Total (riparian habitat)	% of total		Total (riparian habitat)	% of total
Yellow Warbler	27	11	Phainopepla	3	1
Brown-crested Flycatcher	24	9	Bell's Vireo	2	1
Mourning Dove	17	7	Eurasian Collared-Dove	2	1
Gila Woodpecker	15	6	Gambel's Quail	2	1
Summer Tanager	15	6	Barn Swallow	1	0
Yellow-breasted Chat	15	6	Black-headed Grosbeak	1	0
House Finch	14	6	Cassin's Kingbird	1	0
Bewick's Wren	13	5	Hooded Oriole	1	0
Lucy's Warbler	13	5	MacGillivray's Warbler	1	0
Brown-headed Cowbird	9	4	Northern Rough-winged Swallow	1	0
Northern Cardinal	9	4	Pine Siskin	1	0
Warbling Vireo	9	4	Verdin	1	0
Blue Grosbeak	8	3	White-breasted Nuthatch	1	0
Song Sparrow	8	3	Wilson's Warbler	1	0
Black-chinned Hummingbird	5	2	Yellow-rumped Warbler	1	0
Ladder-backed Woodpecker	5	2	Total	254	100%
Lesser Goldfinch	5	2			
Abert's Towhee	4	2			
Bridled Titmouse	4	2			
Ash-throated Flycatcher	3	1			
Bullock's Oriole	3	1			
Canyon Wren	3	1			
Common Black-Hawk	3	1			
Common Yellowthroat	3	1			

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.7 Organ Pipe Cactus National Monument

3.7.1 2013 sampling

During April of 2013, we sampled six transects/grids, each with seven points, at Organ Pipe Cactus NM (Figure 3.7.1). All transects were sampled two times, for a total of 84 point counts. Two transects were in riparian (xeroriparian) habitats and four were in upland (desert scrub) habitats (Table 3.7.1).

3.7.2 Results

During 2013, 1,402 birds of 63 species were counted at Organ Pipe Cactus NM (Table 3.7.2). Gila Woodpecker and Gambel's Quail had the highest number of individuals counted (10% of the total number of birds counted each). The next species observed in relatively high numbers were Cactus Wren (9%), Brewer's Sparrow (8%), Ash-throated Flycatcher (7%), and Verdin (7%). Two new species were recorded for the park, Eurasian Collared-Dove and Cassin's Vireo.

3.7.3 Field Observations

Adequate winter rains triggered a productive spring breeding season for desert residents, and numerous juvenile and immature birds were observed throughout the park. Resident breeders such as Mourning Dove, Gila Woodpecker, Curve-billed Thrasher, Gambel's Quail, Cactus Wren, and Gilded Flicker were common, and migrant breeders like White-winged Dove, Ash-throated Flycatcher, Lucy's Warbler, and Scott's Oriole were also numerous in varied habitats. Greater Roadrunner, Scott's Oriole, and Loggerhead Shrike were recorded in higher numbers than in previous years. The lush winter vegetation also provided ample food and cover for wintering species, especially sparrows, with Brewer's and



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Orange-crowned Warbler (*Oreothlypis celata*) was observed in both desert scrub and xeroriparian habitat at the park in 2013.

White-crowned Sparrows abundant. The visitor center pond continued to attract a wide variety of interesting species, the most notable one being an adult Eared Grebe gorging on pupfish for several days. The bird is an unusual record for the location and season, and it was photographed by the park biologist. Interesting low-density species included Vaux's Swift, Lawrence's Goldfinch, Merlin, Sharp-shinned Hawk, Cooper's Hawk, Common Merganser, Harris's Hawk, Vermilion Flycatcher, and Rufous Hummingbird. A Spotted Towhee was unusual for elevation and habitat, and a territorial Ferruginous Pygmy-Owl was detected in known breeding habitat. Nocturnal species were well represented by Great Horned Owl, Elf Owl, Western Screech-Owl, Common Poorwill, and Lesser Nighthawk.

Table 3.7.1. Habitat type, number of points, and sampling dates for each transect or grid, Organ Pipe Cactus NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
R1	Riparian	Xeroriparian	7	2	4/4/2013	4/18/2013
R2	Riparian	Xeroriparian	7	2	4/3/2013	4/17/2013
U1	Upland	Desert scrub	7	2	4/5/2013	4/19/2013
U12	Upland	Desert scrub	7	2	4/4/2013	4/18/2013
U4	Upland	Desert scrub	7	2	4/3/2013	4/17/2013
U5	Upland	Desert scrub	7	2	4/5/2013	4/19/2013

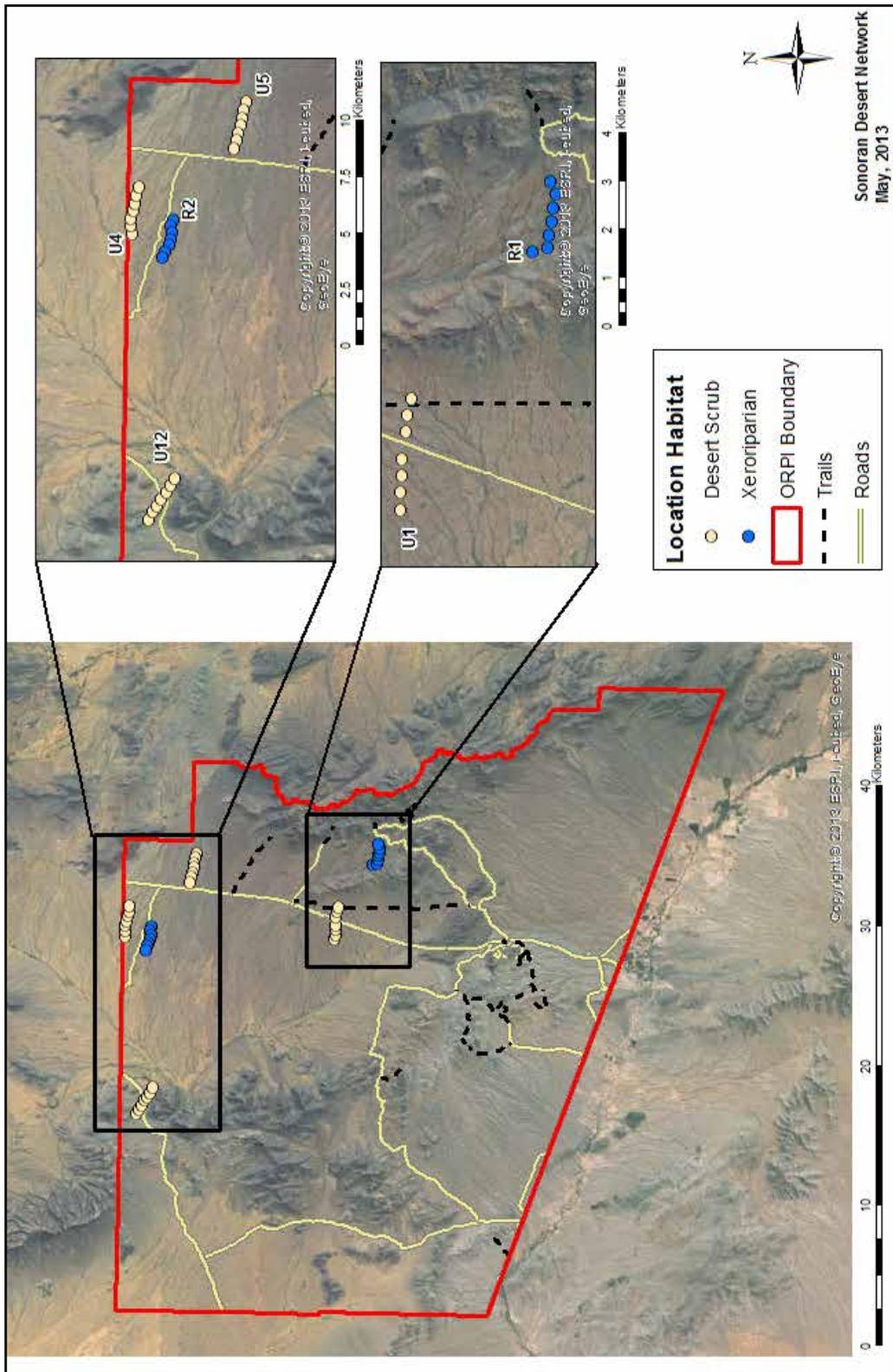


Figure 3.7.1. Point locations targeted for annual sampling at Organ Pipe Cactus NM.

Table 3.7.2. Number of birds counted of each species in each habitat type, Organ Pipe Cactus NM, 2013

Species	Habitat type		# of birds counted	
	Desert scrub	Xeroriparian	Total	% of total
Gila Woodpecker	81	58	139	10
Gambel's Quail	86	49	135	10
Cactus Wren	69	53	122	9
Brewer's Sparrow	49	70	119	8
Ash-throated Flycatcher	79	26	105	7
Verdin	65	30	95	7
Mourning Dove	41	35	76	5
Phainopepla	35	35	70	5
Curve-billed Thrasher	32	27	59	4
Black-tailed Gnatcatcher	35	18	53	4
White-winged Dove	40	6	46	3
White-crowned Sparrow	5	37	42	3
Gilded Flicker	23	11	34	2
Lesser Goldfinch	5	26	31	2
Northern Mockingbird	15	12	27	2
House Finch	16	8	24	2
Black-throated Sparrow	17	6	23	2
Lucy's Warbler	15	4	19	1
Scott's Oriole	14	3	17	1
Turkey Vulture	15	---	15	1
Loggerhead Shrike	12	1	13	1
Yellow-rumped Warbler	10	3	13	1
Greater Roadrunner	12	---	12	1
Common Raven	4	5	9	1
Green-tailed Towhee	3	6	9	1
Orange-crowned Warbler	2	5	7	0
Canyon Towhee	2	4	6	0
Ladder-backed Woodpecker	5	1	6	0
Lazuli Bunting	2	4	6	0
Ruby-crowned Kinglet	2	4	6	0
Gray Flycatcher	2	3	5	0
Wilson's Warbler	2	3	5	0
Black-headed Grosbeak	1	3	4	0
Costa's Hummingbird	1	3	4	0
American Kestrel	1	2	3	0
Black-throated Gray Warbler	1	2	3	0
House Wren	2	1	3	0
Red-tailed Hawk	2	1	3	0
Rufous-winged Sparrow	1	2	3	0
Black-chinned Hummingbird	---	2	2	0

Table 3.7.2. Number of birds counted of each species in each habitat type, Organ Pipe Cactus NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Desert scrub	Xeroriparian	Total	% of total
Cooper's Hawk	2	---	2	0
Crissal Thrasher	---	2	2	0
Pacific-slope Flycatcher	---	2	2	0
Pyrrhuloxia	2	---	2	0
Say's Phoebe	1	1	2	0
Western Kingbird	1	1	2	0
Anna's Hummingbird	---	1	1	0
Blue-gray Gnatcatcher	---	1	1	0
Brown-crested Flycatcher	1	---	1	0
Brown-headed Cowbird	1	---	1	0
Cassin's Vireo	1	---	1	0
Eurasian Collared-Dove	---	1	1	0
Hooded Oriole	---	1	1	0
Lesser Nighthawk	1	---	1	0
Lincoln's Sparrow	---	1	1	0
MacGillivray's Warbler	---	1	1	0
Nashville Warbler	1	---	1	0
Rufous Hummingbird	1	---	1	0
Spotted Towhee	1	---	1	0
Vermilion Flycatcher	---	1	1	0
Vesper Sparrow	1	---	1	0
Violet-green Swallow	1	---	1	0
Warbling Vireo	---	1	1	0
Total	819	583	1,402	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.8 Saguaro National Park

3.8.1 2013 sampling

During April, May, and June of 2013, we sampled 16 transects or grids at Saguaro NP (Figures 3.8.1-1 and 3.8.1-2). Eleven transects were in the Rincon Mountain District (SAGE) and five were in the Tucson Mountain District (SAGW). Of those in the Rincon Mountain District, 10 were in the upland habitat class (desert scrub, forest, or woodland habitat types), and one was in the riparian habitat class (Table 3.8.1). The five transects in the Tucson Mountain District were in upland desert scrub habitat. All transects/grids at the park had six to eight points each, and all were visited twice. The total number of point counts conducted at Saguaro NP in 2013 was 211.

3.8.2 Results

During 2013, 3,310 birds of 112 species were counted at Saguaro NP (Tables 3.8.2-1 and 3.8.2-2). Overall, Gila Woodpecker had the highest number of individuals counted, followed by Cactus Wren, White-winged Dove, and Gambel's Quail. At the Rincon Mountain District (SAGE), 1,952 birds of 107 species were counted. Species counted in the highest numbers were White-winged Dove (8%), Gila Woodpecker (8%), Ash-throated Flycatcher (7%), Cactus Wren (7%), and Gambel's Quail (5%). At the Tucson Mountain District (SAGW), 1,358 birds of 50 species were counted. Species counted in the highest numbers were Gila Woodpecker (15%), Cactus Wren (13%), Gambel's Quail (8%), White-winged Dove (7%), and Curve-billed Thrasher (7%).

No new species were detected for the park during the surveys.

3.8.3 Field Observations

Resident desert breeders had a good early spring nesting season, and many species were observed with young, especially Cactus Wren, Gila Woodpecker, Mourning Dove, Curve-billed Thrasher, Verdin, Gambel's Quail, Gilded Flicker, House Finch, and Black-throated Sparrow. Wintering species were quite numerous, and Brewer's and White-crowned Sparrow were abundant in varied habitats at both parks. Gray Flycatcher and Green-tailed Towhee were noted in higher numbers than in other years. Migrant breeders, such as Ash-throated Flycatcher, Black-chinned Hummingbird, White-winged Dove, Brown-crested Flycatcher, and Lucy' Warbler, were common throughout, and notable desert migrants included Rufous Hummingbird, Townsend's Warbler, Bullock's Oriole, Violet-green Swallow, Lazuli Bunting, and MacGillivray's Warbler. Unusual and irregular species at both park units included Sage Thrasher, Inca Dove, Eurasian Collared-Dove, Gray Vireo, Western Scrub-Jay, Prairie Falcon, and a nesting pair of Peregrine Falcons.

The riparian transect at Rincon Creek was very active with the abundant stream flow and lush vegetation, and Lucy's Warbler, Bell's Vireo, House Finch, Northern Cardinal, Abert's Towhee, and Vermilion Flycatcher were very common. Gray Hawk, Zone-tailed Hawk, Red-tailed Hawk, and Great Horned Owl were on the same breeding territories as in previous years, and interesting species associated with the creek in-



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Cactus Wren (*Campylorhynchus brunneicapillus*) was one of the species observed in the highest numbers at Saguaro NP in 2013.

Table 3.8.1. Habitat type, number of points, and sampling dates for each transect or grid, Saguaro NP, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
SAGE-008	Upland	Desert scrub	7	1	4/10/2013	4/24/2013
SAGE-112	Upland	Desert scrub	7	2	4/8/2013	4/23/2013
SAGE-113	Upland	Forest	7	2	6/19/2013	6/26/2013
SAGE-115	Upland	Desert scrub	7	2	4/9/2013	4/22/2013
SAGE-126	Upland	Desert scrub	6	2	6/20/2013	6/27/2013
SAGE-127	Upland	Desert scrub	6	1	6/20/2013	6/27/2013
SAGE-139	Upland	Desert scrub	6	2	4/9/2013	4/23/2013
SAGE-191	Upland	Forest	7	2	6/19/2013	6/26/2013
SAGE-403	Upland	Woodland	6	2	6/18/2013	6/25/2013
SAGE-405	Upland	Woodland	6	2	6/18/2013	6/25/2013
SAGE-LRC	Riparian	Riparian	8	1	4/10/2013	4/24/2013
SAGW-204	Upland	Desert scrub	7	2	4/2/2013	4/16/2013
SAGW-212	Upland	Desert scrub	6	2	4/6/2013	4/20/2013
SAGW-213	Upland	Desert scrub	7	2	4/2/2013	4/16/2013
SAGW-238	Upland	Desert scrub	6	2	4/1/2013	4/15/2013
SAGW-239	Upland	Desert scrub	7 ¹	2	4/6/2013	4/20/2013

At SAGW-239, 7 points were sampled on one visit, and 6 on the other.

cluded Mallard, Common Yellowthroat, Great Blue Heron, Yellow Warbler, and Hooded Oriole. A nice diversity of wintering sparrows, flycatchers, and finches included Lark Sparrow, Brewer's Sparrow, White-crowned Sparrow, Chipping Sparrow, Lincoln's Sparrow, Vesper Sparrow, Gray Flycatcher, Lesser Goldfinch, and Pine Siskin.

The high elevation transects in the Rincon Mountains at SAGE were sampled later than usual in June. This likely accounted for the fewer detections compared to previous years, as most montane species had already nested and decreased their singing rates. Diversity was still relatively high, but overall numbers were low and very few migrants were detected. At Grass Shack, Ash-throated Flycatcher, Rufous-crowned Sparrow, Bridled Titmouse, and Bewick's Wren were the most numerous, and interesting species included Western Scrub-Jay, Arizona Woodpecker, Black

Phoebe, Greater Roadrunner, Cassin's Kingbird, and an active Cooper's Hawk nest. At Manning Camp, common high elevation species in the conifer zone included Yellow-rumped Warbler (Audubon's Warbler), Yellow-eyed Junco, Red-faced Warbler, American Robin, Grace's Warbler, Plumbeous Vireo, Pygmy Nuthatch, and Violet-green swallow. Notable species were Greater Pewee, Painted Redstart, Mountain Chickadee, and Band-tailed Pigeon, which have all been observed irregularly in recent years. At Douglas Spring, interesting species such as Montezuma Quail, Broad-billed Hummingbird, Mexican Jay, Hepatic Tanager, Crissal Thrasher, Black-chinned Sparrow, and, surprisingly, Loggerhead Shrike, made for relatively high diversity among the common species. High detections of Ash-throated Flycatcher, Northern Mockingbird, Gambel's Quail, Rufous-crowned Sparrow, and Bewick's Wren were as expected.

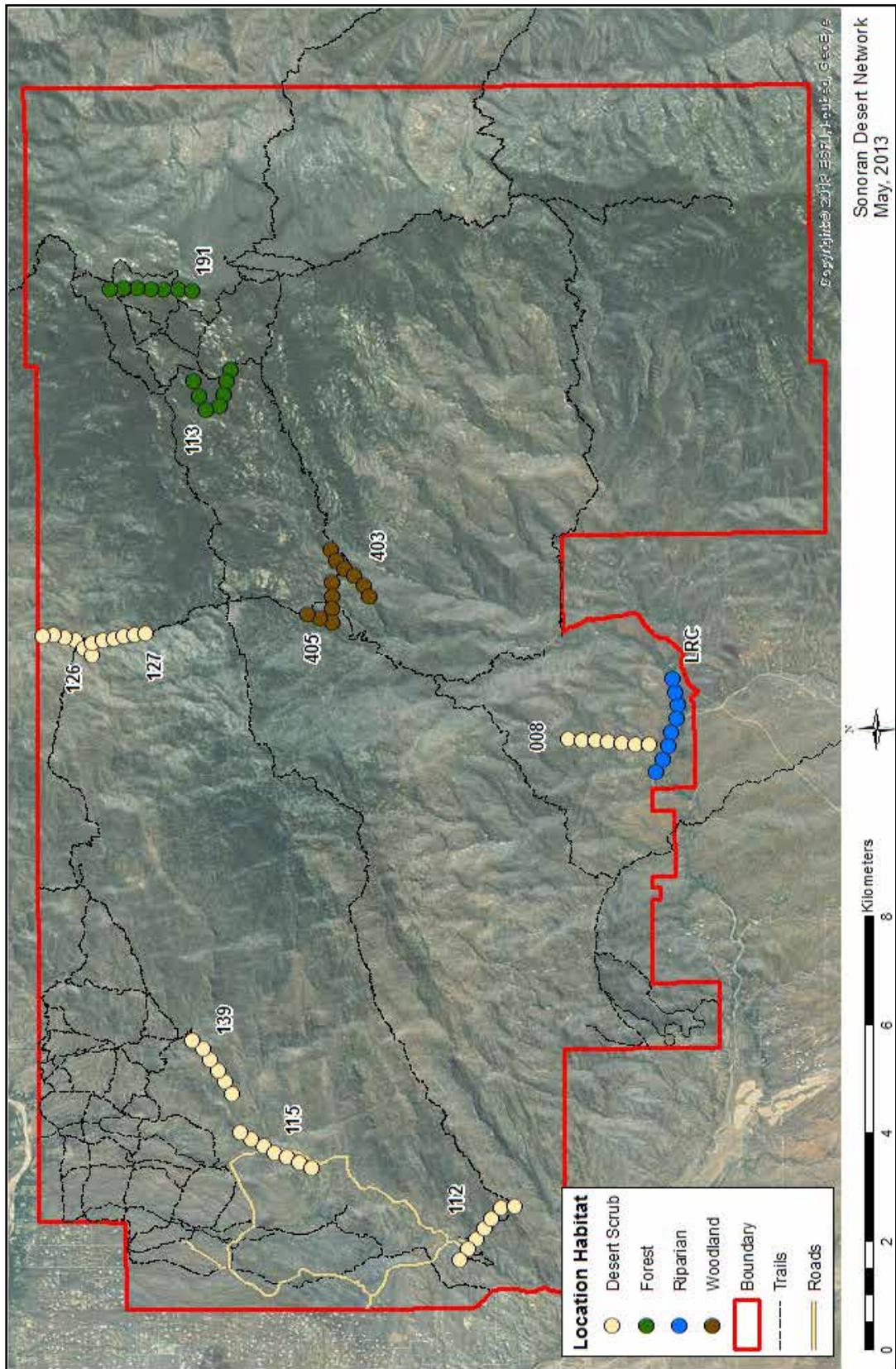


Figure 3.8.1-1. Point locations targeted for annual sampling at Saguaro NP, Rincon Mountain District (SAGE).

Table 3.8.2-1. Number of birds counted of each species in each habitat type, Saguaro NP–Rincon Mountain District (SAGE), 2013

Species	Habitat type				# of birds counted	
	Desert scrub	Forest	Riparian	Woodland	Total	% of total
White-winged Dove	109	---	33	19	161	8
Gila Woodpecker	125	---	36	---	161	8
Ash-throated Flycatcher	73	---	14	41	128	7
Cactus Wren	118	---	9	---	127	7
Gambel's Quail	73	---	32	---	105	5
Black-throated Sparrow	58	---	8	---	66	3
Bewick's Wren	18	---	10	37	65	3
Lucy's Warbler	21	---	42	---	63	3
Mourning Dove	26	---	23	6	55	3
House Finch	35	---	9	2	46	2
Curve-billed Thrasher	37	---	8	---	45	2
Verdin	26	---	15	---	41	2
Northern Mockingbird	39	---	---	---	39	2
Gilded Flicker	32	---	3	---	35	2
Pygmy Nuthatch	---	33	---	---	33	2
Canyon Towhee	30	---	1	---	31	2
Pyrrhuloxia	27	---	1	---	28	1
Mexican Jay	11	---	---	16	27	1
Blue-gray Gnatcatcher	10	---	---	16	26	1
Scott's Oriole	13	---	---	13	26	1
Yellow-eyed Junco	---	26	---	---	26	1
Rufous-crowned Sparrow	12	---	---	11	23	1
Rufous-winged Sparrow	8	---	15	---	23	1
Western Scrub-Jay	15	---	1	6	22	1
Northern Cardinal	7	---	15	---	22	1
American Robin	---	22	---	---	22	1
Lesser Goldfinch	7	---	13	---	20	1
Bushtit	---	17	---	2	19	1
Cassin's Kingbird	3	---	6	9	18	1
Bell's Vireo	---	---	18	---	18	1
Spotted Towhee	---	12	---	5	17	1
House Wren	---	16	---	1	17	1
Gray Flycatcher	10	---	7	---	17	1
Canyon Wren	4	1	---	10	15	1
Pine Siskin	---	---	13	---	13	1
Ladder-backed Woodpecker	6	---	7	---	13	1
White-breasted Nuthatch	---	13	---	---	13	1
Rock Wren	11	---	---	1	12	1
White-crowned Sparrow	---	---	12	---	12	1
Band-tailed Pigeon	---	12	---	---	12	1
Brewer's Sparrow	12	---	---	---	12	1

Table 3.8.2-1. Number of birds counted of each species in each habitat type, Saguaro NP–Rincon Mountain District, 2013, cont.

Species	Habitat type				# of birds counted	
	Desert scrub	Forest	Riparian	Woodland	Total	% of total
Cordilleran Flycatcher	---	11	---	---	11	1
Black-headed Grosbeak	7	2	1	---	10	1
Greater Pewee	---	10	---	---	10	1
Abert's Towhee	---	---	9	---	9	0
Black-chinned Hummingbird	6	---	3	---	9	0
Hermit Thrush	---	9	---	---	9	0
Black-chinned Sparrow	9	---	---	---	9	0
Common Raven	4	---	---	4	8	0
Red-tailed Hawk	6	---	1	1	8	0
Yellow-rumped Warbler	5	2	1	---	8	0
Bridled Titmouse	---	---	---	7	7	0
Brown-headed Cowbird	1	---	2	4	7	0
Hepatic Tanager	2	3	---	2	7	0
Wilson's Warbler	2	---	5	---	7	0
Lazuli Bunting	5	---	2	---	7	0
Hairy Woodpecker	---	7	---	---	7	0
Steller's Jay	---	7	---	---	7	0
Brown-crested Flycatcher	4	---	2	---	6	0
Black-tailed Gnatcatcher	6	---	---	---	6	0
Turkey Vulture	2	---	2	1	5	0
Lincoln's Sparrow	---	---	5	---	5	0
Green-tailed Towhee	2	---	3	---	5	0
Broad-billed Hummingbird	4	---	1	---	5	0
Painted Redstart	---	5	---	---	5	0
Western Tanager	---	5	---	---	5	0
Western Wood-Pewee	---	---	---	4	4	0
Greater Roadrunner	2	---	1	1	4	0
Gray Hawk	---	---	4	---	4	0
Vesper Sparrow	---	---	4	---	4	0
Lark Sparrow	1	---	3	---	4	0
Grace's Warbler	---	4	---	---	4	0
Northern Flicker	---	4	---	---	4	0
Anna's Hummingbird	4	---	---	---	4	0
Cooper's Hawk	---	---	---	3	3	0
Mallard	---	---	3	---	3	0
Plumbeous Vireo	---	3	---	---	3	0
Red-faced Warbler	---	3	---	---	3	0
Violet-green Swallow	---	3	---	---	3	0
Montezuma Quail	3	---	---	---	3	0
Acorn Woodpecker	---	---	---	2	2	0
Arizona Woodpecker	---	---	---	2	2	0

Table 3.8.2-1. Number of birds counted of each species in each habitat type, Saguaro NP–Rincon Mountain District, 2013, cont.

Species	Habitat type				# of birds counted	
	Desert scrub	Forest	Riparian	Woodland	Total	% of total
Phainopepla	1	---	---	1	2	0
Common Yellowthroat	---	---	2	---	2	0
Summer Tanager	---	---	2	---	2	0
Vermilion Flycatcher	---	---	2	---	2	0
Yellow Warbler	---	---	2	---	2	0
Hooded Oriole	1	---	1	---	2	0
Broad-tailed Hummingbird	---	2	---	---	2	0
Brown Creeper	---	2	---	---	2	0
Mountain Chickadee	---	2	---	---	2	0
Black-throated Gray Warbler	2	---	---	---	2	0
Costa's Hummingbird	2	---	---	---	2	0
Dusky-capped Flycatcher	2	---	---	---	2	0
Black Phoebe	---	---	---	1	1	0
Bullock's Oriole	---	---	1	---	1	0
Great Horned Owl	---	---	1	---	1	0
MacGillivray's Warbler	---	---	1	---	1	0
Rufous Hummingbird	---	---	1	---	1	0
American Kestrel	1	---	---	---	1	0
Cassin's Vireo	1	---	---	---	1	0
Crissal Thrasher	1	---	---	---	1	0
Gray Vireo	1	---	---	---	1	0
Inca Dove	1	---	---	---	1	0
Loggerhead Shrike	1	---	---	---	1	0
Orange-crowned Warbler	1	---	---	---	1	0
White-throated Swift	1	---	---	---	1	0
<i>Unidentified Hummingbird</i>	3	---	---	2	5	0
Total	1,070	236	416	230	1,952	100

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

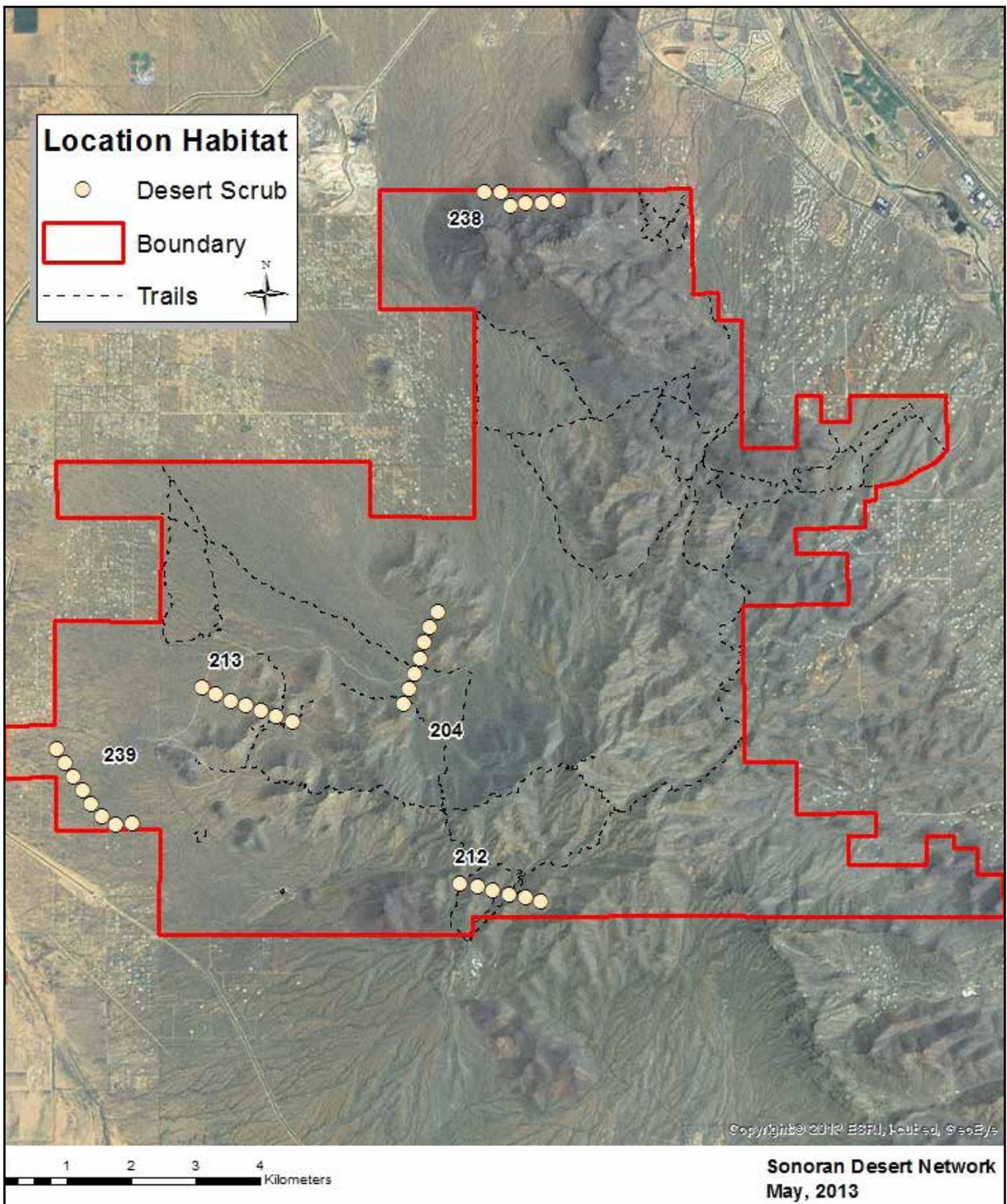


Figure 3.8.1-2. Point locations targeted for annual sampling at Saguaro NP, Tucson Mountain District (SAGW).

Table 3.8.2-2. Number of birds counted of each species in desert scrub habitat, Saguaro NP–Tucson Mountain District (SAGW), 2013

Species	# of birds counted		Species	# of birds counted	
	Total (desert scrub habitat)	% of total		Total (desert scrub habitat)	% of total
Gila Woodpecker	208	15	Lazuli Bunting	2	0
Cactus Wren	180	13	Phainopepla	2	0
Gambel's Quail	108	8	Rufous Hummingbird	2	0
White-winged Dove	97	7	Bullock's Oriole	1	0
Curve-billed Thrasher	92	7	Gray Flycatcher	1	0
Mourning Dove	85	6	Gray Vireo	1	0
Verdin	76	6	Inca Dove	1	0
Ash-throated Flycatcher	63	5	Northern Cardinal	1	0
House Finch	52	4	Orange-crowned Warbler	1	0
Gilded Flicker	51	4	Ruby-crowned Kinglet	1	0
White-throated Swift	43	3	Total	1,358	100%
Brewer's Sparrow	35	3	<i>Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat.</i>		
Black-throated Sparrow	32	2			
Pyrrhuloxia	31	2			
Black-tailed Gnatcatcher	28	2			
Canyon Towhee	27	2			
Rufous-winged Sparrow	15	1			
Ladder-backed Woodpecker	12	1			
White-crowned Sparrow	11	1			
Canyon Wren	10	1			
Rock Wren	9	1			
Turkey Vulture	8	1			
Greater Roadrunner	7	1			
Lesser Goldfinch	7	1			
Red-tailed Hawk	6	0			
Yellow-rumped Warbler	6	0			
Lucy's Warbler	5	0			
Scott's Oriole	5	0			
Brown-headed Cowbird	4	0			
Common Raven	4	0			
Eurasian Collared-Dove	4	0			
Northern Mockingbird	4	0			
Peregrine Falcon	4	0			
Anna's Hummingbird	3	0			
Prairie Falcon	3	0			
Black-chinned Hummingbird	2	0			
Blue-gray Gnatcatcher	2	0			
Great Horned Owl	2	0			
Green-tailed Towhee	2	0			
Harris's Hawk	2	0			

3.9 Tonto National Monument

3.9.1 2013 sampling

During April 2013, we sampled two transects or grids at Tonto NM (Figure 3.9.1). One transect was in riparian habitat with eight points, and the other was in upland (desert scrub) habitat with nine points (Table 3.9.1). Each point was surveyed twice for a total of 34 point counts at Tonto NM.

3.9.2 Results

During 2013, 647 birds of 67 species were counted at Tonto NM (Table 3.9.2). Gambel's Quail had the highest number of individuals counted (8% of the total number of birds counted). Turkey Vulture (7%), Northern Mockingbird (6%), Mourning Dove (6%), Gila Woodpecker (5%), and Phainopepla (5%) were also counted in relatively high numbers. Two new species for the park were detected, Greater Pewee (migrant) and a flock of Franklin's Gulls (migrant).

3.9.3 Field Observations

The upland habitat was very lush following the ample winter rains, and wintering species such as White-crowned Sparrow, Brewer's Sparrow, and Green-tailed Towhee were especially numerous. Desert residents, such as Black-tailed Gnatcatcher, Cactus Wren, Curve-billed Thrasher, Black-throated Sparrow, Gambel's Quail, Northern Mockingbird, and Phainopepla, were also recorded in relatively high numbers. Migrant species were diverse, with Black-throated Gray Warbler, Western Wood-Pewee, Lazuli Bunting, Plumbeous Vireo, Pacific-slope Flycatcher, Wilson's Warbler, Western Tanager, Black-headed Grosbeak, and Broad-tailed Hummingbird noted throughout the park. Common species included Northern Cardinal, White-winged Dove, Mourn-



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Brown-crested Flycatcher (*Myiarchus tyrannulus*) was one of the species observed in the highest numbers at the National Monument in 2013.

ing Dove, Gila Woodpecker, Lucy's Warbler, Ash-throated Flycatcher, and Costa's Hummingbird, all of which seemed more numerous than last year. The small riparian section was active with Bell's Vireo, Lesser Goldfinch, Summer Tanager, Hooded Oriole, Black-chinned Hummingbird, and Brown-crested Flycatcher. The resident pair of Cooper's Hawk was present at old nest sites, and the Turkey Vulture roost was much larger this year, as was the White-throated Swift nesting colony. Notable species included Pyrrhuloxia (rare in Gila County), Crissal Thrasher, Indigo Bunting, Yellow Warbler, and Gray Vireo.

Table 3.9.1. Habitat type, number of points, and sampling dates for each transect or grid, Tonto NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
RIP	Riparian	Riparian	8	2	4/29/2013	4/30/2013
UpW	Upland	Desert scrub	9	2	4/27/2013	4/28/2013

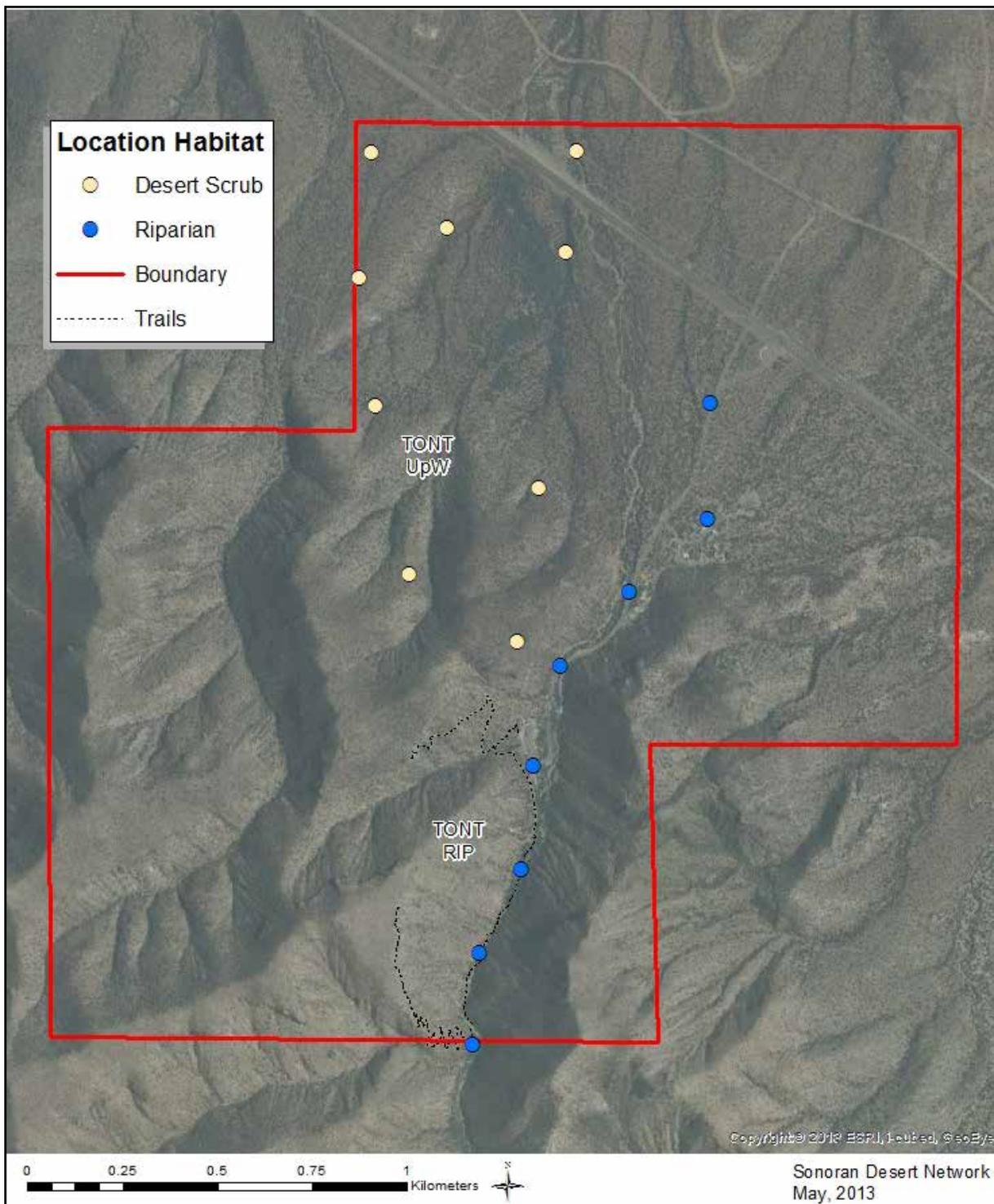


Figure 3.9.1. Point locations targeted for annual sampling at Tonto NM.

Table 3.9.2. Number of birds counted of each species in each habitat type, Tonto NM, 2013

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Gambel's Quail	28	22	50	8
Turkey Vulture	27	18	45	7
Northern Mockingbird	24	14	38	6
Mourning Dove	17	20	37	6
Gila Woodpecker	21	10	31	5
Phainopepla	17	13	30	5
Cactus Wren	14	15	29	4
Black-throated Sparrow	18	8	26	4
Brown-crested Flycatcher	12	14	26	4
Verdin	14	12	26	4
Bell's Vireo	10	14	24	4
Northern Cardinal	12	11	23	4
White-winged Dove	16	7	23	4
Canyon Towhee	9	6	15	2
House Finch	9	6	15	2
Ash-throated Flycatcher	6	8	14	2
Franklin's Gull	13	---	13	2
Curve-billed Thrasher	9	3	12	2
Black-tailed Gnatcatcher	5	4	9	1
Common Raven	8	1	9	1
Green-tailed Towhee	3	6	9	1
Lucy's Warbler	4	5	9	1
Brewer's Sparrow	7	---	7	1
Costa's Hummingbird	2	5	7	1
Hooded Oriole	---	7	7	1
Lazuli Bunting	2	5	7	1
White-crowned Sparrow	7	---	7	1
Gilded Flicker	6	---	6	1
Black-headed Grosbeak	2	3	5	1
Broad-tailed Hummingbird	4	1	5	1
Crissal Thrasher	2	3	5	1
Lesser Goldfinch	1	4	5	1
Rufous-crowned Sparrow	1	4	5	1
Say's Phoebe	---	5	5	1
Brown-headed Cowbird	2	2	4	1
Double-crested Cormorant	4	---	4	1
Gray Vireo	2	2	4	1
Ladder-backed Woodpecker	1	3	4	1
Anna's Hummingbird	---	3	3	0
Canyon Wren	1	2	3	0

Table 3.9.2. Number of birds counted of each species in each habitat type, Tonto NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Gray Flycatcher	3	---	3	0
Great Blue Heron	3	---	3	0
White-throated Swift	---	3	3	0
Yellow Warbler	---	3	3	0
Black-chinned Hummingbird	1	1	2	0
Lark Sparrow	2	---	2	0
Red-tailed Hawk	1	1	2	0
Scott's Oriole	1	1	2	0
Wilson's Warbler	1	1	2	0
Yellow-rumped Warbler	2	---	2	0
Abert's Towhee	---	1	1	0
American Kestrel	1	---	1	0
Bewick's Wren	1	---	1	0
Black-throated Gray Warbler	1	---	1	0
Blue-gray Gnatcatcher	---	1	1	0
Bullock's Oriole	1	---	1	0
Cooper's Hawk	---	1	1	0
Greater Pewee	---	1	1	0
Greater Roadrunner	1	---	1	0
Hammond's Flycatcher	---	1	1	0
Indigo Bunting	---	1	1	0
Pacific-slope Flycatcher	---	1	1	0
Pine Siskin	1	---	1	0
Plumbeous Vireo	---	1	1	0
Rock Wren	---	1	1	0
Ruby-crowned Kinglet	1	---	1	0
Summer Tanager	---	1	1	0
Total	361	286	647	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

3.10 Tumacácori National Historical Park

3.10.1 2013 sampling

During April and May of 2013, we sampled two transects or grids at Tumacácori NHP (Figure 3.10.1). Both transects, with seven points each, were in riparian habitat (Table 3.10.1). Each point was surveyed twice, for a total of 28 point counts at the park.

3.10.2 Results

During 2013, 857 birds of 76 species were counted at Tumacácori NHP (Table 3.10.2). Gila Woodpecker had the highest number of individuals counted (8% of the total number of birds counted). Other species counted in relatively high numbers included White-winged Dove (6%), Cedar Waxwing (5%), Bewick's Wren (5%), House Finch (5%), and Brown-crested Flycatcher (5%). Two new species for the park were observed in 2013: Broad-winged Hawk (an Eastern species that is accidental in southeast Arizona; an incidental detection), and Franklin's Gull (a migrant).

3.10.3 Field Observations

As in previous years, relatively high bird diversity and numbers were observed in the riparian corridor. Many species were well-represented, especially summer breeders such as Yellow Warbler, Bell's Vireo, Summer Tanager, Yellow-breasted Chat, White-winged Dove, Lucy's Warbler, and Brown-crested Flycatcher. Resident breeders noted in higher numbers than last year included Mourning Dove, Bewick's Wren, Lesser Goldfinch, and Gila Woodpecker; House Finch, Song Sparrow, and Abert's Towhee seemed less numerous. Common Ground-Dove, Vermilion Flycatcher, Broad-billed Hummingbird, and Dusky-capped Flycatcher were common, even in the upland away from the river. Wintering sparrows appeared numerous, with White-crowned Sparrow, Brewer's Sparrow, Chipping Sparrow,



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Gila Woodpecker (*Melanerpes uropygialis*) accounted for 8% of the birds recorded at the National Historical Park in 2013.

and Lark Sparrow the most abundant. Wintering species included Gray Flycatcher, Green-tailed Towhee, Northern Flicker, and Ruby-crowned Kinglet. Mallard, Northern Beardless-Tyrannulet, and Indigo Bunting were noted in suitable breeding habitat, three pairs of Gray Hawks were on territories where they have bred in recent years, and pairs of rare breeding Tropical Kingbird and Thick-billed Kingbird were also detected. Migrant species included Western Tanager, Black-headed Grosbeak, Wilson's Warbler, Yellow-rumped Warbler (Audubon's Warbler), Warbling Vireo, Lazuli Bunting, and Broad-tailed Hummingbird, as well as rarer Cedar Waxwing and Pine Siskin. A Green Kingfisher was notable as an incidental observation, because it is occasional in southeast Arizona and has not been recorded at the park in recent years.

Table 3.10.1. Habitat type, number of points, and sampling dates for each transect or grid, Tumacácori NHP, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
Est	Riparian	Riparian	7	2	4/13/2013	5/14/2013
Wst	Riparian	Riparian	7	2	4/11/2012	5/15/2012

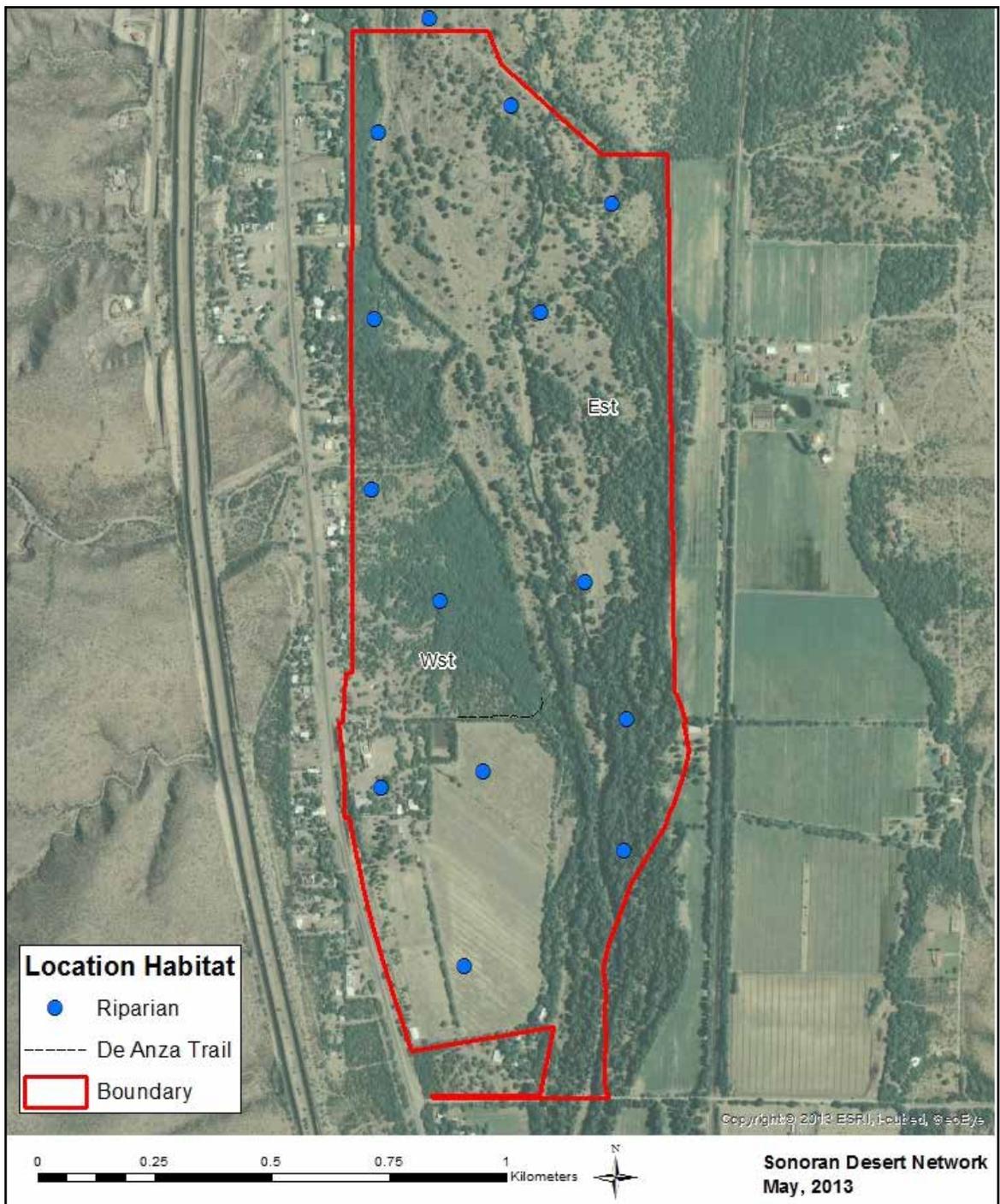


Figure 3.10.1. Point locations targeted for annual sampling at Tumaćacori NHP. One point beyond park boundaries was included to ensure a minimum number of sampling points per transect.

Table 3.10.2. Number of birds counted of each species in riparian habitat, Tumacácori NHP, 2013

Species	# of birds counted		Species	# of birds counted	
	Total (riparian habitat)	% of total		Total (riparian habitat)	% of total
Gila Woodpecker	67	8	Bullock's Oriole	5	1
White-winged Dove	52	6	Common Ground-Dove	5	1
Cedar Waxwing	46	5	Black-headed Grosbeak	4	0
Bewick's Wren	41	5	Cliff Swallow	4	0
House Finch	41	5	Common Raven	4	0
Brown-crested Flycatcher	40	5	Eurasian Collared-Dove	4	0
Franklin's Gull	37	4	House Sparrow	4	0
Vermilion Flycatcher	33	4	Indigo Bunting	4	0
Lucy's Warbler	29	3	Northern Mockingbird	4	0
Cassin's Kingbird	28	3	Bronzed Cowbird	3	0
Lesser Goldfinch	24	3	Nashville Warbler	3	0
Brown-headed Cowbird	23	3	Blue Grosbeak	2	0
Mourning Dove	22	3	Bushtit	2	0
Summer Tanager	21	2	Gambel's Quail	2	0
Northern Cardinal	20	2	Great-tailed Grackle	2	0
Phainopepla	18	2	Green-tailed Towhee	2	0
Yellow-breasted Chat	18	2	Lazuli Bunting	2	0
Turkey Vulture	17	2	MacGillivray's Warbler	2	0
Verdin	16	2	Red-tailed Hawk	2	0
Bridled Titmouse	15	2	Ruby-crowned Kinglet	2	0
Gray Hawk	13	2	Rufous-winged Sparrow	2	0
Pine Siskin	13	2	Say's Phoebe	2	0
Yellow Warbler	13	2	Western Tanager	2	0
Abert's Towhee	11	1	Western Wood-Pewee	2	0
Dusky-capped Flycatcher	11	1	White-crowned Sparrow	3	0
Common Yellowthroat	10	1	American Kestrel	1	0
Ladder-backed Woodpecker	10	1	Black Phoebe	1	0
Song Sparrow	10	1	Chipping Sparrow	1	0
Anna's Hummingbird	9	1	European Starling	1	0
Red-winged Blackbird	9	1	Gray Flycatcher	1	0
Barn Swallow	7	1	Mallard	1	0
Bell's Vireo	7	1	Northern Flicker	2	0
Black-chinned Hummingbird	7	1	Pacific-slope Flycatcher	1	0
Broad-billed Hummingbird	7	1	Thick-billed Kingbird	1	0
Northern Rough-winged Swallow	7	1	Warbling Vireo	1	0
Ash-throated Flycatcher	6	1	Western Kingbird	1	0
Lark Sparrow	6	1	Wilson's Warbler	1	0
Tropical Kingbird	6	1	Yellow-rumped Warbler	1	0

Table 3.10.2. Number of birds counted of each species in riparian habitat, Tumacácori NHP, 2013, cont.

Species	# of birds counted	
	Total (riparian habitat)	% of total
Broad-winged Hawk (incidental)	--	---
Total	857	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.



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Vermillion Flycatcher (*Pyrocephalus rubinus*) was observed at Tumacácori NHP, as well as three other park units, in 2013.

3.11 Tuzigoot National Monument

3.11.1 2013 sampling

During May 2013, we sampled two transects or grids at Tuzigoot NM (Figure 3.11.1). One transect was in riparian habitat and had seven points, and the other was in upland (desert scrub) habitat and had seven points (Table 3.11.1). Each point was surveyed twice for a total of 28 point counts at the National Monument.

3.11.2 Results

During 2013, 749 birds of 61 species were counted at Tuzigoot NM (Table 3.11.2). Red-winged Blackbird had the highest number of individuals counted (16% of the total number of birds counted). Other species counted in relatively high numbers included Phainopepla (9%), Mourning Dove (7%), Common Yellowthroat (6%), Brown-crested Flycatcher (5%), and Brown-headed Cowbird and Gambel's Quail (4% each). One new species, Swamp Sparrow (a rare migrant and potential wintering species), was added to the park list.

3.11.3 Field Observations

Tavasci Marsh and the lush riparian corridor

were the most active sections of the park for birds, and several common species were noted in higher numbers than last year, such as Mourning Dove, House Finch, Lucy's Warbler, Phainopepla, Northern Mockingbird, and Ash-throated Flycatcher. Interesting marsh species included breeding Virginia Rail, Wood Duck, Marsh Wren, Black-crowned Night-Heron, Spotted Sandpiper, and Green Heron. Migrant species of interest were Willow Flycatcher (rare), Lazuli Bunting, MacGillivray's Warbler, Broad-tailed Hummingbird, Pine Siskin, and Wilson's Warbler. Common riparian breeders were Summer Tanager, Yellow-breasted Chat, Common Yellowthroat, Abert's Towhee, Song Sparrow, and Bell's Vireo; numbers of Cassin's Kingbird and Western Kingbird were lower than last year. The Common Black-Hawk nest was inactive during surveys, but one adult was still present. Surprisingly, Eurasian Collared-Dove was quite numerous in several sections of the park. This may be attributed to the recent colonization of the adjacent residential neighborhood. The removal of the feeders at the park housing may have contributed to fewer detections of Hooded Oriole, Bullock's Oriole, and Black-chinned Hummingbird on the upland transect. A migrant Osprey was noted as an incidental observation (but is not a new species for the park).



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Virginia Rails (*Rallus limicola*) were recorded on both transects at Tuzigoot NM in 2013.

Table 3.11.1. Habitat type, number of points, and sampling dates for each transect or grid, Tuzigoot NM, 2013

Transect/Grid	Habitat class	Habitat type	# points	# visits	Visit 1	Visit 2
Est	Riparian	Riparian	7	2	5/13/2013	5/31/2013
Wst	Upland	Desert Scrub	7	2	5/13/2013	5/31/2013

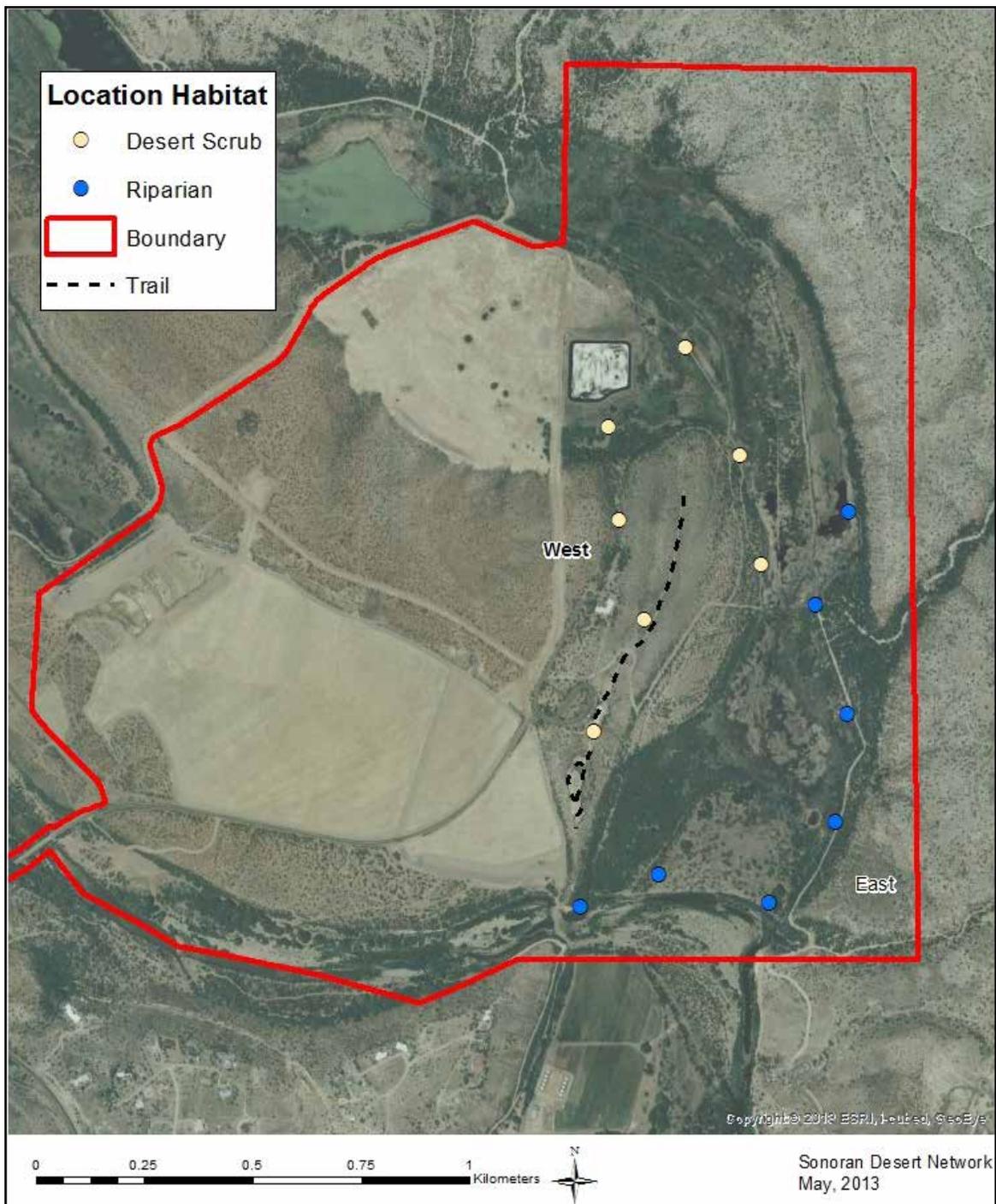


Figure 3.11.1. Point locations targeted for annual sampling at Tuzigoot NM.

Table 3.11.2. Number of birds counted of each species in each habitat type, Tuzigoot NM, 2013

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Red-winged Blackbird	45	73	118	16
Phainopepla	24	42	66	9
Mourning Dove	24	27	51	7
Common Yellowthroat	22	24	46	6
Brown-crested Flycatcher	19	17	36	5
Brown-headed Cowbird	16	16	32	4
Gambel's Quail	23	9	32	4
Lucy's Warbler	11	20	31	4
Yellow-breasted Chat	10	20	30	4
House Finch	15	12	27	4
Gila Woodpecker	10	15	25	3
Blue Grosbeak	9	9	18	2
Bewick's Wren	3	14	17	2
Yellow Warbler	5	12	17	2
Song Sparrow	4	9	13	2
Abert's Towhee	3	9	12	2
Summer Tanager	3	9	12	2
Verdin	6	6	12	2
Ash-throated Flycatcher	8	4	12	2
Black-throated Sparrow	9	2	11	1
Cassin's Kingbird	10	1	11	1
Northern Cardinal	3	7	10	1
Black-chinned Hummingbird	5	5	10	1
Northern Rough-winged Swallow	6	4	10	1
Eurasian Collared-Dove	2	6	8	1
Virginia Rail	3	3	6	1
Northern Mockingbird	5	1	6	1
Rock Wren	5	1	6	1
Vermilion Flycatcher	5	1	6	1
Common Raven	4	1	5	1
Lesser Goldfinch	4	1	5	1
Bullock's Oriole	2	2	4	1
Yellow-rumped Warbler	4	---	4	1
Black-headed Grosbeak	---	2	2	0
MacGillivray's Warbler	---	2	2	0
Spotted Sandpiper	---	2	2	0
Western Wood-Pewee	---	2	2	0
Wood Duck	---	2	2	0
Great-tailed Grackle	1	1	2	0
Indigo Bunting	1	1	2	0

Table 3.11.2. Number of birds counted of each species in each habitat type, Tuzigoot NM, 2013, cont.

Species	Habitat type		# of birds counted	
	Desert scrub	Riparian	Total	% of total
Ladder-backed Woodpecker	1	1	2	0
European Starling	2	---	2	0
Red-tailed Hawk	2	---	2	0
Say's Phoebe	2	---	2	0
Western Tanager	2	---	2	0
Belted Kingfisher	---	1	1	0
Black Phoebe	---	1	1	0
Canyon Wren	---	1	1	0
Cedar Waxwing	---	1	1	0
Cooper's Hawk	---	1	1	0
Gray Flycatcher	---	1	1	0
Green-tailed Towhee	---	1	1	0
Warbling Vireo	---	1	1	0
Willow Flycatcher	---	1	1	0
Wilson's Warbler	---	1	1	0
Anna's Hummingbird	1	---	1	0
Brewer's Sparrow	1	---	1	0
Lazuli Bunting	1	---	1	0
Marsh Wren	1	---	1	0
Swamp Sparrow	1	---	1	0
Western Kingbird	1	---	1	0
Total	344	405	749	100%

Note: New species that have not previously been verified for the park are shown in bold and shaded. Species are listed in rank order of detection, from the most to least commonly observed. Relative detectability among species has not been taken into account; thus, rank order provides only a general indication of relative abundance. Detectability will be explicitly accounted for in periodic synthesis reports. Because of the potential to confound future comparisons, these values exclude observations of species flying overhead and not using the habitat. Species noted as incidental were identified by our birding team, but not as part of our regular survey.

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