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Natural Resource Stewardship and Science

Landbird Monitoring in the Chihuahuan Desert Network

2013 Annual Report

Natural Resource Technical Report NPS/CHDN/NRTR—2014/846

ON THE COVER

Ash-throated Flycatcher (*Myiarchus cinerascens*), recorded at all CHDN parks surveyed in 2013. Photo © Robert Shantz.

Landbird Monitoring in the Chihuahuan Desert Network

2013 Annual Report

Natural Resource Technical Report NPS/CHDN/NRTR—2014/846

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Acronyms

AMIS	Amistad National Recreation Area
BIBE	Big Bend National Park
CAVE	Carlsbad Caverns National Park
CHDN	Chihuahuan Desert Inventory & Monitoring Network
FODA	Fort Davis National Historic Site
GUMO	Guadalupe Mountains National Park
NHS	National Historic Site
NM	National Monument
NP	National Park
NPS	National Park Service
NRA	National Recreation Area
RMBO	Rocky Mountain Bird Observatory
WHSA	White Sands National Monument

Executive Summary

In 2013, landbirds were surveyed within six of seven Chihuahuan Desert Inventory & Monitoring Network (CHDN) parks. Sample points were located along a transect for linear features (e.g., most riparian habitats) or a grid for areal features. Eighty 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 through May, 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 generally conducted once for each transect or grid when there was ample area to survey. For Guadalupe Mountains and Carlsbad Caverns National Parks, there was only enough habitat to establish one riparian transect in each park, so we surveyed each transect two times on different days to increase sample size. We also surveyed the grid at Fort Davis National Historic Site (NHS) twice, due to the small size of the park.

We conducted a total of 846 point counts on 80 transects or grids. Of these, 661 point counts were conducted in grassland habitat and 185 were conducted in riparian habitat. We recorded a total of 10,269 individual birds of 170 species during on our point counts. Amistad National Recreation Area (NRA) had the highest number of individual birds counted (n = 3,400). White Sands National Monument (NM) had the lowest number of birds counted (n = 451). The number of species observed varied widely among the parks surveyed. We observed the greatest number of species at Amistad NRA (n = 124) and Big Bend National Park (NP; n = 86), and the fewest at White Sands NM (n = 37). The number of individuals or species observed is influenced not only by the number of points and visits, but also by the size and diversity of available habitats. Black-throated Sparrow was the species counted in the highest number within the CHDN (n= 1,054), followed by Northern Mockingbird (n = 554) and Mourning Dove (n = 527). Fifteen species (i.e., Ash-throated Flycatcher, Barn Swallow, Black-throated Sparrow, Brewer's Sparrow, Cactus Wren, Canyon Wren, Cassin's Kingbird, Chipping Sparrow, House Finch, Ladder-backed Woodpecker, Mourning Dove, Northern Mockingbird, Verdin, White-winged Dove, and Yellow-rumped Warbler) were observed at all six parks. Nineteen additional species were observed at five of the six parks, and numerous species were observed at one or very few parks. New species, previously unverified in a given park, were recorded for three parks. At Amistad NRA, the new species were Cassin's Kingbird, Common Gallinule, Pectoral Sandpiper, Pine Siskin, and Yellow-throated Warbler. At Fort Davis NHS the new species were Plumbeous Vireo and White-breasted Nuthatch, and at White Sands NM the new species was Canyon Wren.

The Rocky Mountain Bird Observatory (RMBO), our primary cooperator for this project, collects and manages the network's bird monitoring data. Other networks using RMBO also use this data management service and have found it to be efficient and effective. This enables CHDN 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.aspx.

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 Chihuahuan Desert Inventory & Monitoring Network (CHDN) includes seven parks in the northern Chihuahuan Desert in southern New Mexico and west Texas (Table 1.1). Six of the seven parks are representative of the Northern Chihuahuan Subregion of the Chihuahuan Desert Ecoregion. The exception is Amistad National Recreation Area (NRA), which is situated primarily within the Tamaulipan Thornscrub (Mezquital) Ecoregion of southern Texas and northeastern Mexico, but it is also influenced by both the Chihuahuan Desert and Edwards Plateau Ecoregions (NPS, CHDN 2010).

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 CHDN 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 efficiently 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 (e.g., climate, vegetation; 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 CHDN (NPS, CHDN 2010) 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 spiritual 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-

Table 1.1. Parks in the Chihuahuan Desert Inventory & Monitoring Network (CHDN)

Park	Park Acronymn	Area (Acres)	Area (Hectares)
Amistad National Recreation Area	AMIS	57,292	23,195
Big Bend National Park	BIBE	801,863	324,641
Carlsbad Caverns National Park	CAVE	46,766	18,934
Fort Davis National Historic Site	FODA	474	192
Guadalupe Mountains National Park	GUMO	86,416	34,986
White Sands National Monument	WHSA	143,733	58,191
Rio Grande Wild and Scenic River	RIGR	5,164	2,091

standing recreational pastime in the U.S., and it forms the basis of a large and sustainable industry (Sekercioglu 2002).

The CHDN began monitoring birds in spring 2010, following a pilot season in 2009; 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 CHDN 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. However, 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 those breeding birds with sufficient data. 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 they are 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.

In 2013, we surveyed landbirds within six of the seven CHDN parks; sampling was not conducted in the Rio Grande Wild and Scenic River. With the exception of Fort Davis National Historic Site (NHS) and White Sands National Monument (NM), all parks were stratified by grassland and riparian habitat classes. In Guadalupe Mountains and Carlsbad Caverns National Parks (NP), riparian area was limited to McKittrick Canyon and Rattlesnake Springs, respectively. Sample locations were selected randomly within habitat classes using a design that creates a spatially-balanced distribution of points. Fort Davis NHS does not contain sufficient riparian habitat to warrant a riparian transect. Because of the small area encompassed by Fort Davis NHS, sample points were placed in a grid to provide coverage of the entire site; the grid encompasses grasslands with scattered patches of upland scrub and woodland. Sample points in the CHDN were located along a transect for linear features (e.g., most riparian habitats) or a grid for areal features.

A total of 80 unique transects or grids were surveyed in 2013 (Table 2.1.1). Most transects/grids in the CHDN parks were sampled one time, using the sampling methods described in Pavlacky et al. (2012). In these relatively large parks of the CHDN, a hierarchical multi-scale occupancy approach was used (Pavlacky et al. 2012; Nichols et al. 2008; Kendall and White 2009). Multiple sampling visits were conducted at Fort Davis NHS and riparian transects at Carlsbad Caverns NP and Guadalupe Mountains NP, following methodology by Powell et al. (2007).

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

Park unit	Grassland	Riparian
Amistad NRA	9	10
Big Bend NP	20	10
Carlsbad Caverns NP	8	1
Fort Davis NHS	1	--
Guadalupe Mountains NP	10	1
White Sands NM	10	--

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. 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) may not have been adequately surveyed because of this restricted

ROB BENNETTS

Curve-billed Thrasher (*Toxostoma curvirostre*) was observed at four of the six parks monitored in the CHDN in 2013.

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 CHDN parks.

The timing of breeding varies among species and depends on a number of factors, including latitude and elevation. The window of primary breeding and sampling was from April through May, 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 point) (Buckland et al. 2001). For density estimates, the method involves measuring 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 measured the distance to the group and estimated the number of birds in the group. Measuring 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. After counts were completed, observers used a handheld GPS (Global Positioning System) unit to locate successive survey points. While walking between points, observers recorded species previously unconfirmed in a particular park.

As previously noted, most CHDN transects were surveyed once, with the exception of the grassland grid at Fort Davis NHS and the riparian transects at Carlsbad Caverns and Guadalupe Mountains national parks, which were visited twice.

We conducted six-minute point-counts at each point along the transect or grid and used a rangefinder 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.

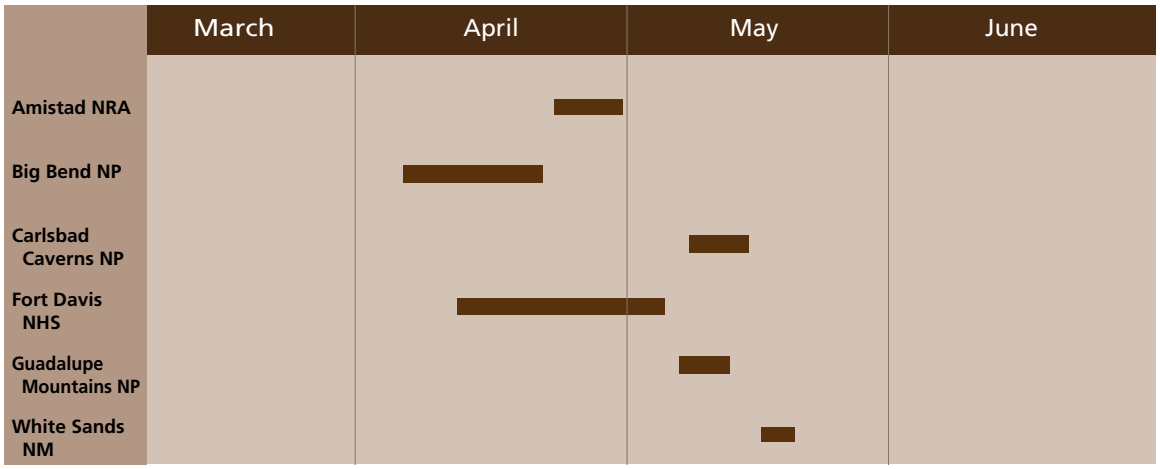

Figure 2.1.2. Dates when sampling was conducted in CHDN parks, 2013.

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 CHDN and other organizations as covariates when assessing population trends for birds. Finally, landbird population parameters, coupled with detailed environmental information, can be used to 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. The first synthesis report is scheduled to be completed following the 2015 sampling season.

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

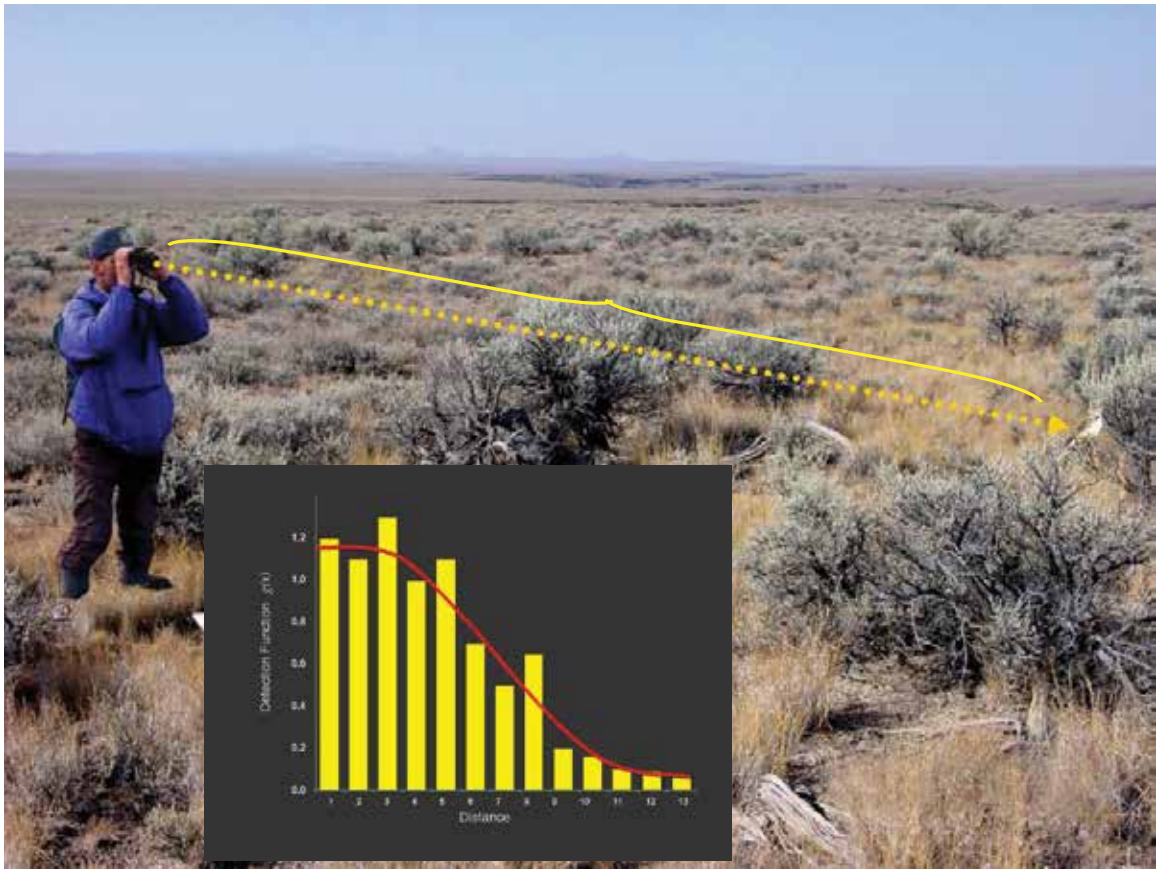

Figure 2.2. Distance sampling works by estimating a detection profile (graph) as a function of distance from which either individual or groups of birds are observed from the transect.

2.5 Accessing the Data

RMBO, our primary cooperator for this project, manages the bird monitoring data they collect. Other networks using RMBO also use this service and have found it to be efficient and effective. This enables CHDN 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.

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Green-tailed Towhee (*Pipilo chlorurus*) was observed at five of the six parks monitored in the CHDN in 2013, although it is known to occur in all six of the parks.

3 Results and Discussion

We conducted a total of 846 point counts (the number of counts from a given point during a given sampling occasion) on 80 transects or grids (Table 3-1). Of these, 661 point counts were conducted in grassland habitats and 185 point counts were conducted in riparian habitats. We recorded a total of 10,269 individual birds of 170 species during our point counts.

Amistad National Recreation Area (NRA) had the highest number of individual birds counted (n = 3,400). White Sands National Monument (NM) had the lowest number of birds counted (n = 451). We observed the greatest number of species at Amistad NRA (n = 124), and the fewest at White Sands NM (n = 37) (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 points and visits, but also by the size and diversity of available habitats.

Black-throated Sparrow was the species counted in the highest number within the CHDN (n = 1,054) (see Table 3-3), followed by Northern Mockingbird (n = 554) and Mourning Dove (n = 527). Fifteen species (i.e., Ash-throated Flycatcher, Barn Swallow, Black-throated Sparrow, Brewer's Sparrow, Cactus Wren, Canyon Wren, Cassin's Kingbird, Chipping Sparrow, House Finch, Ladder-backed Woodpecker, Mourning Dove, Northern Mockingbird, Verdin, White-winged Dove, and Yellow-rumped Warbler) were observed at all six parks (Table 3-4). Nineteen additional species were observed at five of the six parks. New species, previously unverified in a given park, were recorded for three parks (Amistad NRA, Fort Davis National Historic Site [NHS], and White Sands NM). At Amistad NRA, the new species were Cassin's Kingbird, Common Gallinule, Pectoral Sandpiper, Pine Siskin, and Yellow-throated Warbler. At Fort Davis NHS the new species were Plumbeous Vireo and White-breasted Nuthatch, and at White Sands NM the new species was Canyon Wren.

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

Park	Species detected		
	Grassland	Riparian	Total[1]
Amistad NRA	77	106	124
Big Bend NP	48	70	86
Carlsbad Caverns NP	58	51	80
Fort Davis NHS	50	--	50
Guadalupe Mountains NP	44	47	72
White Sands NM	37	--	37
Total[1]	**116**	**150**	**170**

[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. Numbers do not include incidental observations.

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

Park	Grassland		Riparian		Total birds counted
	# Point counts	Birds counted	# Point counts	Birds counted	
Amistad NRA	94	1,747	66	1,653	3,400
Big Bend NP	216	2,020	79	1,130	3,150
Carlsbad Caverns NP	82	1,008	16	405	1,413
Fort Davis NHS	52	692	--	--	692
Guadalupe Mountains NP	112	846	24	317	1,163
White Sands NM	105	451	--	--	451
Total	**661**	**6,764**	**185**	**3,505**	**10,269**

Note: The riparian habitats in Carlsbad Caverns NP and Guadalupe Mountains NP, and the grassland habitat at Fort Davis NHS, were sampled twice; all other transects or grids were sampled once.

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

Common name	# of birds
Black-throated Sparrow	1054
Northern Mockingbird	554
Mourning Dove	527
Ash-throated Flycatcher	377
White-winged Dove	318
Chipping Sparrow	313
Bell's Vireo	309
Turkey Vulture	280
Lark Bunting	260
Northern Cardinal	259
Cactus Wren	248
Pyrrhuloxia	245
House Finch	221
Brewer's Sparrow	211
Scott's Oriole	164
Rock Wren	159
Rufous-crowned Sparrow	154
Red-winged Blackbird	153
Scaled Quail	151
Yellow-breasted Chat	146
Canyon Wren	145
Cliff Swallow	145
Brown-headed Cowbird	131
Verdin	119
Cassin's Sparrow	118
Yellow-rumped Warbler	117
Bewick's Wren	112
Canyon Towhee	112
Lark Sparrow	107
Blue Grosbeak	98
Northern Rough-winged Swallow	97
Western Kingbird	86
Brewer's Blackbird	79
Black Vulture	75
Common Yellowthroat	74
Double-crested Cormorant	73
Painted Bunting	73
Summer Tanager	73
Vermilion Flycatcher	67
Franklin's Gull	66
Black-tailed Gnatcatcher	58

Common name	# of birds
Cave Swallow	58
Blue-winged Teal	55
Cassin's Kingbird	55
Clay-colored Sparrow	55
Great-tailed Grackle	53
Barn Swallow	52
Green-tailed Towhee	43
House Sparrow	42
Ladder-backed Woodpecker	41
Wilson's Warbler	39
Chihuahuan Raven	36
Blue-gray Gnatcatcher	35
Spotted Towhee	35
Eurasian Collared-Dove	31
Orchard Oriole	30
Plumbeous Vireo	28
Killdeer	27
Mallard	26
White-crowned Sparrow	26
Common Raven	25
Loggerhead Shrike	25
Black-headed Grosbeak	24
Curve-billed Thrasher	24
House Wren	23
Golden-fronted Woodpecker	22
Say's Phoebe	22
Black-chinned Sparrow	21
Common Ground-Dove	21
Western Tanager	20
Lesser Nighthawk	19
Lesser Goldfinch	18
Redhead	18
Great Blue Heron	17
Broad-tailed Hummingbird	16
Purple Martin	16
Warbling Vireo	16
Wild Turkey	16
Black-chinned Hummingbird	14
Bullock's Oriole	14
Horned Lark	14
MacGillivray's Warbler	14

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

Common name	# of birds
Orange-crowned Warbler	14
Olive Sparrow	13
Pine Siskin	13
Western Wood-Pewee	13
Bushtit	12
Lucy's Warbler	12
Violet-green Swallow	12
Yellow Warbler	12
Black Phoebe	11
Black-crested Titmouse	10
Savannah Sparrow	10
American Wigeon	9
Lincoln's Sparrow	9
Carolina Wren	8
Eastern Meadowlark	8
Ruby-crowned Kinglet	8
Western Scrub-Jay	8
White-throated Swift	8
American Coot	7
Gadwall	7
Great Egret	7
Indigo Bunting	7
Neotropic Cormorant	7
Varied Bunting	7
Cedar Waxwing	6
Great Horned Owl	6
Hepatic Tanager	6
Nashville Warbler	6
Swamp Sparrow	6
Crissal Thrasher	5
Gambel's Quail	5
Green-winged Teal	5
Scissor-tailed Flycatcher	5
Snowy Egret	5
Yellow-headed Blackbird	5
American Pipit	4
Bank Swallow	4
Dusky Flycatcher	4
Grace's Warbler	4
Great Kiskadee	4
Hooded Oriole	4
Lazuli Bunting	4
Northern Harrier	4
Swainson's Thrush	4
Townsend's Warbler	4
Western Sandpiper	4
American Avocet	3
Bronzed Cowbird	3
Marsh Wren	3
Northern Bobwhite	3
Red-tailed Hawk	3
American Goldfinch	2
Brown-crested Flycatcher	2
Common Gallinule	2
Common Nighthawk	2
Gray Hawk	2
Gray Vireo	2
Hermit Thrush	2
Pectoral Sandpiper	2
Spotted Sandpiper	2
Acorn Woodpecker	1
Belted Kingfisher	1
Black-crowned Night-Heron	1
Common Black-Hawk	1
Cooper's Hawk	1
Cordilleran Flycatcher	1
Crested Caracara	1
European Starling	1
Forster's Tern	1
Gray Flycatcher	1
Greater Roadrunner	1
Hairy Woodpecker	1
Least Flycatcher	1
Lesser Yellowlegs	1
Northern Flicker	1
Osprey	1
Pied-billed Grebe	1
Prairie Falcon	1
Red-breasted Nuthatch	1
Red-naped Sapsucker	1
Rose-breasted Grosbeak	1
Solitary Sandpiper	1
Western Meadowlark	1
Western Screech-Owl	1
White-breasted Nuthatch	1

Common name	# of birds
White-eyed Vireo	1
Yellow-throated Vireo	1
Yellow-throated Warbler	1
Unidentified birds	*558*
Total	**10,269**

Note: Species are listed in rank order from those counted in the highest numbers to those counted in the lowest numbers. Number of birds is the total number of individuals counted. 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 observed 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, but are included in individual park species tables if the species was newly recorded for the park.

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Verdin (*Auriparus flaviceps*), one of 15 species observed at every CHDN park during surveys in 2013.

Table 3-4. Parks where each species was observed, April and May 2013

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Acorn Woodpecker	*Melanerpes formicivorus*		o	o	●	o	o
American Avocet	*Recurvirostra americana*	●	o	o			o
American Bittern	*Botaurus lentiginosus*	o	o	o		o	
American Coot	*Fulica americana*	●	o	o		o	o
American Crow	*Corvus brachyrhynchos*			o			o
American Dipper	*Cinclus mexicanus*		o	o		o	
American Goldfinch	*Spinus tristis*	o	●	●	o	o	o
American Kestrel	*Falco sparverius*	o	o	o	o	o	o
American Pipit	*Anthus rubescens*	●	●	●		o	o
American Redstart	*Setophaga ruticilla*	o	o	o		o	o
American Robin	*Turdus migratorius*	o	o	o	o	o	o
American Tree Sparrow	*Spizella arborea*			o		o	o
American White Pelican	*Pelecanus erythrorhynchos*	o	o	o			o
American Wigeon	*Anas americana*	●	●	o		o	o
American Woodcock	*Scolopax minor*		o	o			
Anhinga	*Anhinga anhinga*	o	o				
Anna's Hummingbird	*Calypte anna*		o	o		o	
Aplomado Falcon	*Falco femoralis*		o			o	
Ash-throated Flycatcher	*Myiarchus cinerascens*	●	●	●	●	●	●
Aztec Thrush	*Ridgwayia pinicola*		o				
Baird's Sandpiper	*Calidris bairdii*	o	o	o			o
Baird's Sparrow	*Ammodramus bairdii*		o	o			o
Bald Eagle	*Haliaeetus leucocephalus*	o	o	o		o	
Baltimore Oriole	*Icterus galbula*	o	o	o		o	
Band-tailed Pigeon	*Patagioenas fasciata*		o	o		o	
Bank Swallow	*Riparia riparia*	●	o	o			●
Barn Owl	*Tyto alba*	o	o	o			o
Barn Swallow	*Hirundo rustica*	●	●	●	●	●	●
Bay-breasted Warbler	*Dendroica castanea*		o	o			
Bell's Vireo	*Vireo bellii*	●	●	●		●	o
Belted Kingfisher	*Megaceryle alcyon*	●	o	o		o	o
Berylline Hummingbird	*Amazilia beryllina*		o				
Bewick's Wren	*Thryomanes bewickii*	●	●	●	●	●	o

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Black Phoebe	*Sayornis nigricans*	●	●	●	o	o	o
Black Tern	*Chlidonias niger*	o	o	o			o
Black Vulture	*Coragyps atratus*	●	●			o	
Black-and-white Warbler	*Mniotilta varia*	o	o	o		o	o
Black-bellied Plover	*Pluvialis squatarola*	o					o
Black-bellied Whistling-Duck	*Dendrocygna autumnalis*	o	o	o			
Black-billed Cuckoo	*Coccyzus erythropthalmus*		o	o			
Black-billed Magpie	*Pica hudsonia*			o		o	
Blackburnian Warbler	*Dendroica fusca*		o	o			
Black-capped Vireo	*Vireo atricapilla*		o	o			
Black-chinned Hummingbird	*Archilochus alexandri*	●	o	●	●	●	o
Black-chinned Sparrow	*Spizella atrogularis*		●	o	●	●	o
Black-crested Titmouse	*Baeolophus atricristatus*	o	o		●	o	
Black-crowned Night-Heron	*Nycticorax nycticorax*	●	o	o			o
Black-headed Grosbeak	*Pheucticus melanocephalus*	o	o	●	o	●	o
Black-legged Kittiwake	*Rissa tridactyla*		o				
Black-necked Stilt	*Himantopus mexicanus*	o	o	o			o
Blackpoll Warbler	*Dendroica striata*		o	o			
Black-tailed Gnatcatcher	*Polioptila melanura*	●	●	o	o	●	●
Black-throated Blue Warbler	*Dendroica caerulescens*	o	o	o		o	o
Black-throated Gray Warbler	*Dendroica nigrescens*		o	o		o	o
Black-throated Green Warbler	*Dendroica virens*		o	o			
Black-throated Sparrow	*Amphispiza bilineata*	●	●	●	●	●	●
Black-vented Oriole	*Icterus wagleri*		o				
Blue Grosbeak	*Passerina caerulea*	●	o	●	●	●	●
Blue Jay	*Cyanocitta cristata*		o	o		o	
Blue-gray Gnatcatcher	*Polioptila caerulea*	●	●	●	●	●	o
Blue-headed Vireo	*Vireo solitarius*		o	o		o	
Blue-throated Hummingbird	*Lampornis clemenciae*		o	o		o	
Blue-winged Teal	*Anas discors*	●	●	●			o

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Blue-winged Warbler	*Vermivora cyanoptera*		o	o			
Bobolink	*Dolichonyx oryzivorus*	o		o			
Bonaparte's Gull	*Chroicocephalus philadelphia*	o	o				o
Brewer's Blackbird	*Euphagus cyanocephalus*	●	●	o	●	o	o
Brewer's Sparrow	*Spizella breweri*	●	●	●	●	●	●
Broad-billed Hummingbird	*Cynanthus latirostris*		o	o		o	
Broad-tailed Hummingbird	*Selasphorus platycercus*		o	o	o	●	●
Broad-winged Hawk	*Buteo platypterus*		o	o			
Bronzed Cowbird	*Molothrus aeneus*	●	o	o	o	o	●
Brown Creeper	*Certhia americana*		o	o		o	o
Brown Pelican	*Pelecanus occidentalis*	o	o				o
Brown Thrasher	*Toxostoma rufum*		o	o		o	o
Brown-crested Flycatcher	*Myiarchus tyrannulus*	●	o		o	o	
Brown-headed Cowbird	*Molothrus ater*	●	●	●	●	●	o
Bufflehead	*Bucephala albeola*	o	o	o		o	o
Bullock's Oriole	*Icterus bullockii*	●	o	●	o	●	●
Burrowing Owl	*Athene cunicularia*	o	o	o		o	o
Bushtit	*Psaltriparus minimus*	o	o	o	●	●	
Cactus Wren	*Campylorhynchus brunneicapillus*	●	●	●	●	●	●
Calliope Hummingbird	*Stellula calliope*		o	o	o	o	
Canada Goose	*Branta canadensis*		o	o			o
Canada Warbler	*Wilsonia canadensis*		o	o			
Canvasback	*Aythya valisineria*	o	o	o			o
Canyon Towhee	*Melozone fusca*	●	●	●	●	●	o
Canyon Wren	*Catherpes mexicanus*	●	●	●	●	●	●
Cape May Warbler	*Dendroica tigrina*		o	o			
Carolina Wren	*Thryothorus ludovicianus*	●	o	o		o	
Caspian Tern	*Hydroprogne caspia*	o					
Cassin's Finch	*Carpodacus cassinii*		o	o	o	o	o
Cassin's Kingbird	*Tyrannus vociferans*	●	●	●	●	●	●
Cassin's Sparrow	*Peucaea cassinii*	●	●	●	o	o	o
Cassin's Vireo	*Vireo cassinii*		o	o		o	
Cattle Egret	*Bubulcus ibis*	o	o	o		o	o

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Cave Swallow	*Petrochelidon fulva*	●	●	●	o	o	
Cedar Waxwing	*Bombycilla cedrorum*	o	o	●	o	o	o
Cerulean Warbler	*Dendroica cerulea*		o	o			
Chestnut-collared Longspur	*Calcarius ornatus*	o	o	o		o	o
Chestnut-sided Warbler	*Dendroica pensylvanica*		o	o		o	o
Chihuahuan Raven	*Corvus cryptoleucus*	●	●	o	●	o	●
Chimney Swift	*Chaetura pelagica*	o	o	o			
Chipping Sparrow	*Spizella passerina*	●	●	●	●	●	●
Cinnamon Teal	*Anas cyanoptera*	o	o	o			o
Clark's Grebe	*Aechmophorus clarkii*	o					
Clark's Nutcracker	*Nucifraga columbiana*		o	o	o	o	
Clay-colored Sparrow	*Spizella pallida*	●	●	●	o	o	o
Clay-colored Thrush	*Turdus grayi*		o				
Cliff Swallow	*Petrochelidon pyrrhonota*	●	●	●	o	o	o
Colima Warbler	*Oreothlypis crissalis*		o			o	
Common Black-Hawk	*Buteogallus anthracinus*		●	o	o	o	
Common Gallinule [1]	*Gallinula galeata*	●	o	o			
Common Goldeneye	*Bucephala clangula*		o	o			
Common Grackle	*Quiscalus quiscula*		o	o		o	o
Common Ground-Dove	*Columbina passerina*	●	●	o			o
Common Loon	*Gavia immer*	o	o				o
Common Merganser	*Mergus merganser*		o	o			o
Common Moorhen	*Gallinula chloropus*		o	o			
Common Nighthawk	*Chordeiles minor*	●	o	o	o	o	o
Common Poorwill	*Phalaenoptilus nuttallii*	o	o	o		o	o
Common Raven	*Corvus corax*	●	●	o	●	o	o
Common Yellowthroat	*Geothlypis trichas*	●	●	●		o	o
Connecticut Warbler	*Oporornis agilis*			o			
Cooper's Hawk	*Accipiter cooperii*	o	o	o	●	o	o
Cordilleran Flycatcher	*Empidonax occidentalis*		o	o	o	●	o

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

[1] The American Ornithologists' Union common name for this species was Common Moorhen until 2011

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Costa's Hummingbird	*Calypte costae*		o				
Couch's Kingbird	*Tyrannus couchii*	o	o				
Crescent-chested Warbler	*Oreothlypis superciliosa*		o				
Crested Caracara	*Caracara cheriway*	●	o				
Crissal Thrasher	*Toxostoma crissale*		●	o		o	●
Curve-billed Thrasher	*Toxostoma curvirostre*	●	●	●	o	●	o
Dark-eyed Junco	*Junco hyemalis*		o	o	o	o	o
Dickcissel	*Spiza americana*	o	o	o		o	o
Double-crested Cormorant	*Phalacrocorax auritus*	●	o	o			
Downy Woodpecker	*Picoides pubescens*			o		o	
Dunlin	*Calidris alpina*		o				
Dusky Flycatcher	*Empidonax oberholseri*		o	o	o	●	o
Dusky-capped Flycatcher	*Myiarchus tuberculifer*		o	o			
Eared Grebe	*Podiceps nigricollis*	o	o	o			o
Eastern Bluebird	*Sialia sialis*		o	o		o	
Eastern Kingbird	*Tyrannus tyrannus*		o	o			
Eastern Meadowlark	*Sturnella magna*	o	o	o	o	o	●
Eastern Phoebe	*Sayornis phoebe*	o	o	o		o	
Eastern Screech-Owl	Megascops asio	o	o				
Eastern Towhee	*Pipilo erythrophthalmus*			o		o	
Eastern Wood-Pewee	*Contopus virens*	o	o	o			
Elegant Trogon	*Trogon elegans*		o				
Elf Owl	*Micrathene whitneyi*	o	o	o		o	
Eurasian Collared-Dove	*Streptopelia decaocto*	●	●	●	●	●	o
Eurasian Wigeon	*Anas penelope*	o					
European Starling	*Sturnus vulgaris*	●	o	o	o	o	o
Evening Grosbeak	*Coccothraustes vespertinus*		o	o		o	o
Fan-tailed Warbler	*Euthlypis lachrymosa*		o				
Ferruginous Hawk	*Buteo regalis*	o	o	o		o	o
Ferruginous Pygmy-Owl	*Glaucidium brasilianum*		o				
Field Sparrow	*Spizella pusilla*	o	o	o		o	
Flame-colored Tanager	*Piranga bidentata*		o				
Flammulated Owl	*Otus flammeolus*		o	o		o	

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Forster's Tern	*Sterna forsteri*	●	o				o
Fox Sparrow	*Passerella iliaca*	o	o	o			
Franklin's Gull	*Leucophaeus pipixcan*	●	o				o
Gadwall	*Anas strepera*	o	●	o			o
Gambel's Quail	*Callipepla gambelii*		●			o	●
Golden Eagle	*Aquila chrysaetos*	o	o	o	o	o	o
Golden-cheeked Warbler	*Dendroica chrysoparia*		o				
Golden-crowned Kinglet	*Regulus satrapa*	o	o	o		o	
Golden-crowned Sparrow	*Zonotrichia atricapilla*		o	o		o	
Golden-fronted Woodpecker	*Melanerpes aurifrons*	●	●				
Golden-winged Warbler	*Vermivora chrysoptera*		o	o			
Grace's Warbler	*Dendroica graciae*		o	o		●	
Grasshopper Sparrow	*Ammodramus savannarum*	o	o	o	o	o	
Gray Catbird	*Dumetella carolinensis*		o	o		o	o
Gray Flycatcher	*Empidonax wrightii*		o	●	o	o	o
Gray Hawk	*Buteo nitidus*		●	o	o		
Gray Vireo	*Vireo vicinior*		o	●		o	o
Gray-cheeked Thrush	*Catharus minimus*		o	o			o
Great Blue Heron	*Ardea herodias*	●	●	o	o	o	o
Great Crested Flycatcher	*Myiarchus crinitus*		o	o			
Great Egret	*Ardea alba*	●	o	o		o	o
Great Horned Owl	*Bubo virginianus*	o	●	o	●	o	o
Great Kiskadee	*Pitangus sulphuratus*	●	o	o			
Greater Pewee	*Contopus pertinax*		o	o	o	o	
Greater Roadrunner	*Geococcyx californianus*	●	o	o	o	o	o
Greater White-fronted Goose	*Anser albifrons*	o	o				
Greater Yellowlegs	*Tringa melanoleuca*	o	o	o			o
Great-tailed Grackle	*Quiscalus mexicanus*	●	o	o	o	o	o
Green Heron	*Butorides virescens*	o	o	o			o
Green Kingfisher	*Chloroceryle americana*	o	o				

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Green-tailed Towhee	*Pipilo chlorurus*	●	●	●	o	●	●
Green-winged Teal	*Anas crecca*	●	o	o		o	o
Groove-billed Ani	*Crotophaga sulcirostris*	o	o	o			
Gull-billed Tern	*Gelochelidon nilotica*	o					
Hairy Woodpecker	*Picoides villosus*			o		●	
Hammond's Flycatcher	*Empidonax hammondii*		o	o		o	
Harris's Hawk	*Parabuteo unicinctus*	o	o	o		o	
Harris's Sparrow	*Zonotrichia querula*		o	o			o
Hepatic Tanager	*Piranga flava*		o	o	o	●	o
Hermit Thrush	*Catharus guttatus*	o	o	●	o	●	o
Hermit Warbler	*Dendroica occidentalis*		o	o		o	
Herring Gull	*Larus argentatus*	o				o	
Hooded Merganser	*Lophodytes cucullatus*	o	o	o			
Hooded Oriole	*Icterus cucullatus*	●	o	o		o	o
Hooded Warbler	*Wilsonia citrina*		o	o		o	o
Horned Grebe	*Podiceps auritus*	o					o
Horned Lark	*Eremophila alpestris*	o	o	o	o	o	●
House Finch	*Carpodacus mexicanus*	●	●	●	●	●	●
House Sparrow	*Passer domesticus*	●	●	●	●	o	o
House Wren	*Troglodytes aedon*	●	●	●	o	●	o
Hutton's Vireo	*Vireo huttoni*		o	o		o	
Inca Dove	*Columbina inca*	o	o	o			o
Indigo Bunting	*Passerina cyanea*	●	o	●	o	o	o
Interior Least Tern	*Sterna antillarum athalassos*	o					
Juniper Titmouse	*Baeolophus ridgwayi*			o	o	o	
Kentucky Warbler	*Oporornis formosus*		o	o		o	o
Killdeer	*Charadrius vociferus*	●	●	o	o	o	o
King Rail	*Rallus elegans*		o				
Ladder-backed Woodpecker	*Picoides scalaris*	●	●	●	●	●	●
Lark Bunting	*Calamospiza melanocorys*	●	●	●	o	●	o
Lark Sparrow	*Chondestes grammacus*	●	●	●	●	●	o
Laughing Gull	*Leucophaeus atricilla*	o	o				
Lawrence's Goldfinch	*Spinus lawrencei*					o	

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Lazuli Bunting	*Passerina amoena*		o	●		●	o
Le Conte's Sparrow	*Ammodramus leconteii*	o	o	o			
Least Bittern	*Ixobrychus exilis*		o	o			
Least Flycatcher	*Empidonax minimus*	●	o	o			
Least Grebe	*Tachybaptus dominicus*		o				
Least Sandpiper	*Calidris minutilla*	o	o	o			o
Least Tern	*Sterna antillarum*		o				o
Lesser Goldfinch	*Spinus psaltria*	●	●	●	●	o	o
Lesser Nighthawk	*Chordeiles acutipennis*	●	●	●	o	●	●
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*			o			
Lesser Scaup	*Aythya affinis*	o	o	o			o
Lesser Yellowlegs	*Tringa flavipes*	●	o	o			o
Lewis's Woodpecker	*Melanerpes lewis*		o	o		o	
Lincoln's Sparrow	*Melospiza lincolnii*	●	●	o	o	●	o
Little Blue Heron	*Egretta caerulea*	o	o				
Loggerhead Shrike	*Lanius ludovicianus*	o	●	●	o	●	●
Long-billed Curlew	*Numenius americanus*	o	o	o			o
Long-billed Dowitcher	*Limnodromus scolopaceus*	o	o	o			o
Long-billed Thrasher	*Toxostoma longirostre*	o	o	o			
Long-eared Owl	*Asio otus*		o	o			
Louisiana Waterthrush	*Parkesia motacilla*		o	o			
Lucifer Hummingbird	*Calothorax lucifer*		o	o			
Lucy's Warbler	*Oreothlypis luciae*		●	●			o
MacGillivray's Warbler	*Oporornis tolmiei*	●	o	●	o	●	●
Magnificent Hummingbird	*Eugenes fulgens*		o	o		o	
Magnolia Warbler	*Dendroica magnolia*		o	o		o	
Mallard	*Anas platyrhynchos*	●	●	o		o	o
Marbled Godwit	*Limosa fedoa*						o
Marsh Wren	*Cistothorus palustris*	●	●	o		o	o

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
McCown's Longspur	*Rhynchophanes mccownii*	o		o		o	
Merlin	*Falco columbarius*	o	o	o		o	o
Mexican Jay	*Aphelocoma ultramarina*		o				
Mississippi Kite	*Ictinia mississippiensis*		o	o			
Montezuma Quail	*Cyrtonyx montezumae*		o	o	o	o	
Mountain Bluebird	*Sialia currucoides*	o	o	o	o	o	o
Mountain Chickadee	*Poecile gambeli*		o	o		o	o
Mourning Dove	*Zenaida macroura*	●	●	●	●	●	●
Mourning Warbler	*Oporornis philadelphia*		o				
Nashville Warbler	*Oreothlypis ruficapilla*	●	●	o		o	o
Neotropic Cormorant	*Phalacrocorax brasilianus*	●	o	o			
Northern Beardless-Tyrannulet	*Camptostoma imberbe*			o			
Northern Bobwhite	*Colinus virginianus*	●		o		o	
Northern Cardinal	*Cardinalis cardinalis*	●	●	●	●	●	
Northern Flicker	*Colaptes auratus*	o	o	o	●	o	o
Northern Goshawk	*Accipiter gentilis*		o	o		o	
Northern Harrier	*Circus cyaneus*	●	●	●	o	●	o
Northern Mockingbird	*Mimus polyglottos*	●	●	●	●	●	●
Northern Parula	*Parula americana*		o	o		o	o
Northern Pintail	*Anas acuta*	o	o	o		o	o
Northern Pygmy-Owl	*Glaucidium gnoma*		o			o	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	●	●	o		o	o
Northern Saw-whet Owl	*Aegolius acadicus*		o			o	
Northern Shoveler	*Anas clypeata*	o	o	o			o
Northern Shrike	Lanius excubitor					o	
Northern Waterthrush	*Parkesia noveboracensis*		o	o		o	o
Olive Sparrow	*Arremonops rufivirgatus*	●					
Olive Warbler	*Peucedramus taeniatus*		o				
Olive-sided Flycatcher	*Contopus cooperi*		o	o	o	o	o
Orange-crowned Warbler	*Oreothlypis celata*	●	●	●	o	●	o
Orchard Oriole	*Icterus spurius*	●	o	●	o	o	o
Osprey	*Pandion haliaetus*	●	o	o		o	
Ovenbird	*Seiurus aurocapilla*		o	o			o

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Pacific Loon	*Gavia pacifica*	o					
Pacific-slope Flycatcher	*Empidonax difficilis*					o	
Painted Bunting	*Passerina ciris*	●	o	●	o	o	o
Painted Redstart	*Myioborus pictus*		o	o		o	
Palm Warbler	*Dendroica palmarum*		o	o			o
Pectoral Sandpiper	*Calidris melanotos*	●	o				
Peregrine Falcon	*Falco peregrinus*	o	o	o		o	o
Phainopepla	*Phainopepla nitens*		o	o	o	o	o
Philadelphia Vireo	*Vireo philadelphicus*		o	o			
Pied-billed Grebe	*Podilymbus podiceps*	●	o	o			o
Pine Grosbeak	*Pinicola enucleator*					o	
Pine Siskin	*Spinus pinus*	●	o	●	o	●	o
Pine Warbler	*Dendroica pinus*		o	o			
Pinyon Jay	*Gymnorhinus cyanocephalus*		o	o		o	o
Piratic Flycatcher	*Legatus leucophaius*		o	o			
Plumbeous Vireo	*Vireo plumbeus*	●	o	o	●	●	o
Prairie Falcon	*Falco mexicanus*		●	o		o	o
Prairie Warbler	*Dendroica discolor*		o	o			
Prothonotary Warbler	*Protonotaria citrea*		o	o	o		
Purple Finch	*Carpodacus purpureus*		o	o		o	
Purple Gallinule	*Porphyrio martinica*		o				
Purple Martin	*Progne subis*	●	o	o		o	o
Pygmy Nuthatch	*Sitta pygmaea*		o	o		o	
Pyrrhuloxia	*Cardinalis sinuatus*	●	●	●	o	●	o
Red Crossbill	*Loxia curvirostra*		o	o		o	
Red-bellied Woodpecker	*Melanerpes carolinus*			o			
Red-breasted Merganser	*Mergus serrator*	o	o				
Red-breasted Nuthatch	*Sitta canadensis*		o	●	o	o	o
Reddish Egret	*Egretta rufescens*	o	o				
Red-eyed Vireo	*Vireo olivaceus*		o	o		o	o

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Red-faced Warbler	*Cardellina rubrifrons*		o	o		o	
Redhead	*Aythya americana*	●	o	o			o
Red-headed Woodpecker	*Melanerpes erythrocephalus*		o	o			o
Red-naped Sapsucker	*Sphyrapicus nuchalis*		o	o		●	o
Red-necked Phalarope	*Phalaropus lobatus*			o			o
Red-shouldered Hawk	*Buteo lineatus*	o	o	o			
Red-tailed Hawk	*Buteo jamaicensis*	o	●	o	●	o	o
Red-winged Blackbird	*Agelaius phoeniceus*	●	o	●		o	o
Ring-billed Gull	*Larus delawarensis*	o	o	o		o	o
Ringed Kingfisher	*Megaceryle torquata*	o					
Ring-necked Duck	*Aythya collaris*	o	o	o		o	o
Ring-necked Pheasant	*Phasianus colchicus*			o		o	
Rock Pigeon	*Columba livia*	o	o	o		o	o
Rock Wren	*Salpinctes obsoletus*	●	●	●	●	●	o
Roseate Spoonbill	*Platalea ajaja*	o	o				
Rose-breasted Grosbeak	*Pheucticus ludovicianus*		o	o		●	o
Rose-throated Becard	*Pachyramphus aglaiae*		o				
Ross's Goose	*Chen rossii*		o				
Rough-legged Hawk	*Buteo lagopus*		o	o		o	o
Royal Tern	*Thalasseus maximus*	o					
Ruby-crowned Kinglet	*Regulus calendula*	●	●	o	o	●	o
Ruby-throated Hummingbird	*Archilochus colubris*	o	o			o	
Ruddy Duck	*Oxyura jamaicensis*	o	o	o			o
Ruddy Ground-Dove	*Columbina talpacoti*		o	o			
Rufous Hummingbird	*Selasphorus rufus*		o	o	o	o	o
Rufous-backed Robin	*Turdus rufopalliatus*		o				
Rufous-capped Warbler	*Basileuterus rufifrons*	o	o				
Rufous-crowned Sparrow	*Aimophila ruficeps*	●	●	●	●	●	o
Rusty Blackbird	*Euphagus carolinus*		o	o		o	
Sage Sparrow	*Amphispiza belli*		o	o		o	o
Sage Thrasher	*Oreoscoptes montanus*	o	o	o		o	o
Sanderling	*Calidris alba*						o
Sandhill Crane	*Grus canadensis*	o	o	o		o	o

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Savannah Sparrow	*Passerculus sandwichensis*	●	●	o	o	o	o
Say's Phoebe	*Sayornis saya*	●	●	●	●	●	o
Scaled Quail	*Callipepla squamata*	●	●	●	●	●	o
Scarlet Tanager	*Piranga olivacea*		o	o		o	o
Scissor-tailed Flycatcher	*Tyrannus forficatus*	●	o	o			o
Scott's Oriole	*Icterus parisorum*	o	●	●	●	●	●
Sedge Wren	*Cistothorus platensis*	o	o	o			
Semipalmated Plover	*Charadrius semipalmatus*	o					o
Semipalmated Sandpiper	*Calidris pusilla*	o		o			o
Sharp-shinned Hawk	*Accipiter striatus*	o	o	o	o	o	o
Short-eared Owl	*Asio flammeus*		o	o			o
Short-tailed Hawk	*Buteo brachyurus*		o	o			
Slate-throated Redstart	*Myioborus miniatus*		o				
Smith's Longspur	*Calcarius pictus*		o				
Snow Bunting	*Plectrophenax nivalis*		o				
Snow Goose	*Chen caerulescens*	o	o	o			o
Snowy Egret	*Egretta thula*	●	o	o		o	o
Snowy Plover	*Charadrius alexandrinus*	o					o
Solitary Sandpiper	*Tringa solitaria*	●	o	o			o
Song Sparrow	*Melospiza melodia*	o	o	o	o	o	o
Sora	*Porzana carolina*	o	o	o			o
Spotted Owl [2]	*Strix occidentalis*			o[2]		o[2]	
Spotted Sandpiper	*Actitis macularius*	●	o	o		o	o
Spotted Towhee	*Pipilo maculatus*	o	●	●	●	●	o
Sprague's Pipit	*Anthus spragueii*	o	o	o			
Steller's Jay	*Cyanocitta stelleri*		o	o	o	o	
Stilt Sandpiper	*Calidris himantopus*						o
Sulphur-bellied Flycatcher	*Myiodynastes luteiventris*		o				
Summer Tanager	*Piranga rubra*	●	●	●	●	●	o
Swainson's Hawk	*Buteo swainsoni*	o	o	o	o	o	o

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

[2] = the Spotted Owls in these CHDN parks belong to the Mexican subspecies (*Strix occidentalis lucida*)

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Swainson's Thrush	*Catharus ustulatus*	o	o	o		●	o
Swainson's Warbler	*Limnothlypis swainsonii*		o	o			
Swallow-tailed Kite	*Elanoides forficatus*		o				
Swamp Sparrow	*Melospiza georgiana*	●	●	o		o	
Tennessee Warbler	*Oreothlypis peregrina*		o	o			
Thick-billed Kingbird	*Tyrannus crassirostris*		o	o			
Townsend's Solitaire	*Myadestes townsendi*		o	o	o	o	o
Townsend's Warbler	*Dendroica townsendi*		o	o	o	●	o
Tree Swallow	*Tachycineta bicolor*	o	o	o			o
Tricolored Heron	*Egretta tricolor*	o	o	o			
Tropical Kingbird	*Tyrannus melancholicus*		o				
Tropical Parula	*Parula pitiayumi*		o	o			
Tufted Flycatcher	*Mitrephanes phaeocercus*		o				
Tundra Swan	*Cygnus columbianus*		o	o			
Turkey Vulture	*Cathartes aura*	●	●	●	●	●	o
Upland Sandpiper	*Bartramia longicauda*	o	o	o			
Varied Bunting	*Passerina versicolor*	o	o	●		o	
Varied Thrush	*Ixoreus naevius*		o	o		o	
Veery	*Catharus fuscescens*		o				
Verdin	*Auriparus flaviceps*	●	●	●	●	●	●
Vermilion Flycatcher	*Pyrocephalus rubinus*	●	●	●	●	o	o
Vesper Sparrow	*Pooecetes gramineus*	o	o	o	o	o	o
Violet-crowned Hummingbird	*Amazilia violiceps*	o	o				
Violet-green Swallow	*Tachycineta thalassina*		o	o	o	●	●
Virginia Rail	*Rallus limicola*	o	o	o			o
Virginia's Warbler	*Oreothlypis virginiae*		o	o	o	o	o
Warbling Vireo	*Vireo gilvus*		o	●		●	●
Western Bluebird	*Sialia mexicana*		o	o	o	o	o
Western Grebe	*Aechmophorus occidentalis*	o		o			o
Western Kingbird	*Tyrannus verticalis*	●	●	●	o	●	●
Western Meadowlark	*Sturnella neglecta*	o	o	o	o	o	●
Western Sandpiper	*Calidris mauri*	●	o	o			o
Western Screech-Owl	*Megascops kennicottii*	●	o	o		o	o

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Western Scrub-Jay	*Aphelocoma californica*		o	●	●	●	o
Western Tanager	*Piranga ludoviciana*	o	o	●	o	●	o
Western Wood-Pewee	*Contopus sordidulus*		●	●	o	●	●
Whimbrel	*Numenius phaeopus*		o				
Whip-poor-will	*Caprimulgus vociferus*		o	o		o	
White Ibis	*Eudocimus albus*		o	o			
White-breasted Nuthatch	*Sitta carolinensis*		o	o	●	o	
White-crowned Sparrow	*Zonotrichia leucophrys*	●	●	●	o	o	o
White-eared Hummingbird	*Hylocharis leucotis*		o			o	
White-eyed Vireo	*Vireo griseus*	●	o	o			
White-faced Ibis	*Plegadis chihi*	o	o	o			o
White-rumped Sandpiper	*Calidris fuscicollis*						o
White-tailed Hawk	*Buteo albicaudatus*		o				
White-tailed Kite	*Elanus leucurus*		o	o			
White-throated Sparrow	*Zonotrichia albicollis*		o	o	o	o	o
White-throated Swift	*Aeronautes saxatalis*	●	o	o	o	●	o
White-tipped Dove	*Leptotila verreauxi*		o				
White-winged Dove	*Zenaida asiatica*	●	●	●	●	●	●
Wild Turkey	*Meleagris gallopavo*	●	o	●		o	
Willet	*Tringa semipalmata*	o	o	o			o
Williamson's Sapsucker	*Sphyrapicus thyroideus*		o	o		o	o
Willow Flycatcher	*Empidonax traillii*		o	o[3]		o	o
Wilson's Phalarope	*Phalaropus tricolor*	o	o	o			o
Wilson's Snipe	*Gallinago delicata*	o	o	o		o	o
Wilson's Warbler	*Wilsonia pusilla*	●	●	●	●	●	o
Winter Wren	*Troglodytes hiemalis*	o	o	o		o	
Wood Duck	*Aix sponsa*	o	o	o		o	
Wood Thrush	*Hylocichla mustelina*		o				o
Worm-eating Warbler	*Helmitheros vermivorum*	o	o	o			o
Yellow Grosbeak	*Pheucticus chrysopeplus*					o	

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

[3] = Willow Flycatchers at CAVE belong to the Southwestern subspecies (*Empidonax traillii extimus*)

Table 3-4. Parks where each species was observed, April and May 2013, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Yellow Rail	*Coturnicops noveboracensis*		o				
Yellow Warbler	*Dendroica petechia*	●	●	●	o	o	●
Yellow-bellied Flycatcher	*Empidonax flaviventris*		o				
Yellow-bellied Sapsucker	*Sphyrapicus varius*		o	o		o	
Yellow-billed Cuckoo	*Coccyzus americanus*	o	o	o	o	o	
Yellow-breasted Chat	*Icteria virens*	●	●	●		o	o
Yellow-crowned Night-Heron	*Nyctanassa violacea*	o	o	o			
Yellow-eyed Junco	*Junco phaeonotus*		o			o	
Yellow-green Vireo	*Vireo flavoviridis*		o	o			
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	●	o	o	o	o	o
Yellow-rumped Warbler	*Dendroica coronata*	●	●	●	●	●	●
Yellow-throated Vireo	*Vireo flavifrons*	●	o	o		o	
Yellow-throated Warbler	*Dendroica dominica*	●	o	o			o
Zone-tailed Hawk	*Buteo albonotatus*	o	o	o	o	o	

● = species detected in 2013 survey

o = species not detected in 2013 survey but previously documented in the park, including species that migrate through or winter in the park

[1] The American Ornithologists' Union common name for this species was Common Moorhen until 2011

[2] = the Spotted Owls in these CHDN parks belong to the Mexican subspecies (*Strix occidentalis lucida*)

[3] = Willow Flycatchers at CAVE belong to the Southwestern subspecies (*Empidonax traillii extimus*)

3.1 Amistad National Recreation Area

3.1.1 2013 sampling

During April of 2013, we sampled 19 transects/grids at Amistad NRA (Figure 3.1.1-1, -2). We conducted 94 point counts on nine grids in grassland habitat and 66 point counts on 10 transects in riparian habitat (Table 3.1.1), for a total of 160 point counts at the park. Each point was surveyed once in 2013.

Note that the riparian stratum was restratified in 2012. We restratified the riparian habitat to include the Pecos and Devils Rivers, and to omit areas, for reasons of safety, along the Rio Grande.

3.1.2 Results

During 2013, 3,400 birds of 124 species were counted at Amistad NRA (Table 3.1.2). Chipping Sparrow had the highest number of individuals counted in 2013 (5% of the total number of birds counted). The next species counted in the highest numbers were Northern Mockingbird (5%), Red-winged Blackbird (4%), Turkey Vulture (4%), Cliff Swallow (4%), and Northern Cardinal (4%). Of the six parks surveyed, Amistad NRA had the greatest number of species counted overall, as well as the greatest number of species counted in grassland and riparian habitat. Additionally, the greatest number of birds counted in any of the parks was in Amistad NRA. Five new species for the park were observed during surveys in 2013.

3.1.3 Field Observations

A combination of great weather and three observers accounted for a quickly-executed round of surveys at Amistad NRA this season. Nine of the ten riparian surveys conducted were accessed by boat, with Amistad NRA biological staff escorting RMBO staff safely and efficiently to each point. Due to near record low lake levels in 2013, two of the 2012 boat-access survey sites were deemed inaccessible and replaced with alternate sites. Low water levels seemingly had no impact on bird numbers and variety, as a wide sampling of species was detected. The classification of riparian surveys should be only loosely applied to Amistad, as the majority of these surveys occur above the rim of the enclosing canyons at the high-water line in upland mesquite habitat. Waterfowl detected included Blue-winged Teal, Redhead, Mallard, Mexican Mallard, and American Wigeon, all found in numbers near the entrance of the Devil's River into Amistad. Other species observed in riparian habitat included Red-winged Blackbird, Bell's Vireo, Painted Bunting, Yellow-breasted Chat, Vermillion Flycatcher, Cassin's Kingbird, Golden-fronted Woodpecker, Killdeer, Neotropic Cormorant, Belted Kingfisher, Spotted Sandpiper, and Osprey. Species observed in both riparian and upland habitats included Ash-throated Flycatcher, Vermillion Flycatcher, Rufous-crowned Sparrow, Chipping Sparrow, Clay-colored Sparrow, Canyon Towhee, Bewicks Wren, Mourning Dove, Black-chinned Hummingbird, Verdin, Hooded Oriole, Orchard Oriole, Bullock's Oriole, and Rock Wren. Primarily upland species included Scaled Quail, Northern Bobwhite, Common Ground-Dove, White-winged Dove, Lesser Nighthawk, Common Nighthawk, Black-throated Sparrow, Cactus Wren, and Curve-billed Thrasher. Rarities this season included several MacGillivray's Warblers (observed during surveys) and a Green Kingfisher (not observed during a survey; located at the Pecos River boat launch).

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Northern Cardinal (*Cardinalis cardinalis*) was recorded at Amistad NRA in both grassland and riparian habitats.

Table 3.1.1. Habitat class, number of points, and sampling dates for each transect or grid at Amistad NRA, 2013

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-AM2	Grassland	11	1	4/28/2013
CH-AM3	Grassland	11	1	4/28/2013
CH-AM4	Grassland	11	1	4/27/2013
CH-AM5	Grassland	7	1	4/27/2013
CH-AM6	Grassland	11	1	4/27/2013
CH-AM7	Grassland	12	1	4/21/2013
CH-AM8	Grassland	10	1	4/29/2013
CH-AM9	Grassland	10	1	4/28/2013
CH-AM10	Grassland	11	1	4/22/2013
CH-AMRI1	Riparian	6	1	4/23/2013
CH-AMRI3	Riparian	6	1	4/24/2013
CH-AMRI5	Riparian	5	1	4/25/2013
CH-AMRI6	Riparian	5	1	4/25/2013
CH-AMRI7	Riparian	9	1	4/26/2013
CH-AMRI8	Riparian	6	1	4/26/2013
CH-AMRI9	Riparian	8	1	4/25/2013
CH-AMRI12	Riparian	7	1	4/26/2013
CH-AMRI13	Riparian	8	1	4/29/2013
CH-AMRI17	Riparian	6	1	4/29/2013

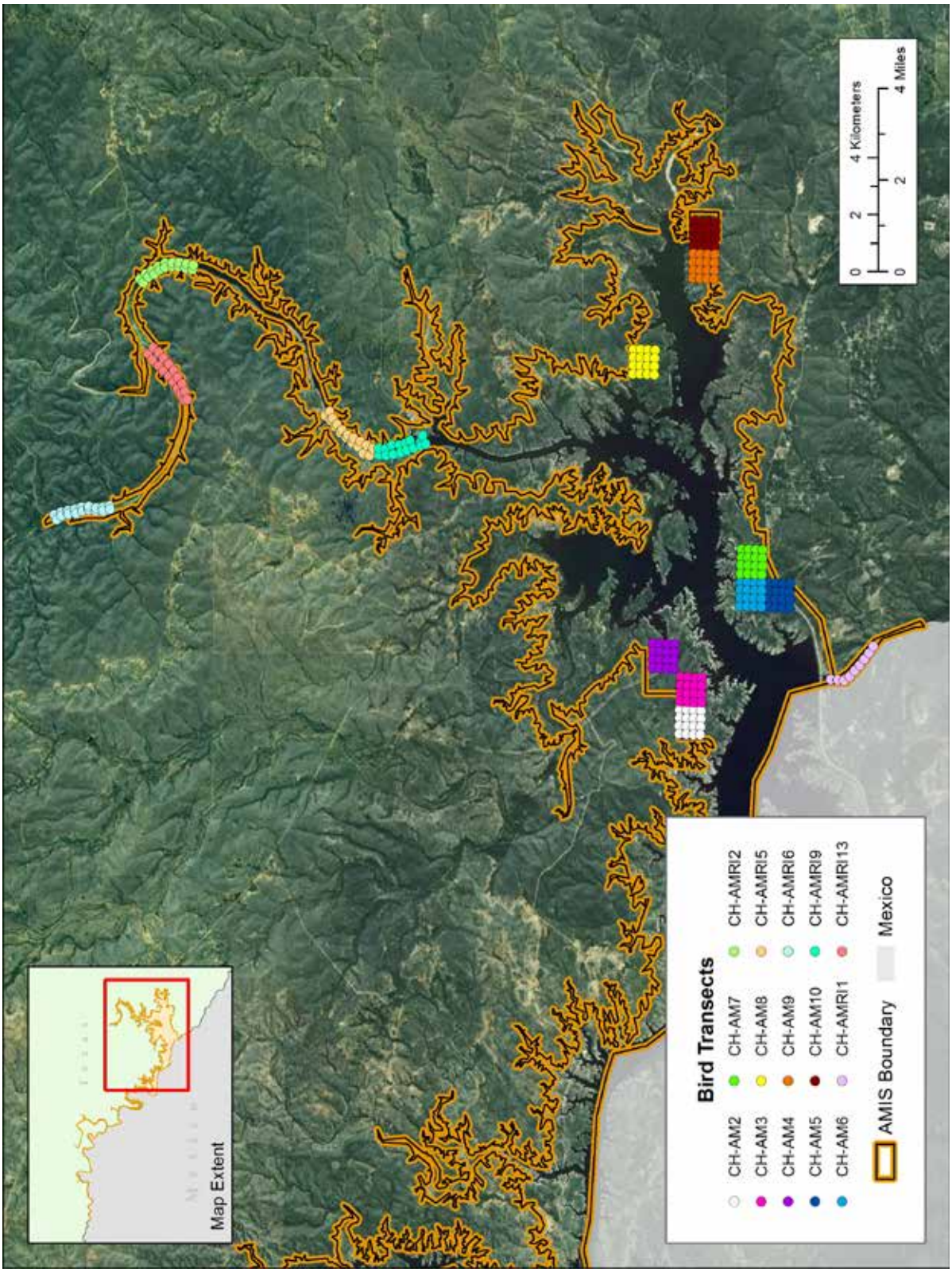

Figure 3.1.1-1. Point locations targeted for annual sampling at Amistad NRA, East.

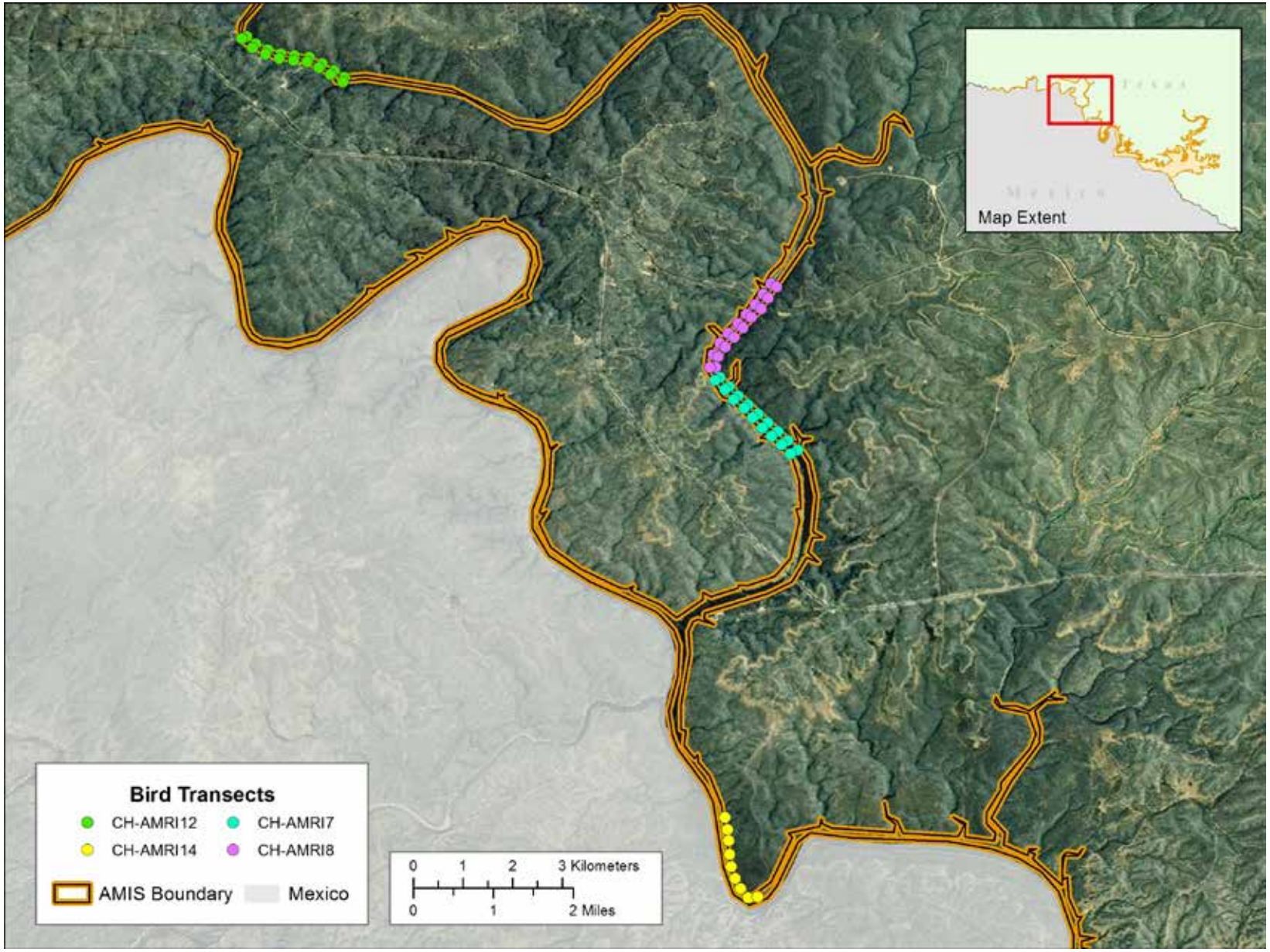

Figure 3.1.1-2. Point locations targeted for annual sampling at Amistad NRA, West.

Table 3.1.2 Number of birds counted of each species in each habitat class, Amistad NRA, 2013

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Chipping Sparrow [1]	122	51	173	5
Northern Mockingbird	148	22	170	5
Red-winged Blackbird	10	142	152	4
Turkey Vulture	43	109	152	4
Cliff Swallow	43	98	141	4
Northern Cardinal	77	60	137	4
Black-throated Sparrow	106	7	113	3
Brown-headed Cowbird	94	16	110	3
Bell's Vireo	47	46	93	3
White-winged Dove	51	38	89	3
Lark Sparrow	80	4	84	2
Northern Rough-winged Swallow	2	80	82	2
Double-crested Cormorant	64	9	73	2
Pyrrhuloxia	66	7	73	2
Painted Bunting	37	35	72	2
Cactus Wren	68	3	71	2
Black Vulture	11	59	70	2
Mourning Dove	39	28	67	2
Franklin's Gull	---	66	66	2
Bewick's Wren	49	9	58	2
Canyon Wren	1	53	54	2
Yellow-breasted Chat	10	44	54	2
Ash-throated Flycatcher	31	22	53	2
Clay-colored Sparrow	37	16	53	2
Great-tailed Grackle	25	28	53	2
Rufous-crowned Sparrow	40	13	53	2
Blue-winged Teal	---	50	50	1
Cassin's Sparrow	48	1	49	1
House Finch	20	20	40	1
Canyon Towhee	29	8	37	1
Scaled Quail	22	14	36	1
Vermilion Flycatcher	11	25	36	1
Blue Grosbeak	16	16	32	1
Rock Wren	4	25	29	1
Verdin	22	6	28	1
Killdeer	5	21	26	1
Orchard Oriole	17	6	23	1
Golden-fronted Woodpecker	3	17	20	1
Redhead	---	18	18	1
Common Yellowthroat	---	17	17	1
Great Blue Heron	---	16	16	0

Table 3.1.2. Number of birds counted of each species in each habitat class, Amistad NRA, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Lark Bunting	16	---	16	0
Purple Martin	13	3	16	0
Black-tailed Gnatcatcher	8	6	14	0
Summer Tanager	2	12	14	0
Olive Sparrow	---	13	13	0
House Sparrow	---	12	12	0
Western Kingbird	10	2	12	0
Eurasian Collared-Dove	4	7	11	0
Barn Swallow	7	3	10	0
Lesser Nighthawk	9	---	9	0
Mallard	1	8	9	0
American Wigeon	---	8	8	0
Brewer's Sparrow	8	---	8	0
Bullock's Oriole	6	2	8	0
Carolina Wren	1	7	8	0
Chihuahuan Raven	4	4	8	0
Common Ground-Dove	6	2	8	0
Curve-billed Thrasher	8	---	8	0
Savannah Sparrow	---	8	8	0
American Coot	---	7	7	0
Great Egret	---	7	7	0
Neotropic Cormorant	---	7	7	0
Indigo Bunting	5	1	6	0
Ladder-backed Woodpecker	3	3	6	0
Orange-crowned Warbler	4	2	6	0
Wild Turkey	---	6	6	0
Green-winged Teal	---	5	5	0
Scissor-tailed Flycatcher	3	2	5	0
Snowy Egret	---	5	5	0
White-crowned Sparrow	5	---	5	0
Yellow-headed Blackbird	---	5	5	0
Black Phoebe	---	4	4	0
Black-chinned Hummingbird	1	3	4	0
Cassin's Kingbird	**2**	**2**	**4**	**0**
Great Kiskadee	1	3	4	0
Hooded Oriole	3	1	4	0
Nashville Warbler	---	4	4	0
Ruby-crowned Kinglet	2	2	4	0
Western Sandpiper	---	4	4	0
American Avocet	3	---	3	0

Table 3.1.2. Number of birds counted of each species in each habitat class, Amistad NRA, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Bank Swallow	3	---	3	0
House Wren	1	2	3	0
Northern Bobwhite	3	---	3	0
Pine Siskin	**3**	**---**	**3**	**0**
Say's Phoebe	1	2	3	0
White-throated Swift	---	3	3	0
Yellow-rumped Warbler	1	2	3	0
Brewer's Blackbird	2	---	2	0
Brown-crested Flycatcher	---	2	2	0
Common Gallinule [2]	**---**	**2**	**2**	**0**
Common Nighthawk	2	---	2	0
Common Raven	---	2	2	0
MacGillivray's Warbler	2	---	2	0
Marsh Wren	---	2	2	0
Pectoral Sandpiper	**---**	**2**	**2**	**0**
Spotted Sandpiper	---	2	2	0
Swamp Sparrow	---	2	2	0
Yellow Warbler	---	2	2	0
American Pipit	---	1	1	0
Belted Kingfisher	---	1	1	0
Black-crowned Night-Heron	---	1	1	0
Blue-gray Gnatcatcher	1	---	1	0
Bronzed Cowbird	---	1	1	0
Cave Swallow	1	---	1	0
Crested Caracara	1	---	1	0
European Starling	1	---	1	0
Forster's Tern	---	1	1	0
Greater Roadrunner	---	1	1	0
Green-tailed Towhee	1	---	1	0
Least Flycatcher	1	---	1	0
Lesser Goldfinch	---	1	1	0
Lesser Yellowlegs	---	1	1	0
Lincoln's Sparrow	---	1	1	0
Northern Harrier	---	1	1	0
Osprey	---	1	1	0
Pied-billed Grebe	---	1	1	0
Plumbeous Vireo	---	1	1	0
Solitary Sandpiper	---	1	1	0
Western Screech-Owl	---	1	1	0
White-eyed Vireo	---	1	1	0
Wilson's Warbler	---	1	1	0

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Yellow-throated Vireo	---	1	1	0
Yellow-throated Warbler	**---**	**1**	**1**	**0**
Unidentified Bird	*38*	*50*	*88*	*3*
Unidentified Sparrow	*36*	*21*	*57*	*2*
Unidentified Warbler	*4*	*13*	*17*	*1*
Unidentified Blackbird	---	*16*	*16*	*0*
Unidentified Hummingbird	*3*	*5*	*8*	*0*
Unidentified Swallow	*3*	*5*	*8*	*0*
Unidentified Dove	---	*3*	*3*	*0*
Unidentified Woodpecker	*3*	---	*3*	*0*
Unidentified Kingbird	*1*	---	*1*	*0*
Unidentified Raptor	*1*	---	*1*	*0*
Unidentified Tanager	*1*	---	*1*	*0*
Unidentified Thrush	---	*1*	*1*	*0*
Grand Total	**1,747**	**1,653**	**3,400**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

[1] Possible migrant at the park, even though recorded in the highest number of any species at the park in 2013.

[2] According to the American Ornithologists' Union, the common name for this species was Common Moorhen until 2011.

3.2 Big Bend National Park

3.2.1 2013 sampling

During April of 2013, we sampled 30 transects/grids at Big Bend NP (Figures 3.2.1-1 to 3.2.1-3). We conducted 216 point counts on 20 grids in grassland habitat and 79 point counts on 10 transects in riparian habitat (Table 3.2.1), for a total of 295 point counts at the park. Each point was surveyed one time in 2013.

3.2.2 Results

During 2013, 3,150 birds of 86 species were counted at Big Bend NP (Table 3.2.2). Black-throated Sparrow had the highest number of individuals counted (13% of the total number of birds counted). The species was observed primarily in grassland habitat. Species observed in the next highest numbers were Mourning Dove (10%), Bell's Vireo (6%), Northern Mockingbird (6%), Cactus Wren (5%), and White-winged Dove (5%). No new species were recorded for the park during surveys.

3.2.3 Field Observations

The survey crew began their field season once again in Big Bend NP this year, starting in early April. To allow time for the arrival of a greater diversity of spring migrants along the Rio Grande corridor, surveyors worked from north to south, commencing with the southern riparian surveys mid-month. Conditions were dry at Big Bend, with little or no spring rains and a continuing drought. Without any adverse weather, surveys progressed very quickly.

A greater overall migrant sparrow diversity was observed compared to the spring of 2012. The vicinity of Grapevine Hills and the floodplain habitat north of Terlingua Ranch Road contained the most non-riparian avian diversity and abundance. Large congregations of Common and Chihuahuan Ravens were observed at the landfill on Grapevine Hills Road. Bird detections were low in the dry regions south of the Chisos Mountains away from the various springs and the Rio Grande. Common grassland species this year included Black-throated Sparrow, Cassin's Sparrow, Lark Sparrow, Verdin, Scaled Quail, Gambel's Quail, Mourning Dove, Loggerhead Shrike, Blue-gray Gnatcatcher, Black-tailed Gnatcatcher, Pyrrhuloxia, Cactus Wren, Scott's Oriole, and Curve-billed Thrasher. Species observed in both grassland and riparian habitats included Mourning Dove, House Finch, Ash-throated Flycatcher, Say's Phoebe, Summer Tanager, Common Raven, Northern Cardinal, Turkey Vulture, Ladder-backed Woodpecker, Canyon Wren, Northern Mockingbird, and Rufous-crowned Sparrow. Species observed primarily in the Rio Grande riparian habitat included Bell's Vireo, Common Yellowthroat, Yellow-breasted Chat, Yellow Warbler, Black Phoebe, Brown-headed Cowbird, Killdeer, Yellow-rumped Warbler, Mexican Mallard, and Great Horned Owl. Migrants included Orange-crowned Warbler, Wilson's Warbler, and Ruby-crowned Kinglet.

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Pyrrhuloxia (*Cardinalis sinuatus*), observed mostly in grassland habitat, accounted for 4% of birds counted at Big Bend NP in 2013.

Table 3.2.1. Habitat class, number of points, and sampling dates for each transect or grid at Big Bend NP, 2013

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-BB1	Grassland	11	1	4/17/2013
CH-BB2	Grassland	7	1	4/9/2013
CH-BB3	Grassland	9	1	4/7/2013
CH-BB4	Grassland	10	1	4/20/2013
CH-BB5	Grassland	15	1	4/13/2013
CH-BB6	Grassland	6	1	4/9/2013
CH-BB7	Grassland	10	1	4/7/2013
CH-BB8	Grassland	12	1	4/8/2013
CH-BB9	Grassland	10	1	4/15/2013
CH-BB10	Grassland	12	1	4/6/2013
CH-BB11	Grassland	12	1	4/6/2013
CH-BB12	Grassland	9	1	4/18/2013
CH-BB13	Grassland	9	1	4/6/2013
CH-BB14	Grassland	11	1	4/20/2013
CH-BB15	Grassland	12	1	4/8/2013
CH-BB16	Grassland	11	1	4/14/2013
CH-BB17	Grassland	14	1	4/15/2013
CH-BB18	Grassland	14	1	4/11/2013
CH-BB19	Grassland	12	1	4/8/2013
CH-BB20	Grassland	10	1	4/7/2013
CH-BIRI1	Riparian	9	1	4/17/2013
CH-BIRI2	Riparian	8	1	4/14/2013
CH-BIRI3	Riparian	7	1	4/18/2013
CH-BIRI5	Riparian	8	1	4/14/2013
CH-BIRI6	Riparian	8	1	4/16/2013
CH-BIRI8	Riparian	11	1	4/15/2013
CH-BIRI9	Riparian	6	1	4/17/2013
CH-BIRI14	Riparian	8	1	4/16/2013
CH-BIRI16	Riparian	6	1	4/16/2013
CH-BIRI17	Riparian	8	1	4/18/2013

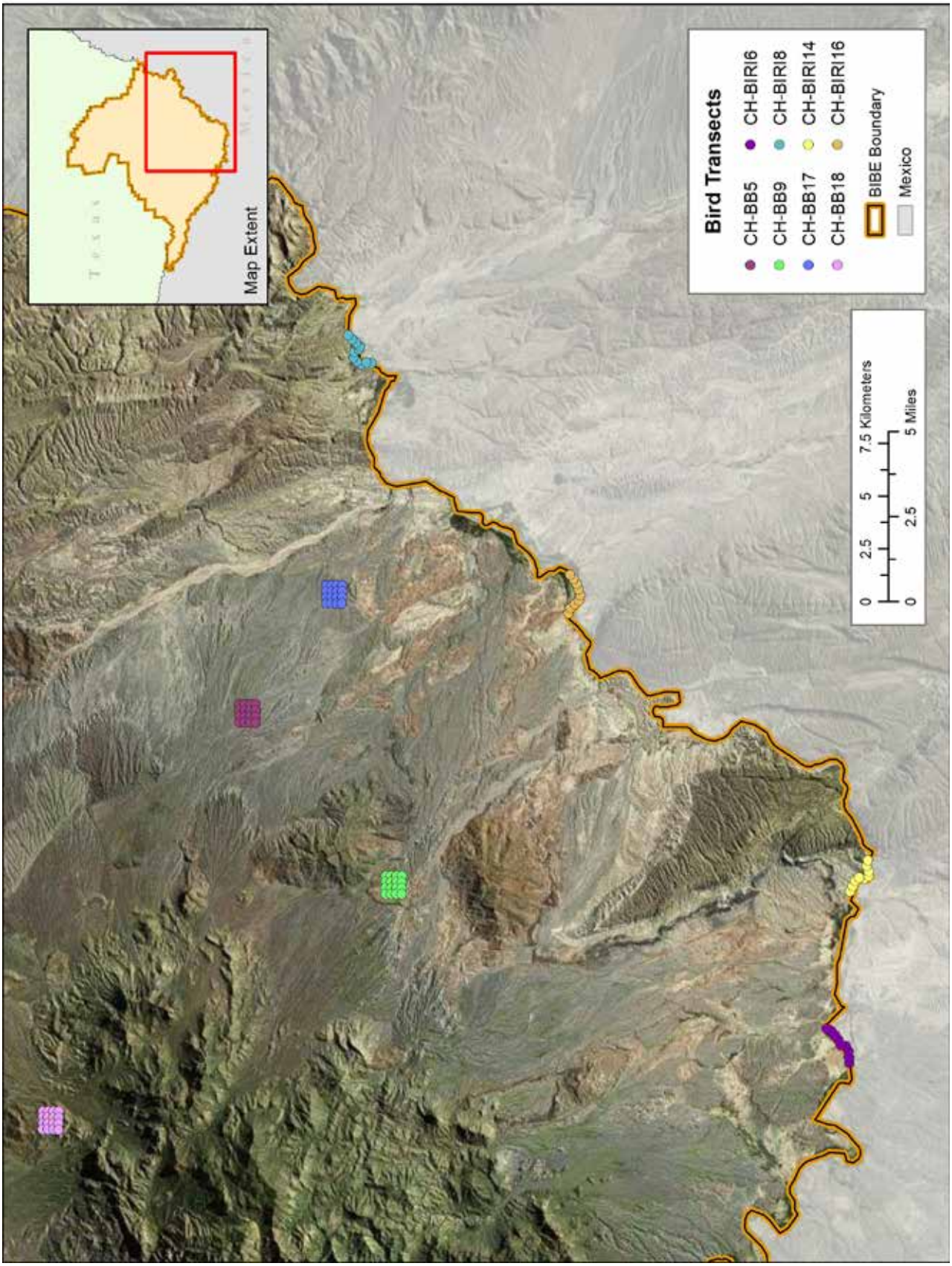

Figure 3.2.1-1. Point locations targeted for annual sampling at Big Bend NP, East.

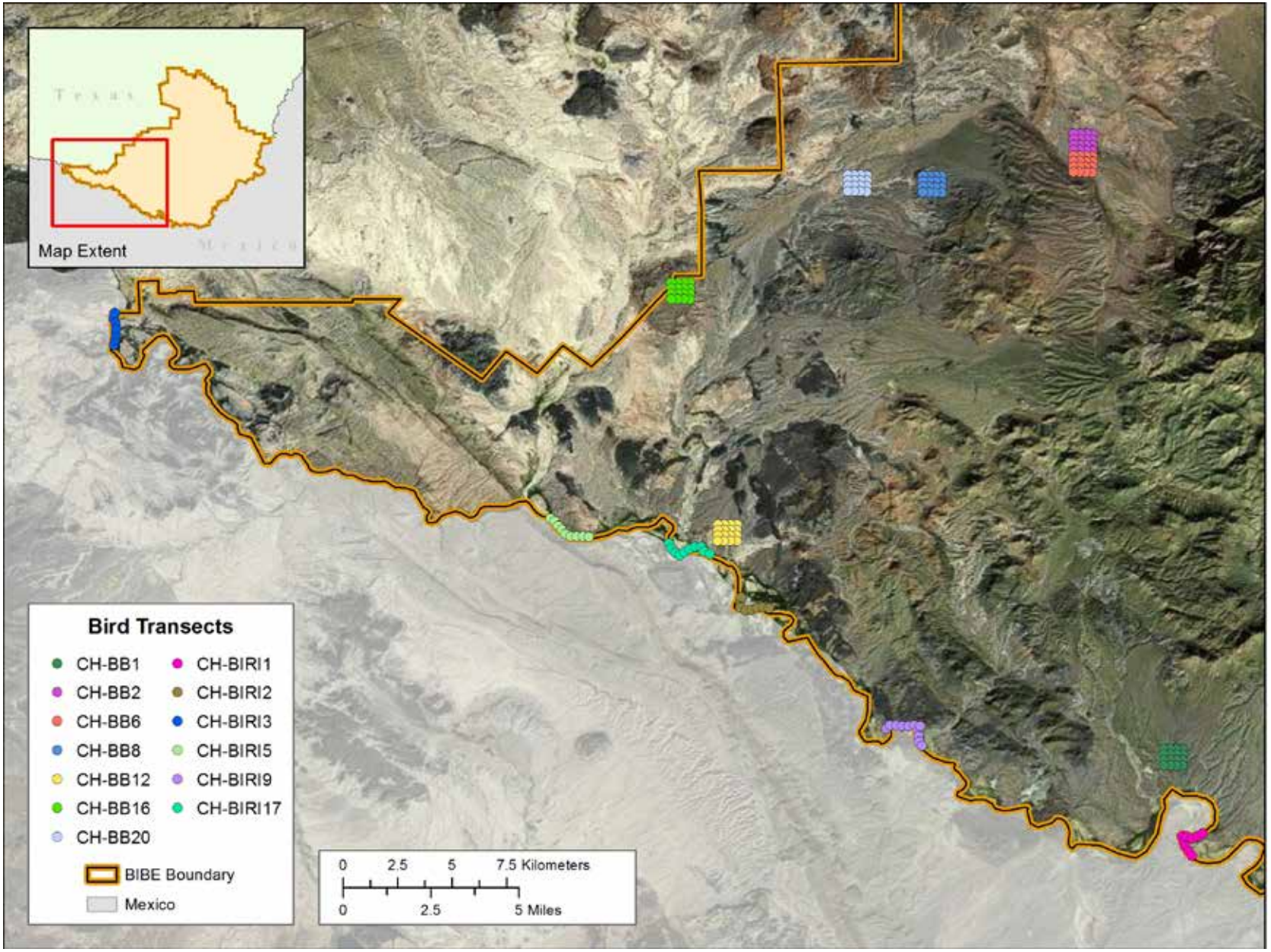

Figure 3.2.1-2. Point locations targeted for annual sampling at Big Bend NP, West.

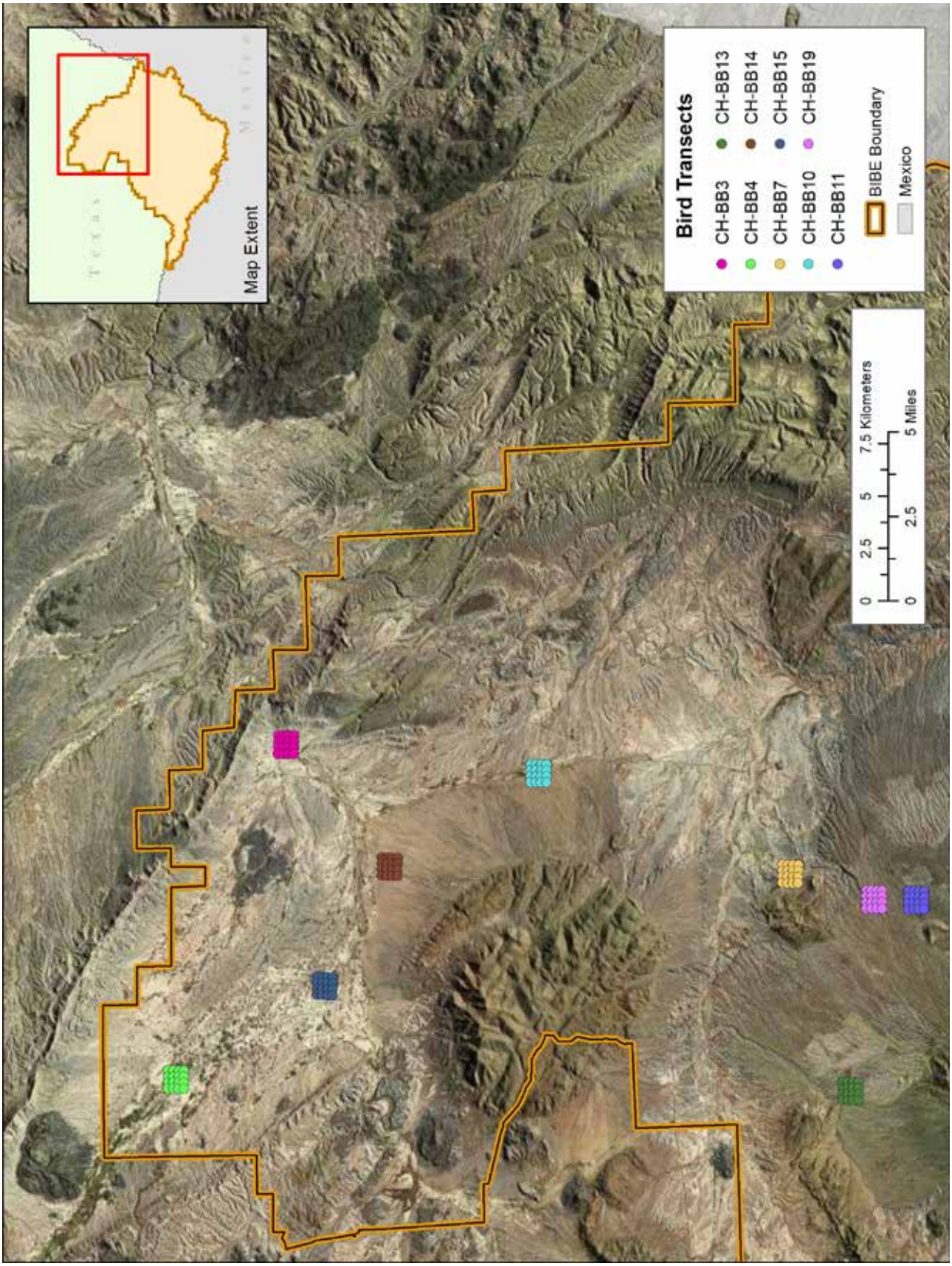

Figure 3.2.1-3. Point locations targeted for annual sampling at Big Bend NP, North.

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2013

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	376	18	394	13
Mourning Dove	245	65	310	10
Bell's Vireo	33	166	199	6
Northern Mockingbird	171	17	188	6
Cactus Wren	161	---	161	5
White-winged Dove	32	129	161	5
Ash-throated Flycatcher	77	53	130	4
Pyrrhuloxia	115	14	129	4
Brewer's Sparrow	119	---	119	4
Northern Cardinal	---	88	88	3
Turkey Vulture	74	13	87	3
Rock Wren	54	6	60	2
Verdin	39	15	54	2
Yellow-breasted Chat	---	53	53	2
Yellow-rumped Warbler	2	51	53	2
House Finch	22	30	52	2
Scott's Oriole	39	5	44	1
Black-tailed Gnatcatcher	39	2	41	1
Common Yellowthroat	---	40	40	1
Cassin's Sparrow	38	---	38	1
Lark Bunting	31	---	31	1
Summer Tanager	1	30	31	1
Chipping Sparrow	19	8	27	1
Wilson's Warbler	---	26	26	1
Chihuahuan Raven	18	6	24	1
Scaled Quail	23	---	23	1
Common Raven	18	4	22	1
Green-tailed Towhee	19	2	21	1
Blue-gray Gnatcatcher	15	5	20	1
Rufous-crowned Sparrow	18	1	19	1
Canyon Towhee	18	---	18	1
Ladder-backed Woodpecker	8	9	17	1
Mallard	---	17	17	1
Eurasian Collared-Dove	---	16	16	1
Northern Rough-winged Swallow	---	15	15	0
Common Ground-Dove	---	13	13	0
Brewer's Blackbird	---	12	12	0
Canyon Wren	2	10	12	0
Loggerhead Shrike	11	---	11	0
Cave Swallow	---	10	10	0
Barn Swallow	2	6	8	0

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Bewick's Wren	7	---	7	0
Gadwall	---	7	7	0
Lincoln's Sparrow	---	7	7	0
Lucy's Warbler	---	7	7	0
Say's Phoebe	3	4	7	0
Black Phoebe	---	6	6	0
House Wren	1	5	6	0
Orange-crowned Warbler	1	5	6	0
Vermilion Flycatcher	---	6	6	0
Black Vulture	---	5	5	0
Great Horned Owl	---	5	5	0
Lark Sparrow	5	---	5	0
White-crowned Sparrow	3	2	5	0
Crissal Thrasher	2	2	4	0
Gambel's Quail	3	1	4	0
Swamp Sparrow	---	4	4	0
Black-chinned Sparrow	3	---	3	0
Blue-winged Teal	---	3	3	0
Curve-billed Thrasher	3	---	3	0
House Sparrow	---	3	3	0
Ruby-crowned Kinglet	---	3	3	0
Yellow Warbler	---	3	3	0
American Pipit	1	1	2	0
Cliff Swallow	1	1	2	0
Golden-fronted Woodpecker	---	2	2	0
Gray Hawk	---	2	2	0
Lesser Goldfinch	2	---	2	0
Lesser Nighthawk	---	2	2	0
Nashville Warbler	---	2	2	0
Savannah Sparrow	---	2	2	0
Western Kingbird	---	2	2	0
American Goldfinch	---	1	1	0
American Wigeon	---	1	1	0
Brown-headed Cowbird	---	1	1	0
Cassin's Kingbird	---	1	1	0
Clay-colored Sparrow	1	---	1	0
Common Black-Hawk	---	1	1	0
Great Blue Heron	---	1	1	0
Killdeer	---	1	1	0
Marsh Wren	---	1	1	0
Northern Harrier	1	---	1	0

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Prairie Falcon	1	---	1	0
Red-tailed Hawk	---	1	1	0
Spotted Towhee	1	---	1	0
Western Wood-Pewee	---	1	1	0
Unidentified Bird	*79*	*43*	*122*	*4*
Unidentified Sparrow	*38*	*12*	*50*	*2*
Unidentified Raven	*14*	---	*14*	*0*
Unidentified Warbler	---	*9*	*9*	*0*
Unidentified Hummingbird	*2*	*5*	*7*	*0*
Unidentified Dove	*4*	*2*	*6*	*0*
Unidentified Hawk	*3*	---	*3*	*0*
Unidentified Finch	*1*	---	*1*	*0*
Unidentified Kingbird	---	*1*	*1*	*0*
Unidentified Thrasher	*1*	---	*1*	*0*
Unidentified Woodpecker	---	*1*	*1*	*0*
Total	**2,020**	**1,130**	**3,150**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

3.3 Carlsbad Caverns National Park

3.3.1 2013 sampling

During May of 2013, we sampled nine transects/grids at Carlsbad Caverns NP (Figure 3.3.1). We conducted 82 point counts on eight grids in grassland habitat and 16 point counts on one transect in riparian habitat (Table 3.3.1). The grassland grids were visited once in 2013, but the riparian transect, along the drainage of Rattlesnake Springs, was visited twice. We conducted a total of 98 point counts at the park.

3.3.2 Results

During 2013, 1,413 birds of 80 species were counted at Carlsbad Caverns NP (Table 3.3.2). Black-throated Sparrow had the highest number of individuals counted (13% of the total number of birds counted). The next species observed in relatively high numbers were Lark Bunting (9%), Northern Mockingbird (7%), Scaled Quail (5%), Ash-throated Flycatcher (4%), and House Finch (4%). No new species were recorded for the park during the survey.

3.3.3 Field Observations

Aside from areas impacted by the 2011 Loop fire, the northern survey sites were well populated with numerous Chihuahuan Desert avian species, including Northern Mockingbird, Scaled Quail, Black-throated Sparrow, Cassin's Sparrow, Rufous-crowned Sparrow, Canyon Towhee, Ash-throated Flycatcher, Cassin's Kingbird, Cactus Wren, Rock Wren, and Loggerhead Shrike. The two western survey sites, located along Gartersnake Road near the parking area for Slaughter Canyon Cave, featured a fine variety of Chihuahuan Desert birds. In addition to the species mentioned above, Chipping Sparrow, Mourning Dove, Pyrrhuloxia, Blue Grosbeak, Bewick's Wren, Blue-gray Gnatcatcher, and migrating Yellow-rumped Warbler and Green-tailed Towhee were observed in this region. Rattlesnake Springs, renowned as a migratory stopover and local birding destination, featured the highest avian diversity of all 2013 CHDN surveys. Common detections at Rattlesnake Springs included (but were not limited to) Bell's Vireo, Gray Vireo, House Finch, Lesser Goldfinch, Wild Turkey, Cassin's Kingbird, Western Kingbird, White-crowned Sparrow, Indigo Bunting, Lark Bunting, Lazuli Bunting, Orchard Oriole, White-winged Dove, Mourning Dove, Vermillion Flycatcher, Ash-throated Flycatcher, Say's Phoebe, Black Phoebe, Western Wood-Pewee, Phainopepla, Ladder-backed Woodpecker, Yellow-breasted Chat, Summer Tanager, and Western Tanager. A Northern Waterthrush was also observed between survey points (i.e., an incidental detection) at Rattlesnake Springs.

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Blue Grosbeak (*Passerina caerulea*) was one of the species observed in the highest numbers at Carlsbad Caverns NP in 2013.

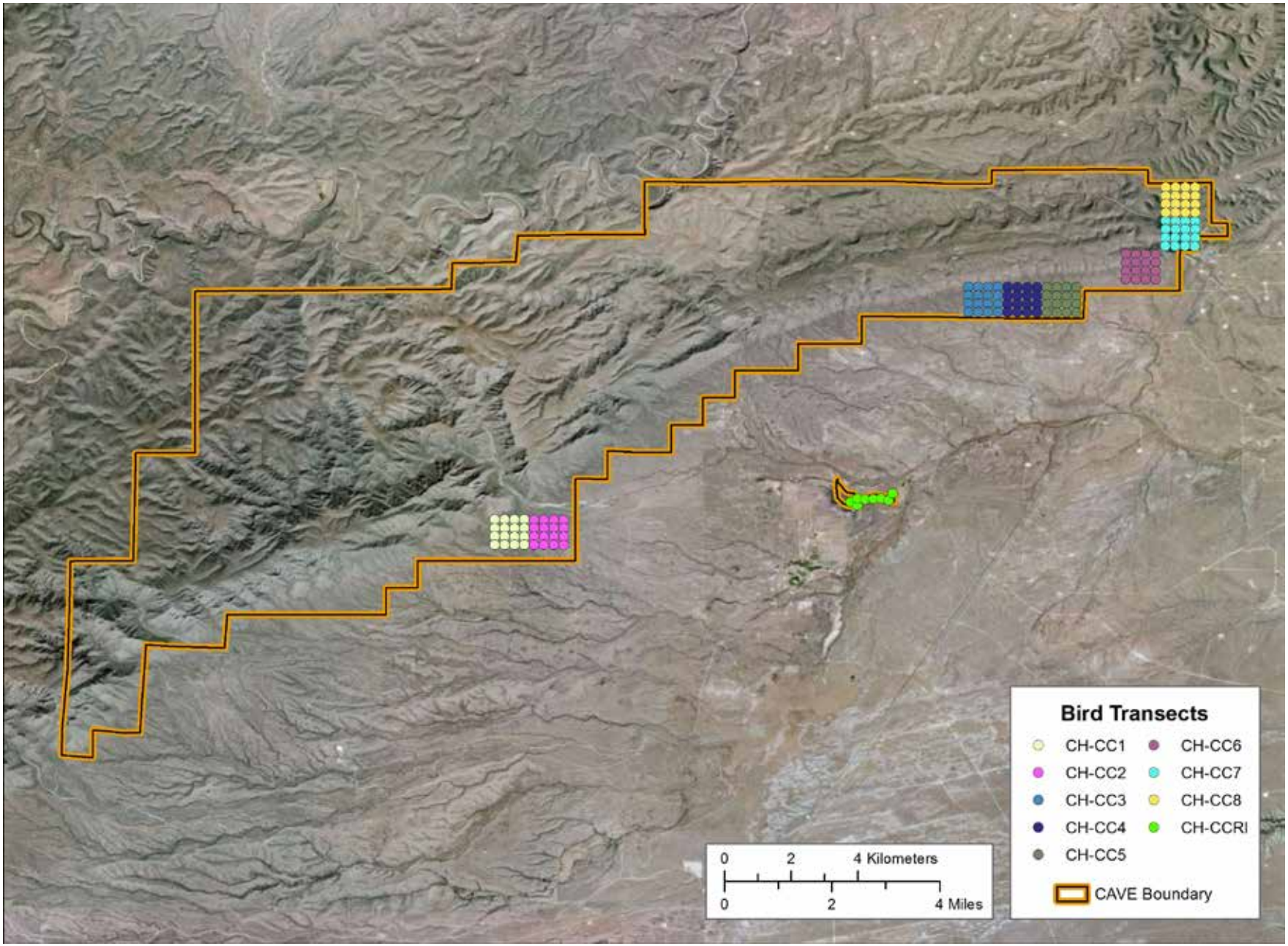

Figure 3.3.1. Point locations targeted for annual sampling at Carlsbad Caverns NP.

Table 3.3.1. Habitat class, number of points, and sampling dates for each transect or grid at Carlsbad Caverns NP, 2013

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-CC1	Grassland	10	1	5/11/2013	--
CH-CC2	Grassland	10	1	5/11/2013	--
CH-CC3	Grassland	10	1	5/14/2013	--
CH-CC4	Grassland	9	1	5/13/2013	--
CH-CC5	Grassland	10	1	5/13/2013	--
CH-CC6	Grassland	12	1	5/12/2013	--
CH-CC7	Grassland	10	1	5/9/2013	--
CH-CC8	Grassland	11	1	5/12/2013	--
CH-CCRI	Riparian	8[1]	2	5/8/2013	5/14/2013

[1] Eight points were counted on the transect on each of the two visits in 2013.

Table 3.3.2. Number of birds counted of each species in each habitat class, Carlsbad Caverns NP, 2013

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	190	---	190	13
Lark Bunting	131	1	132	9
Northern Mockingbird	84	17	101	7
Scaled Quail	75	---	75	5
Ash-throated Flycatcher	51	6	57	4
House Finch	33	24	57	4
Mourning Dove	35	13	48	3
Cave Swallow	47	---	47	3
Blue Grosbeak	39	1	40	3
Yellow-breasted Chat	2	37	39	3
Chipping Sparrow	38	---	38	3
Rufous-crowned Sparrow	36	---	36	3
Cassin's Sparrow	31	---	31	2
Western Kingbird	9	18	27	2
Pyrrhuloxia	26	---	26	2
White-winged Dove	2	23	25	2
Cassin's Kingbird	1	21	22	2
Vermilion Flycatcher	---	21	21	1
Yellow-rumped Warbler	10	11	21	1
Canyon Towhee	16	1	17	1
Common Yellowthroat	---	17	17	1
Northern Cardinal	---	17	17	1

Table 3.3.2. Number of birds counted of each species in each habitat class, Carlsbad Caverns NP, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Bell's Vireo	---	16	16	1
Brown-headed Cowbird	3	13	16	1
White-crowned Sparrow	5	11	16	1
Summer Tanager	---	14	14	1
Scott's Oriole	13	---	13	1
Brewer's Sparrow	11	---	11	1
Rock Wren	11	---	11	1
Turkey Vulture	8	3	11	1
Ladder-backed Woodpecker	1	9	10	1
Wild Turkey	---	10	10	1
Barn Swallow	4	5	9	1
Lark Sparrow	6	3	9	1
Western Tanager	8	1	9	1
Canyon Wren	8	---	8	1
House Wren	6	1	7	0
Orchard Oriole	---	7	7	0
Varied Bunting	7	---	7	0
Verdin	7	---	7	0
Cedar Waxwing	---	6	6	0
Pine Siskin	1	5	6	0
Yellow Warbler	---	6	6	0
Bewick's Wren	5	---	5	0
Lucy's Warbler	---	5	5	0
Say's Phoebe	---	5	5	0
Wilson's Warbler	1	4	5	0
Black-chinned Hummingbird	1	3	4	0
Blue-gray Gnatcatcher	4	---	4	0
Lesser Goldfinch	1	3	4	0
Western Wood-Pewee	---	4	4	0
Bullock's Oriole	2	1	3	0
Green-tailed Towhee	2	1	3	0
House Sparrow	3	---	3	0
Lazuli Bunting	---	3	3	0
MacGillivray's Warbler	2	1	3	0
Blue-winged Teal	---	2	2	0
Cactus Wren	2	---	2	0
Cliff Swallow	2	---	2	0
Eurasian Collared-Dove	2	---	2	0
Gray Vireo	1	1	2	0
Spotted Towhee	1	1	2	0
Western Scrub-Jay	---	2	2	0

Table 3.3.2. Number of birds counted of each species in each habitat class, Carlsbad Caverns NP, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
American Goldfinch	1	---	1	0
American Pipit	1	---	1	0
Black Phoebe	---	1	1	0
Black-headed Grosbeak	1	---	1	0
Clay-colored Sparrow	1	---	1	0
Curve-billed Thrasher	1	---	1	0
Gray Flycatcher	---	1	1	0
Hermit Thrush	1	---	1	0
Indigo Bunting	---	1	1	0
Lesser Nighthawk	1	---	1	0
Loggerhead Shrike	1	---	1	0
Northern Harrier	1	---	1	0
Orange-crowned Warbler	---	1	1	0
Painted Bunting	1	---	1	0
Red-breasted Nuthatch	---	1	1	0
Red-winged Blackbird	---	1	1	0
Warbling Vireo	---	1	1	0
Unidentified Bird	*8*	*11*	*19*	*1*
Unidentified Warbler	*---*	*10*	*10*	*1*
Unidentified Sparrow	*4*	*---*	*4*	*0*
Unidentified Dove	*1*	*1*	*2*	*0*
Unidentified Flycatcher	*---*	*1*	*1*	*0*
Unidentified Hummingbird	*---*	*1*	*1*	*0*
Unidentified Oriole	*1*	*---*	*1*	*0*
Total	**1,008**	**405**	**1,413**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

3.4 Fort Davis National Historic Site

3.4.1 2013 sampling

During April and May of 2013, we sampled one grid at Fort Davis NHS (Figure 3.4.1) twice; we conducted a total of 52 point counts in the park (Table 3.4.1).

3.4.2 Results

During 2013, 692 birds of 50 species were counted at Fort Davis NHS (Table 3.4.2). Chipping Sparrow had the highest number of individuals counted (10% of the total number of birds counted). The next species observed in the highest numbers were Brewer's Blackbird (9%), Rock Wren (8%), Canyon Wren (7%), Black-throated Sparrow (6%), Ash-throated Flycatcher (5%), and Mourning Dove (5%). Two new species for the park were recorded in 2013 (Plumbeous Vireo and White-breasted Nuthatch).

3.4.3 Field Observations

Fort Davis NHS was the second park surveyed in 2013. The mountains of Fort Davis were a pleasant break from the hot desert of Big Bend NP. The survey at Fort Davis differs from that at other CHDN parks because the Historic Site is small and covered by 26 point count stations that are surveyed twice during the season. In 2013, two observers conducted the survey in one day, and returned two weeks later to conduct the second round of surveys. Even though Fort Davis is smaller than the other parks, the terrain and birds observed make this a challenging survey. In addition to those already mentioned, other birds counted in relatively high total numbers were White-winged Dove, Turkey Vulture, Canyon Towhee, House Sparrow, Cassin's Kingbird, and migrating Brewer's Sparrow. Black-crested Titmouse, Great Horned Owl, and Red-tailed Hawk were also observed and added a nice variety to the surveys.

ROB BENNETTS

One Great Horned Owl (*Bubo virginianus*) was observed at Fort Davis NHS during surveys in 2013.

Table 3.4.1. Habitat class, number of points, and sampling dates for the grid at Fort Davis NHS, 2013

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-FODA	Grassland	26[1]	2	4/12/2013	5/5/2013

[1] Twenty-six points were sampled on the each visit.

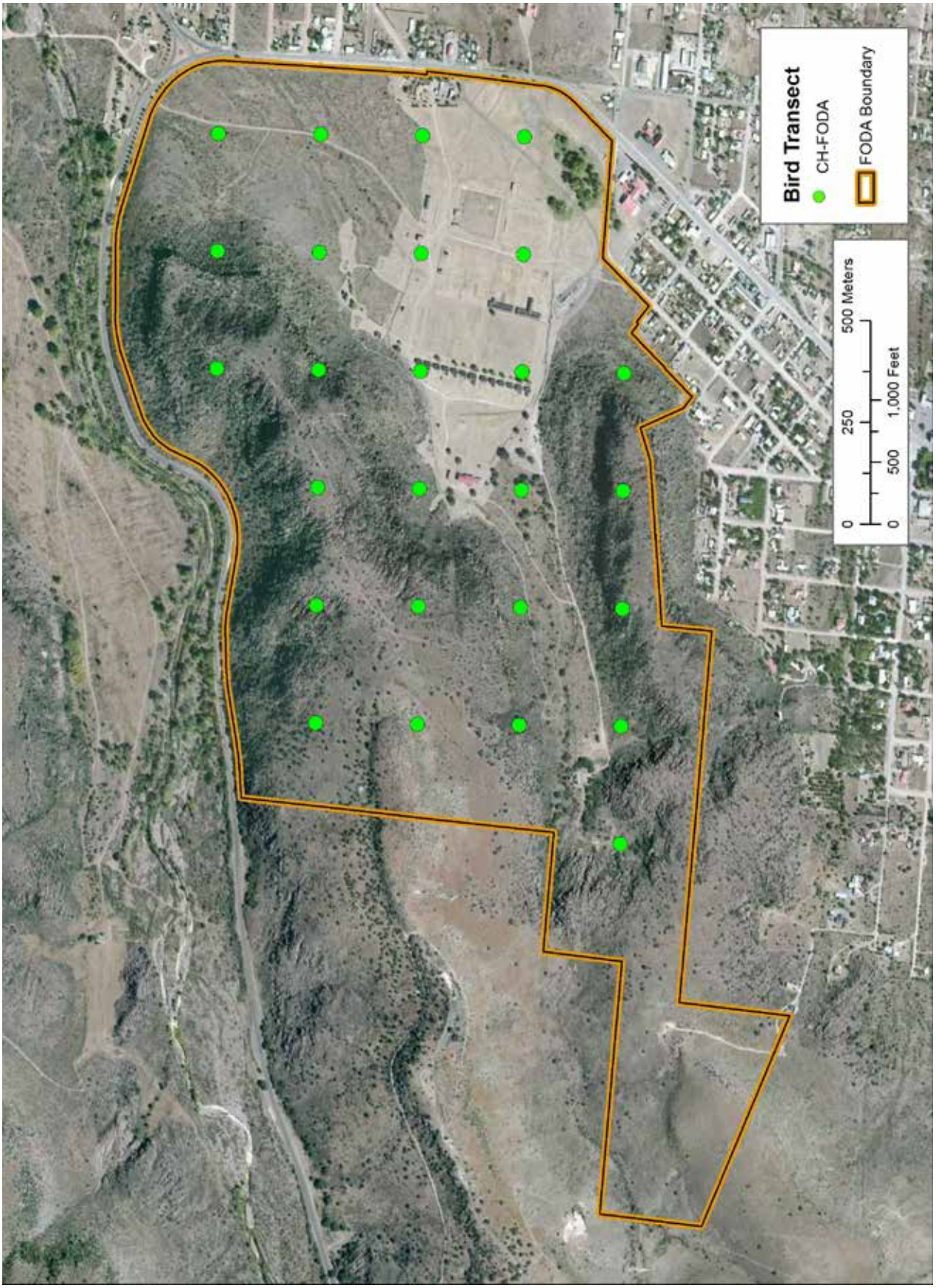

Figure 3.4.1. Point locations targeted for annual sampling at Fort Davis NHS.

Table 3.4.2. Number of birds counted of each species in each habitat class, Fort Davis NHS, 2013

Species	# of birds counted	
	Total (grassland)	% of total
Chipping Sparrow	66	10
Brewer's Blackbird	65	9
Rock Wren	54	8
Canyon Wren	51	7
Black-throated Sparrow	39	6
Ash-throated Flycatcher	33	5
Mourning Dove	33	5
White-winged Dove	31	4
Turkey Vulture	27	4
Canyon Towhee	25	4
House Sparrow	24	3
Brewer's Sparrow	17	2
Cassin's Kingbird	17	2
Rufous-crowned Sparrow	17	2
House Finch	13	2
Bewick's Wren	11	2
Lesser Goldfinch	11	2
Barn Swallow	10	1
Black-crested Titmouse	10	1
Northern Cardinal	9	1
Yellow-rumped Warbler	9	1
Northern Mockingbird	7	1
Blue Grosbeak	6	1
Black-chinned Hummingbird	5	1
Cactus Wren	5	1
Lark Sparrow	5	1
Scott's Oriole	5	1
Summer Tanager	5	1
Western Scrub-Jay	5	1
Bushtit	4	1
Ladder-backed Woodpecker	4	1
Vermilion Flycatcher	4	1
Wilson's Warbler	4	1
Black-chinned Sparrow	3	0
Say's Phoebe	3	0
Plumbeous Vireo	**2**	**0**
Red-tailed Hawk	2	0
Acorn Woodpecker	1	0
Blue-gray Gnatcatcher	1	0
Brown-headed Cowbird	1	0
Chihuahuan Raven	1	0
Common Raven	1	0
Cooper's Hawk	1	0
Eurasian Collared-Dove	1	0
Great Horned Owl	1	0
Northern Flicker	1	0
Scaled Quail	1	0
Spotted Towhee	1	0
Verdin	1	0
White-breasted Nuthatch	**1**	**0**
Unidentified Bird	*23*	*3*
Unidentified Sparrow	*6*	*1*
Unidentified Hummingbird	*4*	*1*
Unidentified Vireo	*4*	*1*
Unidentified Finch	*1*	*0*
Total	**692**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

3.5 Guadalupe Mountains National Park

3.5.1 2013 sampling

During May 2013, we sampled a total of 11 transects/grids at Guadalupe Mountains NP (Figure 3.5.1). We conducted 112 point counts on 10 grids in grassland habitat and 24 point counts on one transect in riparian habitat (Table 3.5.1); we conducted a total of 136 point counts at the park in 2013. The grassland grids were surveyed once, while the riparian transect was surveyed twice.

3.5.2 Results

During 2013, 1,163 birds of 72 species were counted at Guadalupe Mountains NP (Table 3.5.2). Black-throated Sparrow had the highest number of individuals counted (15% of the total number of birds counted). Other species counted in relatively high numbers included Scott's Oriole (7%), Lark Bunting (7%), Ash-throated Flycatcher (7%), Northern Mockingbird (5%), and House Finch (4%).

3.5.3 Field Observations

Guadalupe Mountains NP, located in the northwest part of Texas on the border of New Mexico, is a beautiful setting of high jutting mountains surrounded by flat, arid desert and salt washes. The gem of Guadalupe Mountains NP is McKittrick Canyon. The steep canyon walls and flowing creek bed nourish a lush riparian environment that is home to a large variety of birds. Some of the most common birds observed in this riparian area were Black-chinned Sparrow, Rufous-crowned Sparrow, Bell's Vireo, Plumbeous Vireo, Hepatic Tanager, Summer Tanager, Western Tanager, Black-headed Grosbeak, MacGillivray's Warbler, Warbling Vireo, and Spotted Towhee.

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Scott's Oriole (*Icterus parisorum*) had the second highest number of individuals counted at Guadalupe Mountains NP in 2013.

Most of the remaining surveys were in the west end of the park in the salt washes and sand dunes surrounding the mountains. In this area, the birds observed were common desert birds such as Ash-throated Flycatcher, Black-throated Sparrow, Scott's Oriole, Northern Mockingbird, and Scaled Quail.

Table 3.5.1. Habitat class, number of points, and sampling dates for each transect or grid at Guadalupe Mountains NP, 2013

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-GM1	Grassland	11	1	5/6/2013	--
CH-GM2	Grassland	11	1	5/9/2013	--
CH-GM3	Grassland	14	1	5/10/2013	--
CH-GM4	Grassland	8	1	5/9/2013	--
CH-GM5	Grassland	10	1	5/7/2013	--
CH-GM6	Grassland	11	1	5/8/2013	--
CH-GM7	Grassland	14	1	5/10/2013	--
CH-GM8	Grassland	11	1	5/10/2013	--
CH-GM9	Grassland	12	1	5/7/2013	--
CH-GM10	Grassland	10	1	5/8/2013	--
CH-GMRI	Riparian	12[1]	2	5/7/2013	5/11/2013

[1] A total of 24 points were sampled in 2013 on this transect/grid.

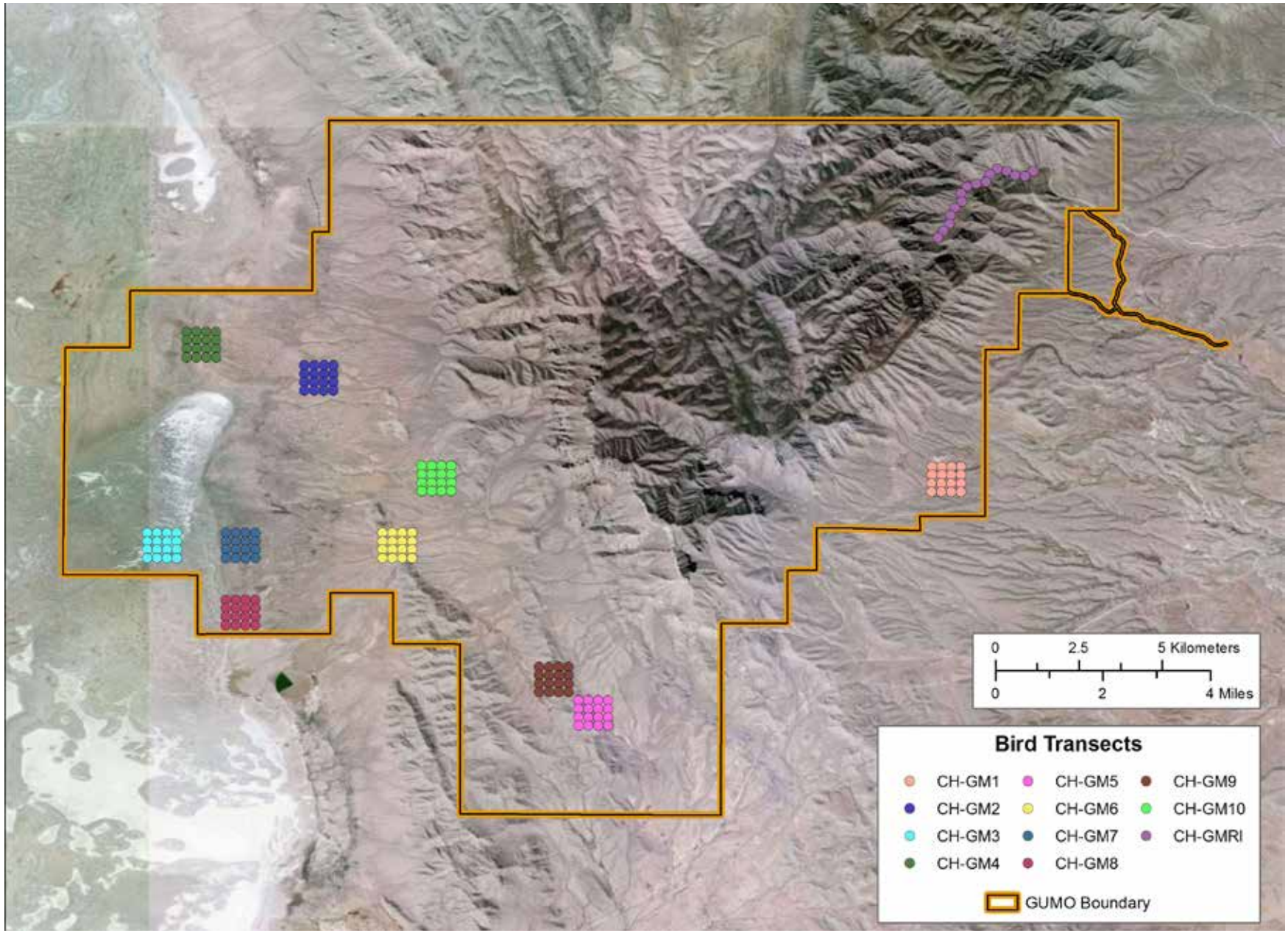

Figure 3.5.1. Point locations targeted for annual sampling at Guadalupe Mountains NP.

Table 3.5.2. Number of birds counted of each species in each habitat class, Guadalupe Mountains NP, 2013

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	180	---	180	15
Scott's Oriole	80	7	87	7
Lark Bunting	81	---	81	7
Ash-throated Flycatcher	66	13	79	7
Northern Mockingbird	58	---	58	5
House Finch	45	4	49	4
Brewer's Sparrow	39	---	39	3
Bewick's Wren	18	13	31	3
Spotted Towhee	2	29	31	3
Rufous-crowned Sparrow	14	15	29	2
Mourning Dove	28	---	28	2
Plumbeous Vireo	---	25	25	2
Black-headed Grosbeak	---	23	23	2
Western Kingbird	21	---	21	2
Verdin	20	---	20	2
Canyon Wren	2	17	19	2
Yellow-rumped Warbler	16	3	19	2
Pyrrhuloxia	17	---	17	1
Scaled Quail	16	---	16	1
Black-chinned Sparrow	2	13	15	1
Broad-tailed Hummingbird	---	15	15	1
Canyon Towhee	10	5	15	1
Warbling Vireo	---	14	14	1
Curve-billed Thrasher	12	---	12	1
Green-tailed Towhee	12	---	12	1
Violet-green Swallow	8	3	11	1
Western Tanager	1	10	11	1
Blue-gray Gnatcatcher	4	5	9	1
Summer Tanager	1	8	9	1
Bushtit	2	6	8	1
Cactus Wren	8	---	8	1
Northern Cardinal	8	---	8	1
White-winged Dove	4	4	8	1
House Wren	---	7	7	1
Western Wood-Pewee	---	7	7	1
Blue Grosbeak	4	2	6	1
Hepatic Tanager	---	6	6	1
Cassin's Kingbird	5	---	5	0
Chipping Sparrow	5	---	5	0
Lesser Nighthawk	5	---	5	0
Loggerhead Shrike	5	---	5	0
Rock Wren	5	---	5	0

Table 3.5.2. Number of birds counted of each species in each habitat class, Guadalupe Mountains NP, 2013, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
White-throated Swift	3	2	5	0
Dusky Flycatcher	---	4	4	0
Grace's Warbler	---	4	4	0
Lark Sparrow	4	---	4	0
Pine Siskin	---	4	4	0
Say's Phoebe	4	---	4	0
Swainson's Thrush	---	4	4	0
Townsend's Warbler	---	4	4	0
Brown-headed Cowbird	---	3	3	0
Ladder-backed Woodpecker	---	3	3	0
Turkey Vulture	3	---	3	0
Wilson's Warbler	---	3	3	0
Barn Swallow	2	---	2	0
Black-tailed Gnatcatcher	1	1	2	0
MacGillivray's Warbler	---	2	2	0
Bell's Vireo	---	1	1	0
Black-chinned Hummingbird	---	1	1	0
Bullock's Oriole	1	---	1	0
Cordilleran Flycatcher	---	1	1	0
Eurasian Collared-Dove	1	---	1	0
Hairy Woodpecker	---	1	1	0
Hermit Thrush	---	1	1	0
Lazuli Bunting	---	1	1	0
Lincoln's Sparrow	---	1	1	0
Northern Harrier	1	---	1	0
Orange-crowned Warbler	---	1	1	0
Red-naped Sapsucker	---	1	1	0
Rose-breasted Grosbeak	---	1	1	0
Ruby-crowned Kinglet	---	1	1	0
Western Scrub-Jay	---	1	1	0
Unidentified Bird	*14*	*14*	*28*	*2*
Unidentified Sparrow	*4*	*---*	*4*	*0*
Unidentified Flycatcher	*1*	*1*	*2*	*0*
Unidentified Hummingbird	*1*	*1*	*2*	*0*
Unidentified Thrasher	*2*	*---*	*2*	*0*
Unidentified Dove	*---*	*1*	*1*	*0*
Total	**846**	**317**	**1,163**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

3.6 White Sands National Monument

3.6.1 2013 sampling

During May of 2013, we sampled 10 grids at White Sands NM (Figure 3.6.1). We conducted 105 point counts on 10 grids in grassland habitat (Table 3.6.1). Each point was surveyed once in 2013. As described below, we also conducted an area search of a cottonwood grove within the park to determine whether the area is used as a migrant stopover site.

3.6.2 Results

During 2013 surveys, 451 birds of 37 species were counted at White Sands NM (Table 3.6.2). Black-throated Sparrow had the highest number of individuals counted (31% of the total number of birds counted). The next species counted in the highest numbers were Mourning Dove (9%), Northern Mockingbird (7%), Ash-throated Flycatcher (6%), Western Kingbird (5%), Brewer's Sparrow (4%), and Scott's Oriole (3%). One new species, Canyon Wren, was detected for the park in 2013.

3.6.3 Field Observations

The area search was located in a row of cottonwood trees that line the end of the dunes near the administrative buildings at the entrance of the park. The area attracts riparian and migrant bird species and is one of few areas at the park that has a large population of birds. The rest of the surveys are located in a mixture of grassland and shrub habitat with interspersed dunes. While the National Monument is a beautiful and unique sight, the birds occur in low in numbers. Typical birds seen here are: Western and Eastern Meadowlark, Black-throated Sparrow, Horned Lark, and Western Kingbird.

DAVE MENKE, USFWS

Several Loggerhead Shrike (*Lanius ludovicianus*) were observed at White Sands NM in 2013.

Table 3.6.1. Habitat class, number of points, and sampling dates for each transect or grid at White Sands NM, 2013

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-WH1	Grassland	10	1	5/18/2013
CH-WH2	Grassland	10	1	5/18/2013
CH-WH3	Grassland	12	1	5/16/2013
CH-WH5	Grassland	10	1	5/17/2013
CH-WH6	Grassland	11	1	5/19/2013
CH-WH7	Grassland	12	1	5/17/2013
CH-WH8	Grassland	10	1	5/18/2013
CH-WH9	Grassland	10	1	5/19/2013
CH-WH10	Grassland	10	1	5/17/2013
CH-WH11	Grassland	10	1	5/16/2013

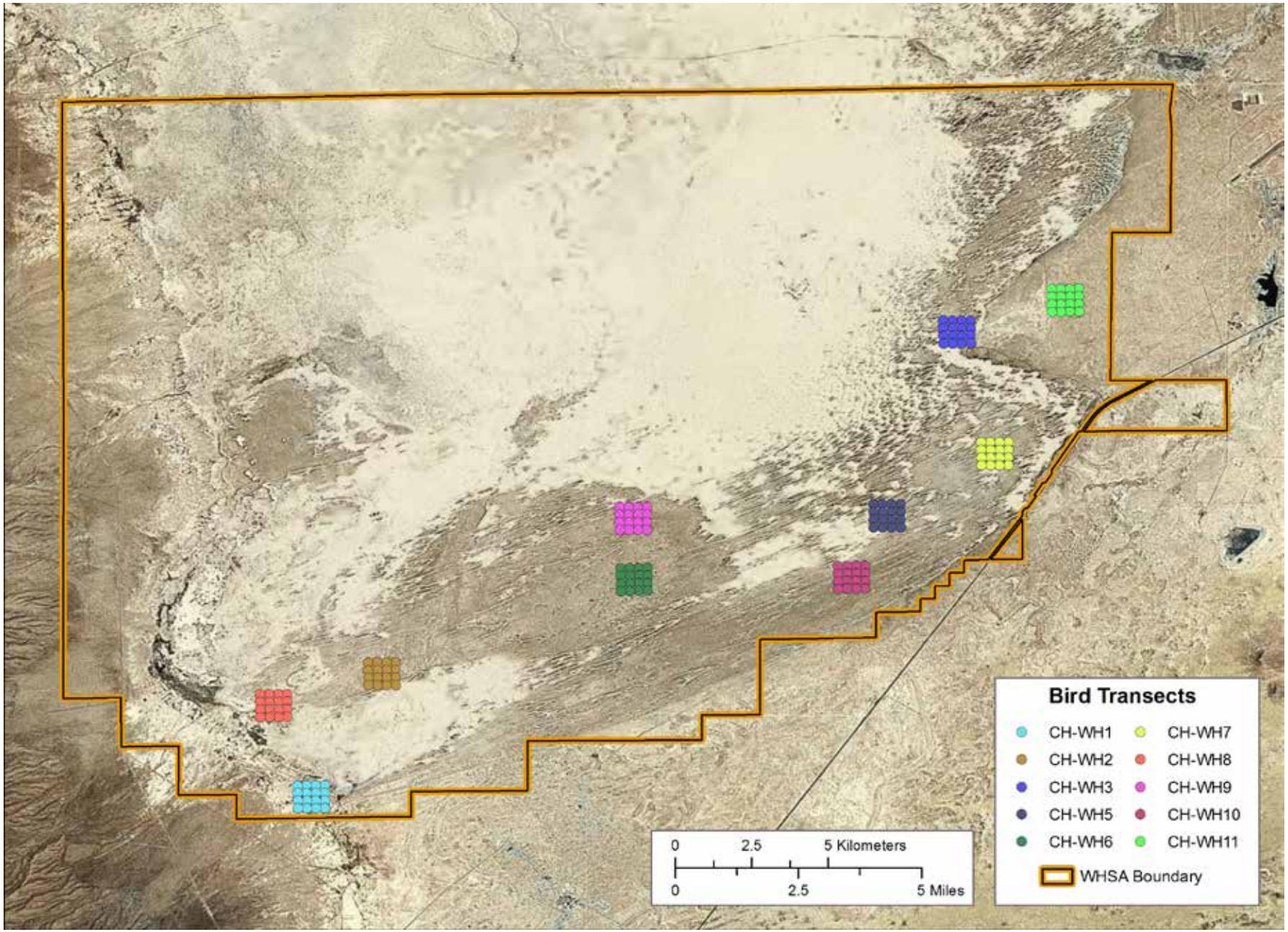

Figure 3.6.1. Point locations targeted for annual sampling at White Sands NM.

Table 3.6.2. Number of birds counted of each species in each habitat class, White Sands NM, 2013

Species	# of birds counted	
	Total (grassland)	% of total
Black-throated Sparrow	138	31
Mourning Dove	41	9
Northern Mockingbird	30	7
Ash-throated Flycatcher	25	6
Western Kingbird	24	5
Brewer's Sparrow	17	4
Scott's Oriole	15	3
Blue Grosbeak	14	3
Horned Lark	14	3
Barn Swallow	13	3
Yellow-rumped Warbler	12	3
House Finch	10	2
Verdin	9	2
Eastern Meadowlark	8	2
Loggerhead Shrike	8	2
MacGillivray's Warbler	7	2
Cassin's Kingbird	6	1
Green-tailed Towhee	6	1
Chipping Sparrow	4	1
White-winged Dove	4	1
Chihuahuan Raven	3	1
Bronzed Cowbird	2	0
Bullock's Oriole	2	0
Lesser Nighthawk	2	0
Bank Swallow	1	0
Black-tailed Gnatcatcher	1	0
Broad-tailed Hummingbird	1	0
Cactus Wren	1	0
Canyon Wren	**1**	**0**
Crissal Thrasher	1	0
Gambel's Quail	1	0
Ladder-backed Woodpecker	1	0
Violet-green Swallow	1	0
Warbling Vireo	1	0
Western Meadowlark	1	0
Western Wood-Pewee	1	0
Yellow Warbler	1	0
Unidentified Bird	*17*	*4*
Unidentified Sparrow	*5*	*1*
Unidentified Flycatcher	*1*	*0*
Unidentified Hummingbird	*1*	*0*
Total	**451**	**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 from those counted in the highest numbers to those counted in the lowest numbers. 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.

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