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Landbird Monitoring in the Chihuahuan Desert Network

2012 Annual Report

Natural Resource Technical Report NPS/CHDN/NRTR—2013/702

ON THE COVER

Ladder-backed Woodpecker (***Picoides scalaris***), detected at several network parks in 2012. Photo © Robert Shantz.

Landbird Monitoring in the Chihuahuan Desert Network

2012 Annual Report

Natural Resource Technical Report NPS/CHDN/NRTR—2013/702

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Cassin's Sparrow (*Peucaea cassinii*) was observed at five of the six parks monitored in the CHDN in 2012. 3

Brewer's Blackbird (*Euphagus cyanocephalus*) was observed at four of the six parks monitored in the CHDN in 2012, although it is known to occur in all six of the parks. 6

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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 2012, 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. A total of 80 transects or grids was surveyed in 2012. 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 June, with adjustments made for individual park visits based on latitude and elevation. We used point-transect surveys to estimate and monitor landbird population parameters. Surveys were 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 transect in Fort Davis National Historic Site (NHS) twice, due to the small size of the park.

We conducted a total of 914 point counts on 80 transects or grids. Of these, 723 point counts were conducted in grassland habitat and 191 were conducted in riparian habitat. We recorded a total of 8,622 individual birds of 146 species during on our point counts. Big Bend National Park (NP) had the highest number of individual birds counted (n = 2,682). White Sands National Monument (NM) had the lowest number of birds counted (n = 565). The number of species observed varied widely among the parks surveyed. We observed the greatest number of species at Amistad National Recreation Area (NRA) (n = 98) and Big Bend NP (n = 81), and the fewest at White Sands NM (n = 33). 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= 1,137), followed by Northern Mockingbird (n = 550) and Ash-throated Flycatcher (n = 410). Fourteen species (e.g, Blue Grosbeak, Brown-headed Cowbird, Common Raven, Ladder-backed Woodpecker, Lesser Nighthawk, Say's Phoebe, and Scott's Oriole) were observed at all six parks. Seventeen 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 two parks. At Amistad NRA, the new species were Bobolink (migrant species), European Starling, and Plumbeous Vireo (migrant species). At Guadalupe Mountains NP, the new species were Eastern Phoebe (migrant species) and Orchard Oriole.

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 broad-based monitoring approaches (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

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

are inherently valuable. The high aesthetic and spiritual values that humans place on native wildlife is 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, longstanding 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 most species in most parks. Occupancy is a measure of presence or absence 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 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 Bennetts et al. (2013, in review). 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 2012, 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 2012 (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, 2012

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

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Cassin's Sparrow (*Peucaea cassinii*) was observed at five of the six parks monitored in the CHDN in 2012.

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 June, with adjustments, as described above, for individual park visits based on latitude and elevation (Figure 2.1.2).

2.2 Bird Surveys

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

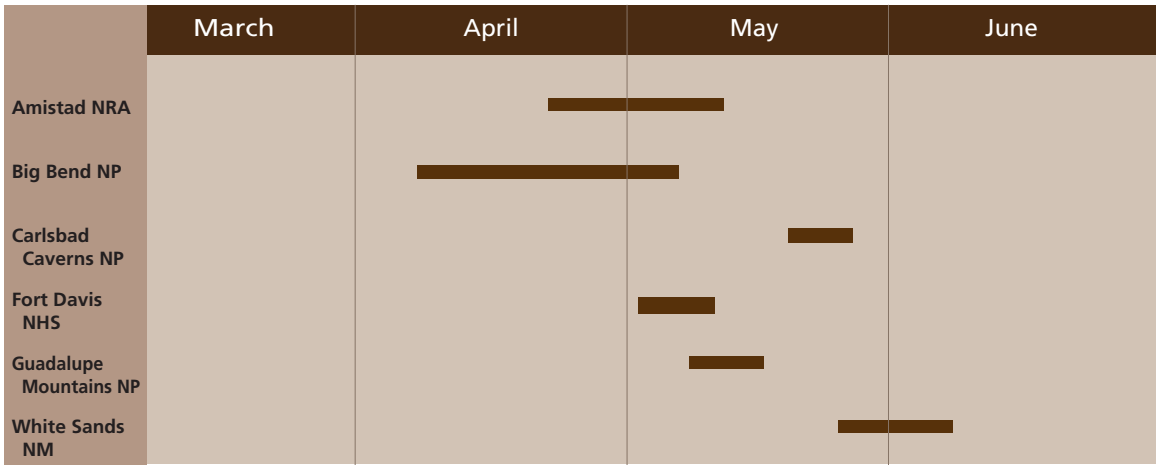

Figure 2.1.2. Dates when sampling was conducted in CHDN parks, 2012.

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 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.

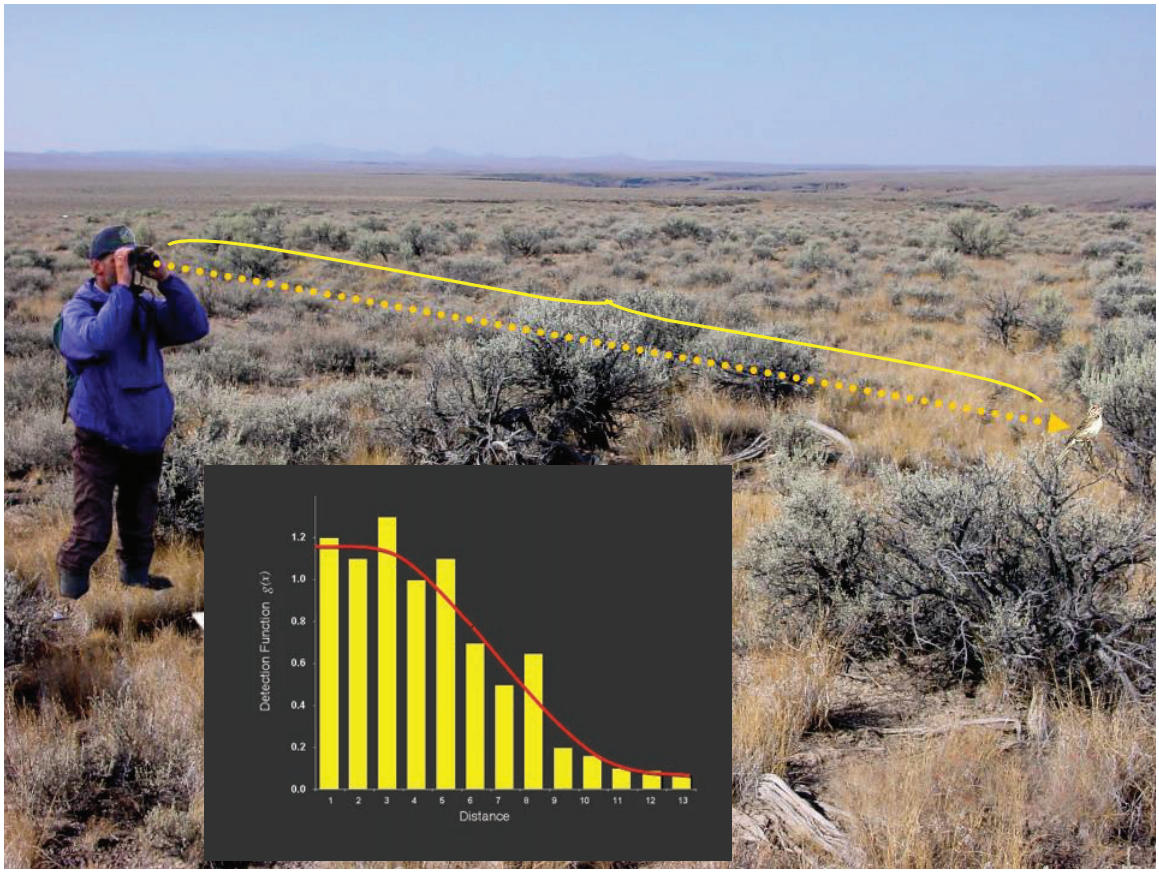

Figure 2.2. Distance sampling works by estimating a detection profile (graph) as a function of distance from which either individual or groups of birds are observed from the transect.

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.

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 broader ecological context.

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Brewer's Blackbird (*Euphagus cyanocephalus*) was observed at four of the six parks monitored in the CHDN in 2012, although it is known to occur in all six of the parks.

3 Results and Discussion

We conducted a total of 914 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, 723 point counts were conducted in grassland habitats and 191 point counts were conducted in riparian habitats. We recorded a total of 8,622 individual birds of 146 species during our point counts.

Big Bend National Park (NP) had the highest number of individual birds counted (n = 2,682). White Sands National Monument (NM) had the lowest number of birds counted (n = 565). We observed the greatest number of species at Amistad National Recreation Area (NRA) (n = 98) and Big Bend NP (n = 81), and the fewest at White Sands NM (n = 33) (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 = 1,137) (see Table 3-3), followed by Northern Mockingbird (n = 550) and Ash-throated Flycatcher (n = 410). Fourteen species (i.e., Ash-throated Flycatcher, Black-throated Sparrow, Blue Grosbeak, Brown-headed Cowbird, Common Raven, House Finch, Ladder-backed Woodpecker, Lesser Nighthawk, Mourning Dove, Northern Mockingbird, Say's Phoebe, Scott's Oriole, White-winged Dove, and Yellow-rumped Warbler) were observed at all six parks (Table 3-4). Seventeen additional species were observed at five of the six parks. New species, previously unverified in a given park, were recorded for two parks (Amistad NRA and Guadalupe Mountains NP). At Amistad NRA, the new species were Bobolink (migrant species), European Starling, and Plumbeous Vireo (migrant species), and at Guadalupe Mountains NP, the new species were Eastern Phoebe (migrant species) and Orchard Oriole.

Table 3-2. Number of species observed in each habitat class at each park, 2012

Park	Species detected		
	Grassland	Riparian	Total[1]
Amistad NRA	72	75	98
Big Bend NP	43	68	81
Carlsbad Caverns NP	44	42	70
Fort Davis NHS	53	--	53
Guadalupe Mountains NP	53	35	68
White Sands NM	33	--	33
Total[1]	**114**	**120**	**146**

[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, 2012

Park	Grassland		Riparian		Total birds counted
	# Point counts	Birds counted	# Point counts	Birds counted	
Amistad NRA	92	1,349	65	937	2,286
Big Bend NP	245	1,645	84	1,037	2,682
Carlsbad Caverns NP	91	824	16	336	1,160
Fort Davis NHS	51	636	--	--	636
Guadalupe Mountains NP	126	988	26	305	1,293
White Sands NM	118	565	--	--	565
Total	**723**	**6,007**	**191**	**2,615**	**8,622**

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, 2012

Common name	# of birds
Black-throated Sparrow	1,137
Northern Mockingbird	550
Ash-throated Flycatcher	410
Turkey Vulture	355
Cactus Wren	326
Bell's Vireo	299
White-winged Dove	294
Mourning Dove	282
Cave Swallow	264
Yellow-breasted Chat	247
Rufous-crowned Sparrow	219
Northern Cardinal	214
Blue Grosbeak	195
Pyrrhuloxia	187
Brown-headed Cowbird	165
House Finch	153
Scott's Oriole	151
Cassin's Sparrow	137
Scaled Quail	122
Verdin	121
Painted Bunting	110
Cliff Swallow	109
Brewer's Blackbird	102
Cassin's Kingbird	98
Canyon Wren	96
Rock Wren	82
Bewick's Wren	81
Western Kingbird	73
Canyon Towhee	68
Common Yellowthroat	68
Summer Tanager	61
Eurasian Collared-Dove	58
Clay-colored Sparrow	56
House Sparrow	56
Red-winged Blackbird	49
Black-tailed Gnatcatcher	48
Lesser Nighthawk	46
Brewer's Sparrow	42
Curve-billed Thrasher	41
Plumbeous Vireo	38
Chipping Sparrow	38

Common name	# of birds
Ladder-backed Woodpecker	37
Horned Lark	35
Chihuahuan Raven	34
Black-chinned Sparrow	33
Blue-gray Gnatcatcher	33
Lark Sparrow	31
Black-headed Grosbeak	30
Western Wood-Pewee	30
Common Raven	29
European Starling	28
Northern Rough-winged Swallow	28
Barn Swallow	27
Spotted Towhee	27
Green-tailed Towhee	26
Loggerhead Shrike	26
Mallard	26
Vermilion Flycatcher	26
Black Vulture	25
Crissal Thrasher	25
Say's Phoebe	24
House Wren	23
Great-tailed Grackle	22
Northern Bobwhite	21
Wilson's Warbler	21
Warbling Vireo	20
Orchard Oriole	18
Greater Roadrunner	17
Eastern Meadowlark	16
Yellow-rumped Warbler	16
Gambel's Quail	15
Killdeer	15
Great Blue Heron	14
Black-chinned Hummingbird	13
Lesser Goldfinch	13
Gray Flycatcher	12
Western Tanager	12
White-crowned Sparrow	12
Golden-fronted Woodpecker	11
Hepatic Tanager	11
Black-crested Titmouse	10
Red-tailed Hawk	10

Table 3-3. Total number of individual birds observed of each species during surveys in all CHDN parks, 2012, cont.

Common name	# of birds
Wild Turkey	10
Spotted Sandpiper	9
Great Horned Owl	8
Carolina Wren	8
Dusky Flycatcher	8
American Coot	7
Band-tailed Pigeon	7
Bushtit	7
Blue-winged Teal	6
Common Ground-Dove	6
Gray Vireo	6
Hooded Oriole	6
Indigo Bunting	6
Northern Shoveler	6
White-throated Swift	6
Lazuli Bunting	5
Mountain Chickadee	5
Yellow Warbler	5
MacGillivray's Warbler	4
American Goldfinch	4
Common Nighthawk	4
Double-crested Cormorant	4
Lucy's Warbler	4
Vesper Sparrow	4
Willow Flycatcher	4
Bank Swallow	3
Black Phoebe	3
Lark Bunting	3
Olive Sparrow	3
Peregrine Falcon	3
Phainopepla	3
Acorn Woodpecker	2
Belted Kingfisher	2
Broad-tailed Hummingbird	2
Brown-crested Flycatcher	2
Canvasback	2
Caspian Tern	2
Common Loon	2
Eastern Phoebe	2
Gray Hawk	2
Great Egret	2
Great Kiskadee	2
Northern Harrier	2
Snowy Egret	2
Swainson's Hawk	2
Varied Bunting	2
Virginia's Warbler	2
Yellow-billed Cuckoo	2
American Kestrel	1
Bobolink	1
Brown Thrasher	1
Bullock's Oriole	1
Cooper's Hawk	1
Crested Caracara	1
Harris's Hawk	1
Inca Dove	1
Northern Parula	1
Northern Waterthrush	1
Osprey	1
Scissor-tailed Flycatcher	1
Western Meadowlark	1
Western Scrub-Jay	1
White-eyed Vireo	1
White-throated Sparrow	1
Unidentified birds	*255*
Total	**8,622**

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).

Table 3-4. Parks where each species was observed, April through June 2012

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			o
American Bittern	*Botaurus lentiginosus*	o	o	o		o	
American Coot	*Fulica americana*	●	●	o		o	o
American Crow	*Corvus brachyrhynchos*			o			o
American Dipper	*Cinclus mexicanus*		o	o		o	
American Goldfinch	*Spinus tristis*	o	o	●	o	o	o
American Kestrel	*Falco sparverius*	●	o	o	o	o	o
American Pipit	*Anthus rubescens*	o	o	o		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		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		●	
Bank Swallow	*Riparia riparia*	o	●	o			o
Barn Owl	*Tyto alba*	o	o	o			o
Barn Swallow	*Hirundo rustica*	●	●	●	●	o	●
Bay-breasted Warbler	*Dendroica castanea*		o	o			
Bell's Vireo	*Vireo bellii*	●	●	●		o	o
Belted Kingfisher	*Megaceryle alcyon*	o	●	o		o	o
Berylline Hummingbird	*Amazilia beryllina*		o				
Bewick's Wren	*Thryomanes bewickii*	●	●	o	●	●	o

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Black Phoebe	*Sayornis nigricans*	o	●	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
Black-chinned Sparrow	*Spizella atrogularis*		●	●	o	●	o
Black-crested Titmouse	*Baeolophus atricristatus*	o	o		●	o	
Black-crowned Night-Heron	*Nycticorax nycticorax*	o	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	●	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*	●	●	●	●	●	●
Blue Jay	*Cyanocitta cristata*		o	o		o	
Blue-gray Gnatcatcher	*Polioptila caerulea*	●	●	o	●	●	o
Blue-headed Vireo	*Vireo solitarius*		o	o		o	
Blue-throated Hummingbird	*Lampornis clemenciae*		o	o		o	
Blue-winged Teal	*Anas discors*	●	●	o			o

● = species detected in 2012 survey

o = species not detected in 2012 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Blue-winged Warbler	*Vermivora cyanoptera*		o	o			
Bobolink	*Dolichonyx oryzivorus*	●		o			
Bonaparte's Gull	*Chroicocephalus philadelphia*	o	o				o
Brewer's Blackbird	*Euphagus cyanocephalus*	●	●	●	o	●	o
Brewer's Sparrow	*Spizella breweri*	●	●	●	●	●	o
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	o	o
Brown Creeper	*Certhia americana*		o	o		o	o
Brown Pelican	*Pelecanus occidentalis*	o	o				o
Brown Thrasher	*Toxostoma rufum*		o	●		o	o
Brown-crested Flycatcher	*Myiarchus tyrannulus*	●	o		o	o	
Brown-headed Cowbird	*Molothrus ater*	●	●	●	●	●	●
Bufflehead	*Bucephala albeola*	o	o	o		o	o
Bullock's Oriole	*Icterus bullockii*	●	o	o	o	o	o
Burrowing Owl	*Athene cunicularia*	o	o	o		o	o
Bushtit	*Psaltriparus minimus*	o	o	o	●	●	
Cactus Wren	*Campylorhynchus brunneicapillus*	●	●	●	●	●	o
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
Canyon Towhee	*Melozone fusca*	●	●	●	●	●	o
Canyon Wren	*Catherpes mexicanus*	●	●	●	●	●	
Cape May Warbler	*Dendroica tigrina*		o	o			
Carolina Wren	*Thryothorus ludovicianus*	●	●	o		o	
Caspian Tern	*Hydroprogne caspia*	●					
Cassin's Finch	*Carpodacus cassinii*		o	o	o	o	o
Cassin's Kingbird	*Tyrannus vociferans*		o	●	●	●	●
Cassin's Sparrow	*Peucaea cassinii*	●	●	●	●	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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Cave Swallow	*Petrochelidon fulva*	●	o	●	o	o	
Cedar Waxwing	*Bombycilla cedrorum*	o	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	o
Chimney Swift	*Chaetura pelagica*	o	o	o			
Chipping Sparrow	*Spizella passerina*	●	o	o	●	●	o
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	o
Clay-colored Thrush	*Turdus grayi*		o				
Cliff Swallow	*Petrochelidon pyrrhonota*	●	●	o	●	●	o
Colima Warbler	*Oreothlypis crissalis*		o			o	
Common Black-Hawk	*Buteogallus anthracinus*		o	o	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
Common Merganser	*Mergus merganser*		o	o			o
Common Moorhen	*Gallinula chloropus*		o	o			
Common Nighthawk	*Chordeiles minor*	o	●	o	o	o	●
Common Poorwill	*Phalaenoptilus nuttallii*	o	o	o		o	o
Common Raven	*Corvus corax*	●	●	●	●	●	●
Common Yellowthroat	*Geothlypis trichas*	●	●	●		●	o
Connecticut Warbler	*Oporornis agilis*			o			
Cooper's Hawk	*Accipiter cooperii*	o	o	●	o	o	o
Cordilleran Flycatcher	*Empidonax occidentalis*		o	o	o	o	o
Costa's Hummingbird	*Calypte costae*		o				

● = species detected in 2012 survey

o = species not detected in 2012 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
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	●	●
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
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		●	
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	o
Eurasian Wigeon	*Anas penelope*	o					
European Starling	*Sturnus vulgaris*	●	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	
Forster's Tern	*Sterna forsteri*	o	o				o

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Fox Sparrow	*Passerella iliaca*	o	o	o			
Franklin's Gull	*Leucophaeus pipixcan*	o	o				o
Gadwall	*Anas strepera*	o	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*	●	o				
Golden-winged Warbler	*Vermivora chrysoptera*		o	o			
Grace's Warbler	*Dendroica graciae*		o	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
Gray Hawk	*Buteo nitidus*		●	o	o		
Gray Vireo	*Vireo vicinior*		o	●		●	o
Gray-cheeked Thrush	*Catharus minimus*		o	o			o
Great Blue Heron	*Ardea herodias*	●	o	o	o	o	o
Great Crested Flycatcher	*Myiarchus crinitus*		o	o			
Great Egret	*Ardea alba*	●	●	o		o	o
Great Horned Owl	*Bubo virginianus*	●	●	●	o	o	o
Great Kiskadee	*Pitangus sulphuratus*	●	o	o			
Greater Pewee	*Contopus pertinax*		o	o	o	o	
Greater Roadrunner	*Geococcyx californianus*	●	●	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
Green Heron	*Butorides virescens*	o	o	o			o
Green Kingfisher	*Chloroceryle americana*	o	o				
Green-tailed Towhee	*Pipilo chlorurus*	●	●	o	●	●	o

● = species detected in 2012 survey

o = species not detected in 2012 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Green-winged Teal	*Anas crecca*	o	o	o		o	o
Groove-billed Ani	*Crotophaga sulcirostris*	o	o	o			
Gull-billed Tern	*Gelochelidon nilotica*	o					
Hairy Woodpecker	*Picoides villosus*			o		o	
Hammond's Flycatcher	*Empidonax hammondii*		o	o		o	
Harris's Hawk	*Parabuteo unicinctus*	●	o	o		o	
Harris's Sparrow	*Zonotrichia querula*		o	o			o
Hepatic Tanager	*Piranga flava*		●	o	o	●	o
Hermit Thrush	*Catharus guttatus*	o	o	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	●	o	o
House Wren	*Troglodytes aedon*	o	●	●	o	●	o
Hutton's Vireo	*Vireo huttoni*		o	o		o	
Inca Dove	*Columbina inca*	o	●	o			o
Indigo Bunting	*Passerina cyanea*	o	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
King Rail	*Rallus elegans*		o				
Ladder-backed Woodpecker	*Picoides scalaris*	●	●	●	●	●	●
Lark Bunting	*Calamospiza melanocorys*	o	o	●	o	●	o
Lark Sparrow	*Chondestes grammacus*	●	o	●	●	o	●
Laughing Gull	*Leucophaeus atricilla*	o	o				
Lawrence's Goldfinch	*Spinus lawrencei*					o	
Lazuli Bunting	*Passerina amoena*		o	o		●	o

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Le Conte's Sparrow	*Ammodramus leconteii*	o	o	o			
Least Bittern	*Ixobrychus exilis*		o	o			
Least Flycatcher	*Empidonax minimus*	o	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*	●	●	●	●	●	●
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*			o			
Lesser Scaup	*Aythya affinis*	o	o	o			o
Lesser Yellowlegs	*Tringa flavipes*	o	o	o			o
Lewis's Woodpecker	*Melanerpes lewis*		o	o		o	
Lincoln's Sparrow	*Melospiza lincolnii*	o	o	o	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	●			o
MacGillivray's Warbler	*Oporornis tolmiei*	o	o	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		o	o
McCown's Longspur	*Rhynchophanes mccownii*	o		o		o	

● = species detected in 2012 survey

o = species not detected in 2012 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
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
Mourning Dove	*Zenaida macroura*	●	●	●	●	●	●
Mourning Warbler	*Oporornis philadelphia*		o				
Nashville Warbler	*Oreothlypis ruficapilla*	o	o	o		o	o
Neotropic Cormorant	*Phalacrocorax brasilianus*	o	o	o			
Northern Beardless-Tyrannulet	*Camptostoma imberbe*			o			
Northern Bobwhite	*Colinus virginianus*	●		●		o	
Northern Cardinal	*Cardinalis cardinalis*	●	●	●	●	o	
Northern Flicker	*Colaptes auratus*	o	o	o	o	o	o
Northern Goshawk	*Accipiter gentilis*		o	o		o	
Northern Harrier	*Circus cyaneus*	●	●	o	o	o	o
Northern Mockingbird	*Mimus polyglottos*	●	●	●	●	●	●
Northern Parula	*Parula americana*		●	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
Northern Shrike	Lanius excubitor					o	
Northern Waterthrush	*Parkesia noveboracensis*		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	o	o	o	o
Orchard Oriole	*Icterus spurius*	●	o	●	o	●	o
Osprey	*Pandion haliaetus*	●	o	o		o	
Ovenbird	*Seiurus aurocapilla*		o	o			o
Pacific Loon	*Gavia pacifica*	o					

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Pacific-slope Flycatcher	*Empidonax difficilis*					o	
Painted Bunting	*Passerina ciris*	●	●	●	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
Phainopepla	*Phainopepla nitens*		●	o	●	o	o
Philadelphia Vireo	*Vireo philadelphicus*		o	o			
Pied-billed Grebe	*Podilymbus podiceps*	o	o	o			o
Pine Grosbeak	*Pinicola enucleator*					o	
Pine Siskin	*Spinus pinus*		o	o	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
Prairie Falcon	*Falco mexicanus*		o	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	o
Pygmy Nuthatch	*Sitta pygmaea*		o	o		o	
Pyrrhuloxia	*Cardinalis sinuatus*	●	●	●	●	●	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	o
Reddish Egret	*Egretta rufescens*	o	o				
Red-eyed Vireo	*Vireo olivaceus*		o	o		o	o
Red-faced Warbler	*Cardellina rubrifrons*		o	o		o	

● = species detected in 2012 survey

o = species not detected in 2012 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Redhead	*Aythya americana*	o	o	o			o
Red-headed Woodpecker	*Melanerpes erythrocephalus*		o	o			o
Red-naped Sapsucker	*Sphyrapicus nuchalis*		o	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
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	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	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
Savannah Sparrow	*Passerculus sandwichensis*	o	o	o	o	o	o

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Say's Phoebe	*Sayornis saya*	●	●	●	●	●	●
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*	●	●	●	●	●	●
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			o
Song Sparrow	*Melospiza melodia*	o	o	o	o	o	o
Sora	*Porzana carolina*	o	o	o			o
Spotted Owl[1]	*Strix occidentalis*			o[1]		o[1]	
Spotted Sandpiper	*Actitis macularius*	●	●	o		o	o
Spotted Towhee	*Pipilo maculatus*	●	●	●	●	●	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	●	●
Swainson's Thrush	*Catharus ustulatus*	o	o	o		o	o

● = species detected in 2012 survey

o = species not detected in 2012 survey but previously documented in the park, including species that migrate through or winter in the park

[1] = 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 through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Swainson's Warbler	*Limnothlypis swainsonii*		o	o			
Swallow-tailed Kite	*Elanoides forficatus*		o				
Swamp Sparrow	*Melospiza georgiana*	o	o	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	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*	●	●	o	●	●	●
Vermilion Flycatcher	*Pyrocephalus rubinus*	●	●	●	o	o	o
Vesper Sparrow	*Pooecetes gramineus*	●	o	o	o	●	o
Violet-crowned Hummingbird	*Amazilia violiceps*	o	o				
Violet-green Swallow	*Tachycineta thalassina*		o	o	o	o	o
Virginia Rail	*Rallus limicola*	o	o	o			o
Virginia's Warbler	*Oreothlypis virginiae*		o	o	●	o	o
Warbling Vireo	*Vireo gilvus*		●	●		●	●
Western Bluebird	*Sialia mexicana*		o	o	o	o	o
Western Grebe	*Aechmophorus occidentalis*	o		o			o
Western Kingbird	*Tyrannus verticalis*	●	o	●	o	●	●
Western Meadowlark	*Sturnella neglecta*	o	●	o	o	o	o
Western Sandpiper	*Calidris mauri*	o	o	o			o
Western Screech-Owl	*Megascops kennicottii*	o	o	o		o	o
Western Scrub-Jay	*Aphelocoma californica*		o	o	●	o	o

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Western Tanager	*Piranga ludoviciana*	o	o	●	●	●	o
Western Wood-Pewee	*Contopus sordidulus*		o	●	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	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
White-throated Swift	*Aeronautes saxatalis*	o	●	●	o	●	o
White-tipped Dove	*Leptotila verreauxi*		o				
White-winged Dove	*Zenaida asiatica*	●	●	●	●	●	●
Wild Turkey	*Meleagris gallopavo*	o	o	●		o	
Willet	*Tringa semipalmata*	o	o	o			o
Williamson's Sapsucker	*Sphyrapicus thyroideus*		o	o		o	o
Willow Flycatcher	*Empidonax traillii*		o	●[2]		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	
Yellow Rail	*Coturnicops noveboracensis*		o				

● = species detected in 2012 survey

o = species not detected in 2012 survey but previously documented in the park, including species that migrate through or winter in the park

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

Table 3-4. Parks where each species was observed, April through June 2012, cont.

Common name	Scientific name	AMIS	BIBE	CAVE	FODA	GUMO	WHSA
Yellow Warbler	*Dendroica petechia*	●	●	●	o	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	
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	o
Yellow-rumped Warbler	*Dendroica coronata*	●	●	●	●	●	●
Yellow-throated Vireo	*Vireo flavifrons*	o	o	o		o	
Yellow-throated Warbler	*Dendroica dominica*		o	o			o
Zone-tailed Hawk	*Buteo albonotatus*	o	o	o	o	o	

● = species detected in 2012 survey

o = species not detected in 2012 survey but previously documented in the park, including species that migrate through or winter in the park

3.1 Amistad National Recreation Area

3.1.1 2012 sampling

During April and May of 2012, we sampled 19 transects/grids at Amistad NRA (Figure 3.1.1-1, -2). We conducted 92 point counts on nine grids in grassland habitat and 65 point counts on ten transects in riparian habitat (Table 3.1.1), for a total of 157 point counts at the park. Each point was surveyed once in 2012.

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

3.1.2 Results and discussion

During 2012, 2,286 birds of 98 species were counted at Amistad NRA (Table 3.1.2). Although not observed in 2010 and 2011 surveys, Cave Swallow had the highest number of individuals counted in 2012 (9% of the total number of birds counted). The next species counted in the highest numbers were Turkey Vulture (8%), Northern Mockingbird (7%), Brown-headed Cowbird (5%), Bell's Vireo (4%), and Black-throated Sparrow (4%).

Amistad NRA encompasses three different rivers but very little dry land. Many of the rivers are cut through steep bedrock canyons with upland mesas. Because of this unique geography, many of the upland surveys were conducted very close to water, and the riparian surveys were close to upland habitat. For this reason, there was some overlap in the bird communities.

The 72 species observed at grassland grids represents the highest bird diversity of any grassland habitat surveyed in the CHDN. Species observed in the highest numbers included Northern Mockingbird, Brown-headed Cowbird, Black-throated Sparrow, Turkey Vulture, Brewer's Blackbird, Northern Cardinal, and Pained Bunting. There were 75 species recorded in riparian habitat, the highest bird diversity of any riparian habitat surveyed in the CHDN. Species observed in the highest numbers included Cave Swallow, Turkey Vulture, Bell's Vireo, Yellow-breasted Chat, Canyon Wren, Painted Bunting, and Red-winged Blackbird. Some species, such as Bell's Vireo, Turkey Vulture, and Painted Bunting, were counted in relatively high numbers in both grassland and riparian habitats.

New species for Amistad NRA in 2012 included a migrant female Bobolink, one European Starling, and several migrant Plumbeous Vireos. Species infrequently observed included two Varied Buntings at a riparian transect, and a Scissor-tailed Flycatcher and one Peregrine Falcon in grassland habitat.

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Migrant Plumbeous Vireo (*Vireo plumbeus*) were recorded at Amistad NRA for the first time in 2012.

Table 3.1.1. Habitat class, number of points, and sampling dates for each transect or grid at Amistad NRA, 2012

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-AM2	Grassland	14	1	4/22/2012
CH-AM3	Grassland	11	1	4/21/2012
CH-AM4	Grassland	13	1	4/23/2012
CH-AM5	Grassland	9	1	4/25/2012
CH-AM6	Grassland	6	1	4/26/2012
CH-AM7	Grassland	8	1	4/26/2012
CH-AM8	Grassland	9	1	5/12/2012
CH-AM9	Grassland	10	1	5/6/2012
CH-AM10	Grassland	12	1	5/1/2012
CH-AMRI1	Riparian	7	1	4/24/2012
CH-AMRI2	Riparian	9	1	4/25/2012
CH-AMRI5	Riparian	5	1	4/24/2012
CH-AMRI6	Riparian	6	1	5/7/2012
CH-AMRI7	Riparian	6	1	5/3/2012
CH-AMRI8	Riparian	6	1	5/2/2012
CH-AMRI9	Riparian	7	1	4/26/2012
CH-AMRI12	Riparian	5	1	5/4/2012
CH-AMRI13	Riparian	8	1	5/11/2012
CH-AMRI14	Riparian	6	1	4/30/2012

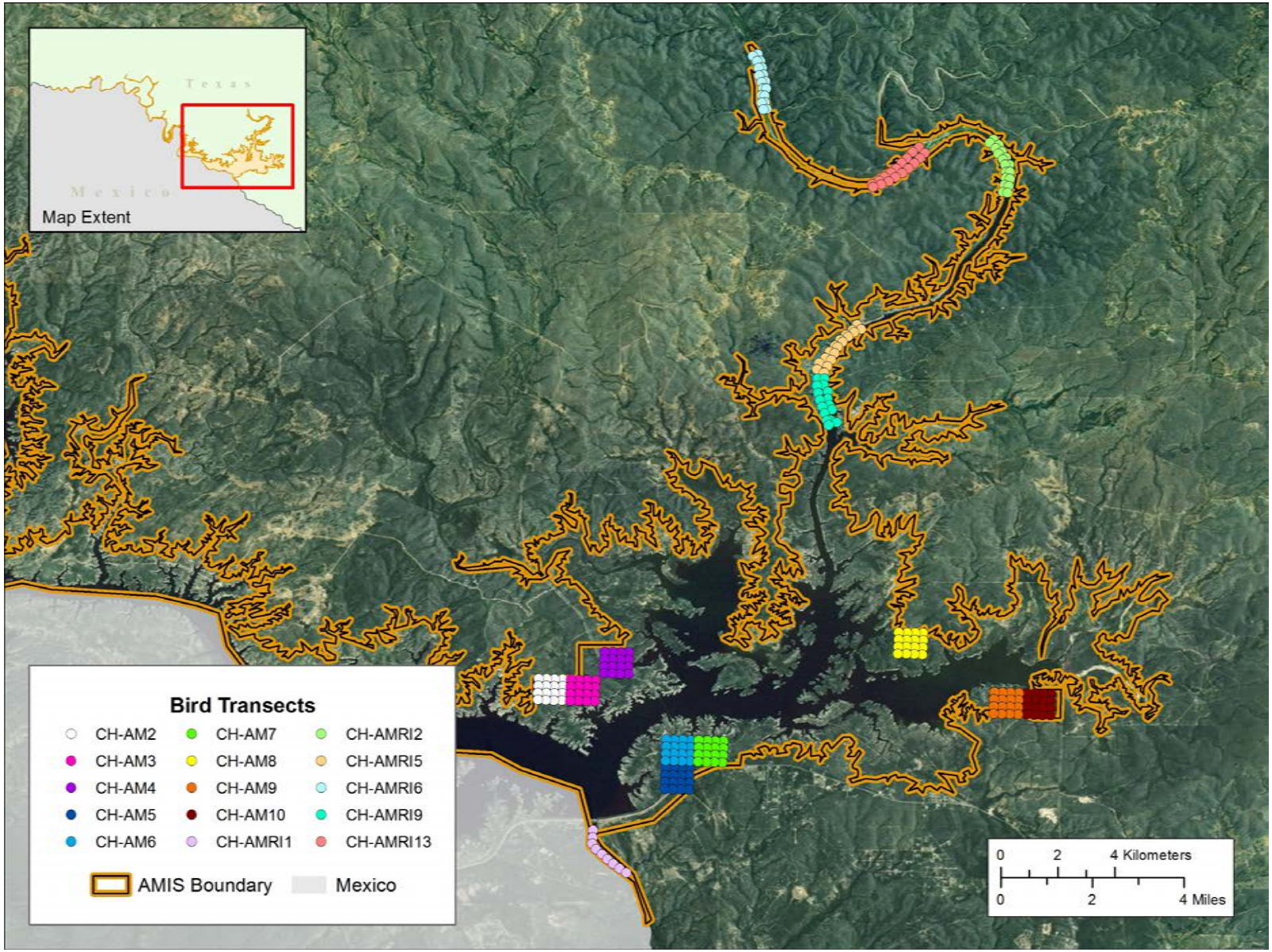

Figure 3.1.1-1. Point locations targeted for annual sampling at Amistad NRA, East.

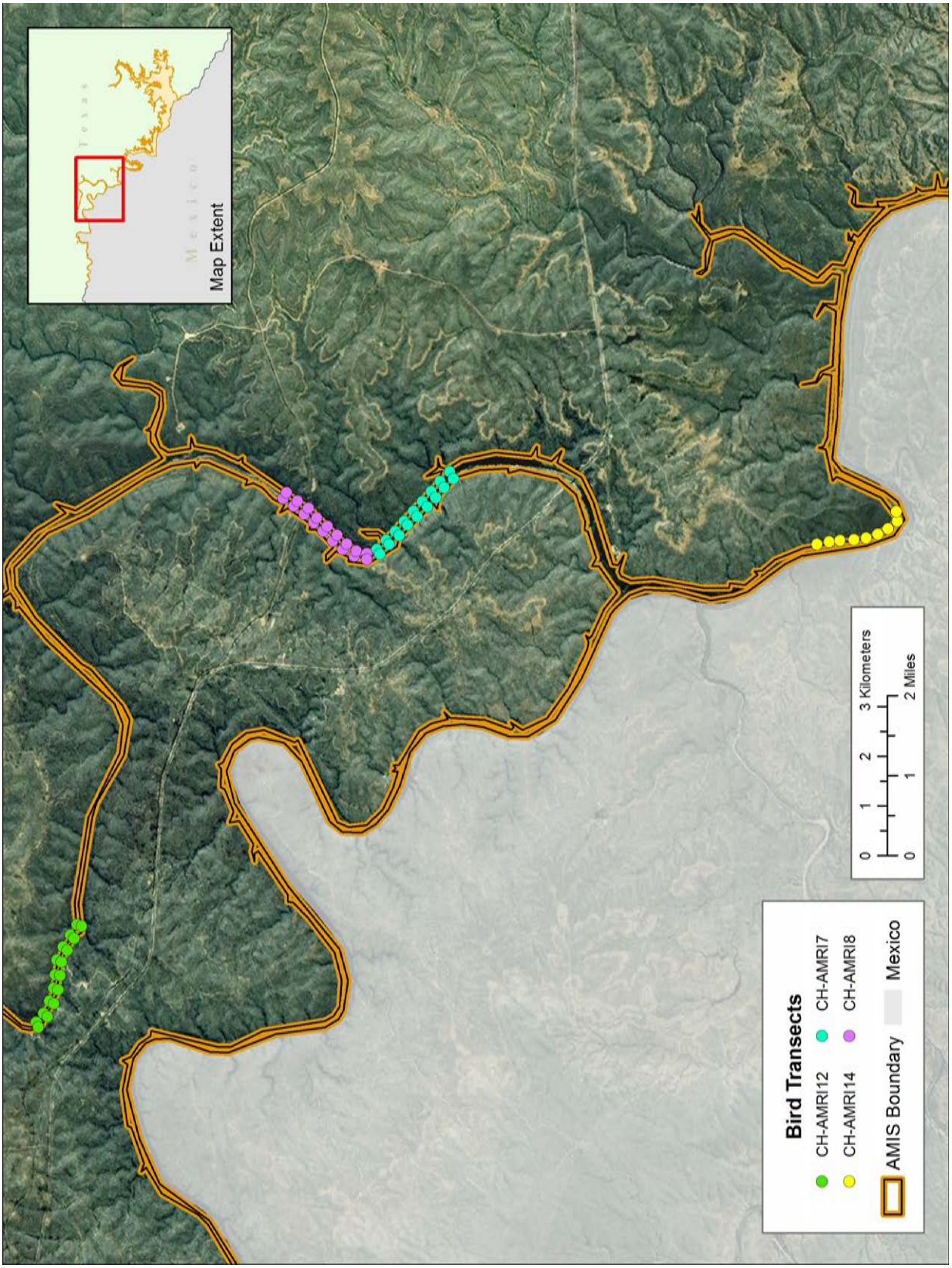

Figure 3.1.1-2. Point locations targeted for annual sampling at Amistad NRA, West.

Table 3.1.2 Number of birds counted of each species in each habitat class, Amistad NRA, 2012

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Cave Swallow	---	205	205	9
Turkey Vulture	85	92	177	8
Northern Mockingbird	143	25	168	7
Brown-headed Cowbird	110	11	121	5
Bell's Vireo	53	43	96	4
Black-throated Sparrow	93	2	95	4
Painted Bunting	59	29	88	4
Brewer's Blackbird	77	10	87	4
Northern Cardinal	62	16	78	3
Cactus Wren	52	13	65	3
Cassin's Sparrow	54	10	64	3
Rufous-crowned Sparrow	44	15	59	3
Yellow-breasted Chat	18	38	56	2
Clay-colored Sparrow	35	14	49	2
Cliff Swallow	44	5	49	2
Mourning Dove	31	18	49	2
Red-winged Blackbird	18	29	47	2
Ash-throated Flycatcher	25	16	41	2
White-winged Dove	18	17	35	2
Bewick's Wren	19	15	34	1
Canyon Wren	---	30	30	1
House Finch	17	13	30	1
Northern Rough-winged Swallow	---	27	27	1
Blue Grosbeak	17	9	26	1
Scaled Quail	24	---	24	1
Black Vulture	6	16	22	1
Pyrrhuloxia	17	4	21	1
Great-tailed Grackle	12	8	20	1
Canyon Towhee	18	---	18	1
Northern Bobwhite	12	5	17	1
Chipping Sparrow	10	6	16	1
Mallard	---	15	15	1
Eurasian Collared-Dove	7	7	14	1
Great Blue Heron	2	12	14	1
Vermilion Flycatcher	4	10	14	1
Verdin	11	2	13	1
Killdeer	2	10	12	1
Rock Wren	2	10	12	1
Black-tailed Gnatcatcher	9	2	11	0
Common Yellowthroat	1	10	11	0
Golden-fronted Woodpecker	5	6	11	0

Table 3.1.2. Number of birds counted of each species in each habitat class, Amistad NRA, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Orchard Oriole	6	5	11	0
House Sparrow	4	6	10	0
Lark Sparrow	10	---	10	0
Spotted Sandpiper	---	8	8	0
Wilson's Warbler	4	4	8	0
Curve-billed Thrasher	6	1	7	0
White-crowned Sparrow	6	1	7	0
American Coot	5	1	6	0
Chihuahuan Raven	4	2	6	0
Hooded Oriole	2	4	6	0
Summer Tanager	---	6	6	0
Barn Swallow	5	---	5	0
Lesser Goldfinch	---	5	5	0
Lesser Nighthawk	5	---	5	0
Plumbeous Vireo	**---**	**4**	**4**	**0**
Blue-gray Gnatcatcher	4	---	4	0
Blue-winged Teal	---	4	4	0
Carolina Wren	---	4	4	0
Double-crested Cormorant	1	3	4	0
Ladder-backed Woodpecker	2	1	3	0
Olive Sparrow	---	3	3	0
Vesper Sparrow	3	---	3	0
Brown-crested Flycatcher	1	1	2	0
Canvasback	2	---	2	0
Caspian Tern	---	2	2	0
Common Ground-Dove	1	1	2	0
Common Loon	---	2	2	0
Great Kiskadee	1	1	2	0
Scott's Oriole	---	2	2	0
Snowy Egret	1	1	2	0
Varied Bunting	---	2	2	0
Yellow Warbler	---	2	2	0
American Kestrel	---	1	1	0
Black-chinned Hummingbird	---	1	1	0
Black-headed Grosbeak	---	1	1	0
Bobolink	**1**	**---**	**1**	**0**
Brewer's Sparrow	1	---	1	0
Bullock's Oriole	1	---	1	0
Common Raven	---	1	1	0
Crested Caracara	1	---	1	0

Table 3.1.2. Number of birds counted of each species in each habitat class, Amistad NRA, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Eastern Phoebe	1	---	1	0
European Starling	**1**	**---**	**1**	**0**
Great Egret	---	1	1	0
Great Horned Owl	---	1	1	0
Greater Roadrunner	1	---	1	0
Green-tailed Towhee	1	---	1	0
Harris's Hawk	1	---	1	0
Northern Harrier	1	---	1	0
Osprey	---	1	1	0
Peregrine Falcon	1	---	1	0
Red-tailed Hawk	---	1	1	0
Say's Phoebe	---	1	1	0
Scissor-tailed Flycatcher	1	---	1	0
Spotted Towhee	1	---	1	0
Western Kingbird	1	---	1	0
White-eyed Vireo	---	1	1	0
Yellow-rumped Warbler	1	---	1	0
Unidentified Bird	*19*	*12*	*31*	*1*
Unidentified Swallow	*11*	*10*	*21*	*1*
Unidentified Sparrow	*9*	*3*	*12*	*1*
Unidentified Dove	*6*	*---*	*6*	*0*
Unidentified Raptor	*---*	*1*	*1*	*0*
Grand Total	**1,349**	**937**	**2,286**	**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/not using the habitat.

3.2 Big Bend National Park

3.2.1 2012 sampling

During April and May of 2012, we sampled 30 transects/grids at Big Bend NP (Figures 3.2.1-1 to 3.2.1-3). We conducted 245 point counts on 20 grids in grassland habitat and 84 point counts on 10 transects in riparian habitat (Table 3.2.1), for a total of 329 point counts at the park. Each point was surveyed one time in 2012.

3.2.2 Results and discussion

During 2012, 2,682 birds of 81 species were counted at Big Bend NP (Table 3.2.2). Black-throated Sparrow had the highest number of individuals counted (15% of the total number of birds counted). It was observed primarily in grassland habitat. Species observed in the next highest numbers were Cactus Wren (7%), Bell's Vireo (7%), White-winged Dove (7%), Ash-throated Flycatcher (6%), and Yellow-breasted Chat (5%). No new species were recorded for the park during surveys.

In addition to Black-throated Sparrow, other species observed in relatively high numbers in grassland habitat included Cactus Wren, Ash-throated Flycatcher, Turkey Vulture, Pyrrhuloxia, Northern Mockingbird, and Verdin. Sixty-eight species were observed at riparian transects, the second highest bird diversity of any riparian habitat surveyed in the CHDN. Species observed in the highest numbers in riparian habiatat included White-winged Dove, Bell's Vireo, Yellow-breasted Chat, Northern Cardinal, Cliff Swallow, and Common Yellowthroat. Species infrequently observed included two Gray Hawks (possibly a pair) at one of the riparian transects, and two Peregrine Falcons at a riparian transect.

Two species, Nashville Warbler and Yellow-throated Vireo, were observed in riparian habitat incidental to our surveys. Because they were incidental observations and not new species for the park, they are not included in Table 3.2.2 or in the count of total species for the park or network. However, they are worth noting because the species were not observed at any other parks in the network in 2012.

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Ash-throated Flycatcher (*Myiarchus cinerascens*) was one of the species counted in the highest numbers at Big Bend NP in 2012.

Table 3.2.1. Habitat class, number of points, and sampling dates for each transect or grid at Big Bend NP, 2012

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-BB1	Grassland	11	1	4/22/2012
CH-BB2	Grassland	9	1	4/8/2012
CH-BB3	Grassland	9	1	4/8/2012
CH-BB4	Grassland	10	1	4/7/2012
CH-BB5	Grassland	12	1	4/16/2012
CH-BB6	Grassland	16	1	4/9/2012
CH-BB7	Grassland	12	1	4/8/2012
CH-BB8	Grassland	15	1	4/16/2012
CH-BB9	Grassland	10	1	4/18/2012
CH-BB10	Grassland	13	1	4/11/2012
CH-BB11	Grassland	14	1	4/7/2012
CH-BB12	Grassland	16	1	4/17/2012
CH-BB13	Grassland	10	1	4/10/2012
CH-BB14	Grassland	16	1	4/16/2012
CH-BB15	Grassland	14	1	4/9/2012
CH-BB16	Grassland	11	1	4/17/2012
CH-BB17	Grassland	14	1	4/9/2012
CH-BB18	Grassland	11	1	4/19/2012
CH-BB19	Grassland	11	1	4/18/2012
CH-BB20	Grassland	11	1	4/10/2012
CH-BIRI1	Riparian	9	1	4/19/2012
CH-BIRI2	Riparian	8	1	4/18/2012
CH-BIRI3	Riparian	7	1	5/1/2012
CH-BIRI5	Riparian	9	1	4/30/2012
CH-BIRI6	Riparian	9	1	4/21/2012
CH-BIRI8	Riparian	9	1	5/6/2012
CH-BIRI9	Riparian	6	1	4/22/2012
CH-BIRI14	Riparian	8	1	4/21/2012
CH-BIRI16	Riparian	9	1	4/17/2012
CH-BIRI17	Riparian	10	1	4/19/2012

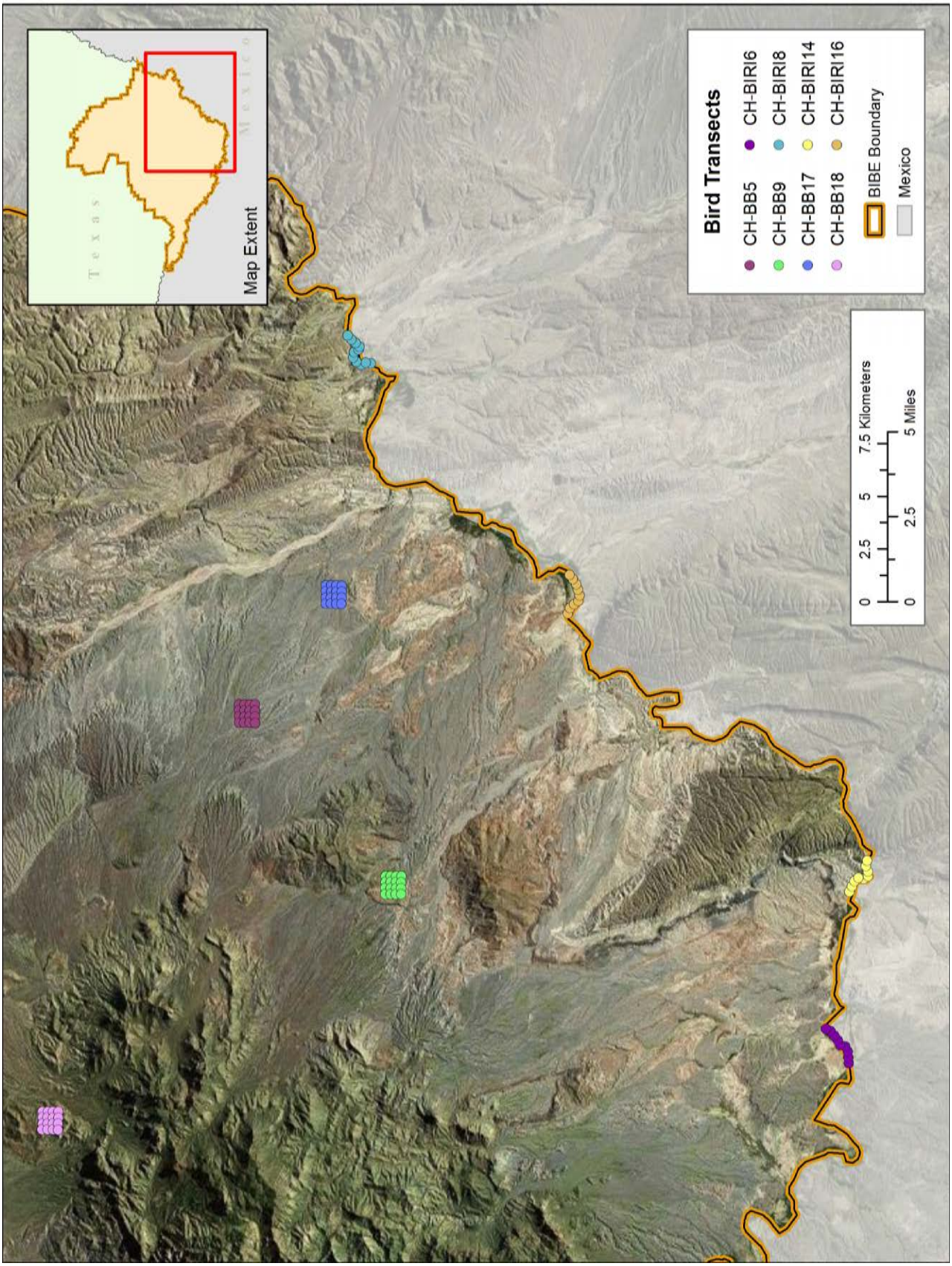

Figure 3.2.1-1. Point locations targeted for annual sampling at Big Bend NP, East.

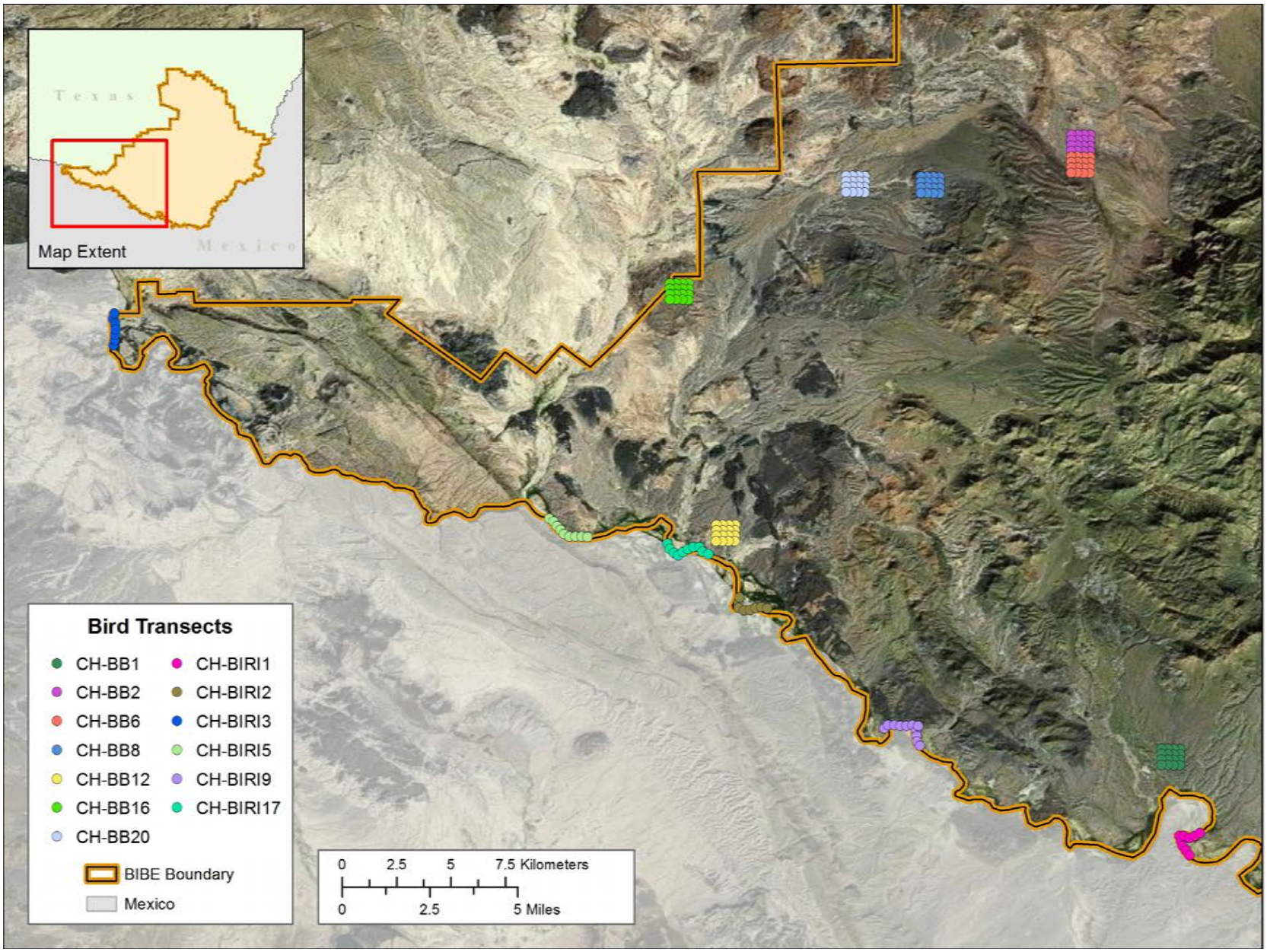

Figure 3.2.1-2. Point locations targeted for annual sampling at Big Bend NP, West.

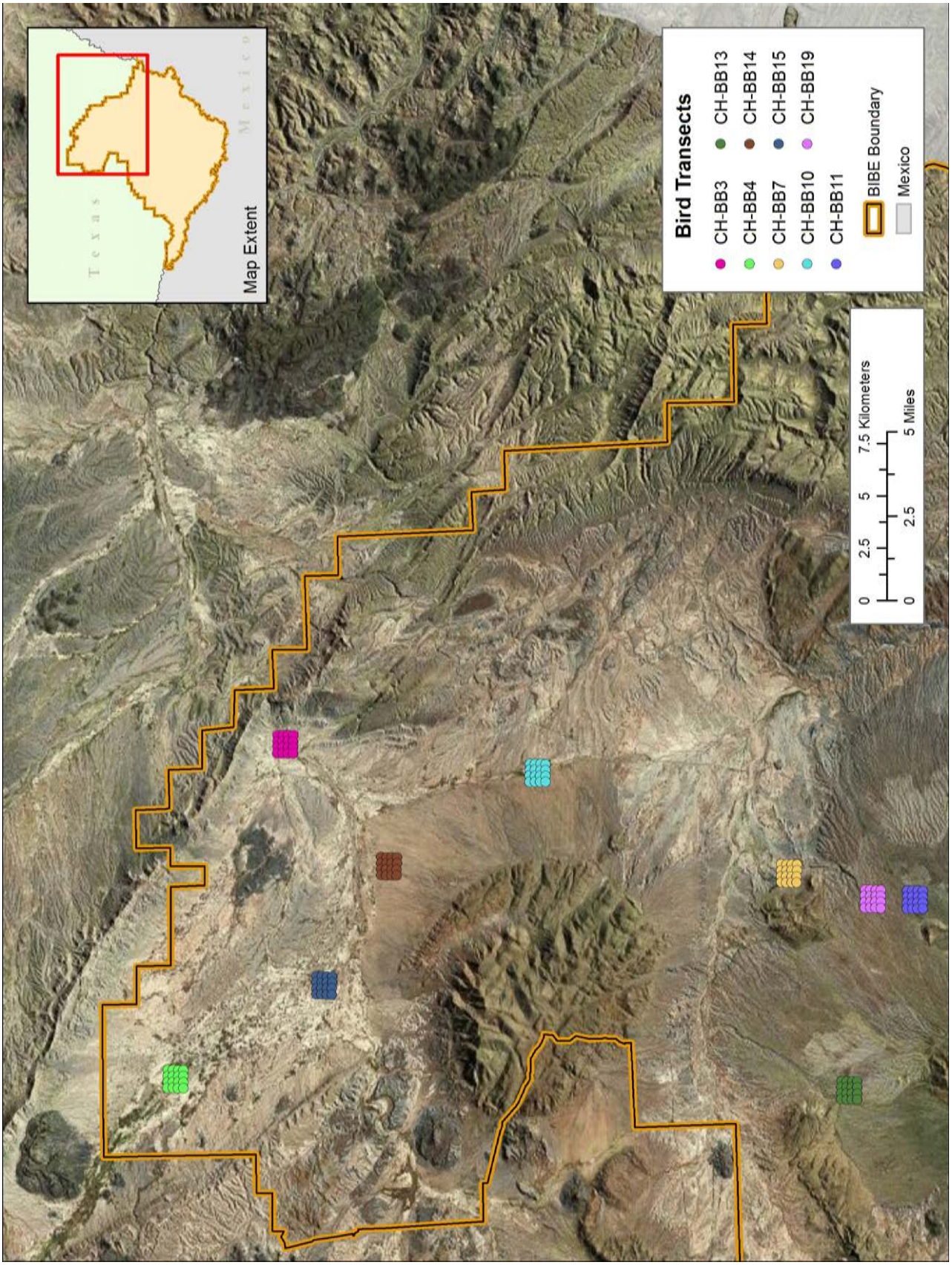

Figure 3.2.1-3. Point locations targeted for annual sampling at Big Bend NP, North.

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2012

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	392	14	406	15
Cactus Wren	198	---	198	7
Bell's Vireo	50	142	192	7
White-winged Dove	33	145	178	7
Ash-throated Flycatcher	138	32	170	6
Yellow-breasted Chat	3	131	134	5
Turkey Vulture	100	13	113	4
Northern Cardinal	8	97	105	4
Pyrrhuloxia	85	5	90	3
Northern Mockingbird	79	10	89	3
Verdin	63	16	79	3
Mourning Dove	46	25	71	3
Scott's Oriole	49	---	49	2
Cliff Swallow	1	44	45	2
Common Yellowthroat	---	44	44	2
Rock Wren	32	11	43	2
House Finch	31	8	39	1
Black-tailed Gnatcatcher	35	1	36	1
Summer Tanager	---	34	34	1
Rufous-crowned Sparrow	30	1	31	1
Brewer's Sparrow	26	3	29	1
Chihuahuan Raven	26	1	27	1
Eurasian Collared-Dove	3	24	27	1
Crissal Thrasher	17	3	20	1
Green-tailed Towhee	15	3	18	1
Painted Bunting	---	17	17	1
Blue-gray Gnatcatcher	16	1	17	1
Ladder-backed Woodpecker	1	14	15	1
Common Raven	14	---	14	1
Greater Roadrunner	9	4	13	0
Scaled Quail	12	---	12	0
Mallard	---	11	11	0
Bewick's Wren	10	---	10	0
Curve-billed Thrasher	8	2	10	0
Loggerhead Shrike	10	---	10	0
Wilson's Warbler	---	10	10	0
Brown-headed Cowbird	---	9	9	0
Canyon Towhee	9	---	9	0
Gambel's Quail	---	9	9	0
Lesser Nighthawk	4	4	8	0
Blue Grosbeak	---	7	7	0

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Clay-colored Sparrow	---	7	7	0
House Wren	7	---	7	0
Northern Shoveler	---	6	6	0
Canyon Wren	2	3	5	0
Great Horned Owl	1	4	5	0
Hepatic Tanager	---	5	5	0
Brewer's Blackbird	---	4	4	0
Carolina Wren	---	4	4	0
Common Ground-Dove	---	4	4	0
Say's Phoebe	1	3	4	0
Yellow-rumped Warbler	---	4	4	0
Bank Swallow	---	3	3	0
Black Vulture	---	3	3	0
Black-chinned Hummingbird	---	3	3	0
Cassin's Sparrow	3	---	3	0
Vermilion Flycatcher	---	3	3	0
Belted Kingfisher	---	2	2	0
Black Phoebe	---	2	2	0
Black-chinned Sparrow	2	---	2	0
Blue-winged Teal	---	2	2	0
Gray Flycatcher	---	2	2	0
Gray Hawk	---	2	2	0
Killdeer	---	2	2	0
Peregrine Falcon	---	2	2	0
Phainopepla	1	1	2	0
American Coot	---	1	1	0
Barn Swallow	---	1	1	0
Common Nighthawk	---	1	1	0
Great Egret	---	1	1	0
Inca Dove	---	1	1	0
Northern Harrier	1	---	1	0
Northern Parula	---	1	1	0
Northern Rough-winged Swallow	---	1	1	0
Spotted Sandpiper	---	1	1	0
Spotted Towhee	1	---	1	0
Warbling Vireo	---	1	1	0
Western Meadowlark	1	---	1	0
White-throated Sparrow	---	1	1	0
White-throated Swift	---	1	1	0
Yellow Warbler	---	1	1	0
Unidentified Bird	*27*	*11*	*38*	*1*

Table 3.2.2. Number of birds counted of each species in each habitat class, Big Bend NP, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Unidentified Sparrow	*26*	*8*	*34*	*1*
Unidentified Blackbird	*---*	*28*	*28*	*1*
Unidentified Thrasher	*17*	*---*	*17*	*1*
Unidentified Dove	*1*	*3*	*4*	*0*
Unidentified Swallow	*---*	*3*	*3*	*0*
Unidentified Hummingbird	*---*	*2*	*2*	*0*
Unidentified Corvid	*1*	*---*	*1*	*0*
Unidentified Flycatcher	*---*	*1*	*1*	*0*
Unidentified Warbler	*---*	*1*	*1*	*0*
Unidentified Woodpecker	*---*	*1*	*1*	*0*
Unidentified Wren	*---*	*1*	*1*	*0*
Total	**1,645**	**1,037**	**2,682**	**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/not using the habitat

3.3 Carlsbad Caverns National Park

3.3.1 2012 sampling

During May of 2012, we sampled nine transects/grids at Carlsbad Caverns NP (Figure 3.3.1). We conducted 91 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 2012, but the riparian transect was visited twice. We conducted a total of 107 point counts at the park.

3.3.2 Results and discussion

During 2012, 1,160 birds of 70 species were counted at Carlsbad Caverns NP (Table 3.3.2). Black-throated Sparrow had the highest number of individuals counted (19% of the total number of birds counted). The next species observed in relatively high numbers were Blue Grosbeak (8%), Scaled Quail (6%), Cave Swallow (5%), Yellow-breasted Chat (5%), and Ash-throated Flycatcher (5%). No new species were recorded for the park during the survey.

Species observed in the highest numbers in riparian habitat included Yellow-breasted Chat, Cassin's Kingbird, White-winged Dove, House Finch, Northern Cardinal, Turkey Vulture, Western Wood-Pee, Summer Tanager, Bell's Vireo, and Common Yellowthroat. Species observed in the highest numbers in grassland habitat included (after Black-throated Sparrow) Blue Grosbeak, Scaled Quail, Cave Swallow, Rufous-crowned Sparrow, Ash-throated Flycatcher, Northern Mockingbird, and Pyrrhuloxia. Infrequently observed birds included Gray Vireo at a grassland grid, at least one singing Yellow-billed Cuckoo at the riparian transect, and one Loggerhead Shrike and a Lark Bunting at a grassland grid.

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Scaled Quail (*Callipepla squamata*) was one of the species observed in the highest numbers in grassland habitat at Carlsbad Caverns NP in 2012.

Table 3.3.1. Habitat class, number of points, and sampling dates for each transect or grid at Carlsbad Caverns NP, 2012

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-CC1	Grassland	12	1	5/21/2012	--
CH-CC2	Grassland	16	1	5/26/2012	--
CH-CC3	Grassland	12	1	5/22/2012	--
CH-CC4	Grassland	13	1	5/22/2012	--
CH-CC5	Grassland	7	1	5/23/2012	--
CH-CC6	Grassland	10	1	5/23/2012	--
CH-CC7	Grassland	11	1	5/25/2012	--
CH-CC8	Grassland	10	1	5/25/2012	--
CH-CCRI	Riparian	8[1]	2	5/21/2012	5/26/2012

[1] 8 points were counted on the transect on each of the two visits in 2012.

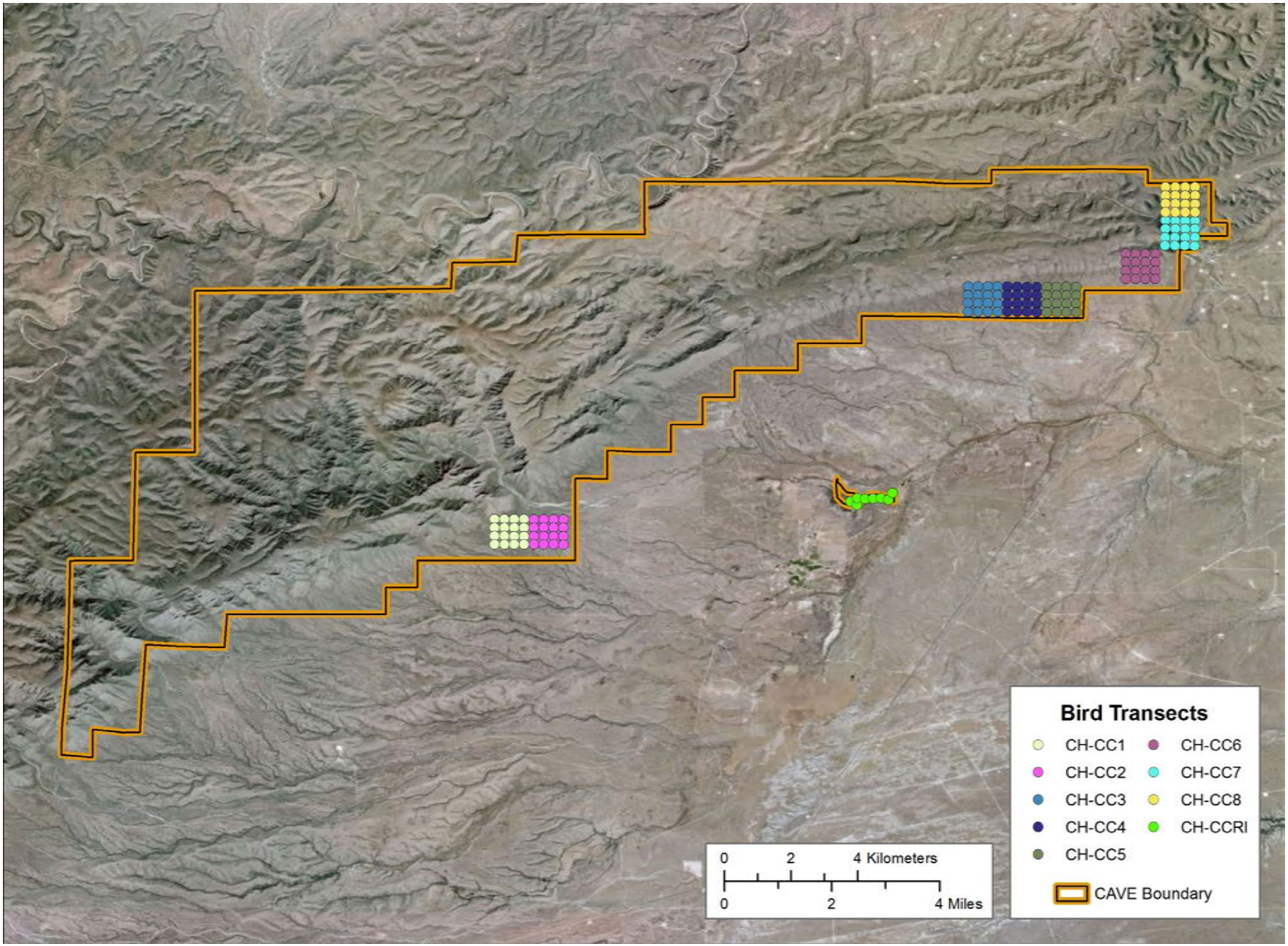

Figure 3.3.1. Point locations targeted for annual sampling at Carlsbad Caverns NP.

Table 3.3.2. Number of birds counted of each species in each habitat class, Carlsbad Caverns NP, 2012

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	218	---	218	19
Blue Grosbeak	87	---	87	8
Scaled Quail	67	---	67	6
Cave Swallow	59	---	59	5
Yellow-breasted Chat	---	57	57	5
Ash-throated Flycatcher	46	7	53	5
Rufous-crowned Sparrow	49	---	49	4
Northern Mockingbird	43	2	45	4
Pyrrhuloxia	39	---	39	3
Mourning Dove	34	4	38	3
House Finch	16	21	37	3
Cassin's Kingbird	---	32	32	3
Turkey Vulture	15	16	31	3
White-winged Dove	1	30	31	3
Scott's Oriole	25	---	25	2
Northern Cardinal	4	17	21	2
Canyon Towhee	17	---	17	1
Western Wood-Pewee	1	16	17	1
Brown-headed Cowbird	4	10	14	1
Cactus Wren	12	---	12	1
Canyon Wren	12	---	12	1
Summer Tanager	---	12	12	1
Bell's Vireo	---	11	11	1
Common Yellowthroat	---	11	11	1
Cassin's Sparrow	10	---	10	1
Rock Wren	10	---	10	1
Wild Turkey	---	10	10	1
House Wren	9	---	9	1
Vermilion Flycatcher	---	9	9	1
Ladder-backed Woodpecker	4	4	8	1
Western Kingbird	4	4	8	1
Curve-billed Thrasher	6	---	6	1
Indigo Bunting	1	5	6	1
Orchard Oriole	---	6	6	1
Painted Bunting	---	5	5	0
American Goldfinch	---	4	4	0
Eurasian Collared-Dove	2	2	4	0
Lesser Goldfinch	1	3	4	0
Lucy's Warbler	---	4	4	0
Northern Bobwhite	4	---	4	0

Table 3.3.2. Number of birds counted of each species in each habitat class, Carlsbad Caverns NP, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Willow Flycatcher	---	4	4	0
Say's Phoebe	3	---	3	0
Barn Swallow	1	1	2	0
Black-chinned Hummingbird	---	2	2	0
Black-chinned Sparrow	2	---	2	0
Brewer's Blackbird	---	2	2	0
Brewer's Sparrow	2	---	2	0
Great Horned Owl	---	2	2	0
Lesser Nighthawk	1	1	2	0
Western Tanager	---	2	2	0
Yellow Warbler	---	2	2	0
Yellow-billed Cuckoo	---	2	2	0
Broad-tailed Hummingbird	---	1	1	0
Brown Thrasher	---	1	1	0
Common Raven	1	---	1	0
Cooper's Hawk	1	---	1	0
Dusky Flycatcher	---	1	1	0
Gray Vireo	1	---	1	0
Great-tailed Grackle	1	---	1	0
Killdeer	1	---	1	0
Lark Bunting	1	---	1	0
Lark Sparrow	---	1	1	0
Loggerhead Shrike	1	---	1	0
Plumbeous Vireo	---	1	1	0
Red-winged Blackbird	---	1	1	0
Spotted Towhee	1	---	1	0
Warbling Vireo	---	1	1	0
White-throated Swift	1	---	1	0
Wilson's Warbler	---	1	1	0
Yellow-rumped Warbler	1	---	1	0
Unidentified Bird	*4*	*5*	*9*	*1*
Unidentified Hummingbird	*1*	*2*	*3*	*0*
Unidentified Woodpecker	---	*1*	*1*	*0*
Total	**824**	**336**	**1160**	**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/not using the habitat.

3.4 Fort Davis National Historic Site

3.4.1 2012 sampling

During May of 2012, we sampled one grid at Fort Davis NHS (Figure 3.4.1) twice; we conducted a total of 51 point counts in the park (Table 3.4.1).

3.4.2 Results and discussion

During 2012, 636 birds of 53 species were counted at Fort Davis NHS (Table 3.4.2). Cassin's Kingbird had the highest number of individuals counted (9% of the total number of birds counted). The next species observed in the highest numbers were House Sparrow (7%), Black-throated Sparrow (6%), White-winged Dove (6%), Canyon Wren (6%), Rufous-crowned Sparrow (5%), Turkey Vulture (5%), and Ash-throated Flycatcher (5%).

Several Black-chinned Hummingbirds and one Broad-tailed Hummingbird were observed. Several species were observed only once or twice, including Acorn Woodpecker, Cassin's Sparrow, Chihuahuan Raven, Great-tailed Grackle, Green-tailed Towhee, Ladder-backed Woodpecker, Lesser Nighthawk, Phainopepla, Say's Phoebe, Virginia's Warbler, Western Scrub-Jay, Western Tanager, and Wilson's Warbler. No new species for the park were recorded in 2012.

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Two Acorn Woodpeckers (*Melanerpes formicivorus*) were counted at Fort Davis NHS in 2012.

Table 3.4.1. Habitat class, number of points, and sampling dates for the grid at Fort Davis NHS, 2012

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-FODA	Grassland	26[1]	2	5/2 to 5/3/2012	5/7 to 5/9/2012

[1] Twenty-five points were sampled on the first visit (1 point not sampled due to logistical constraints), and 26 points were sampled on the second visit.

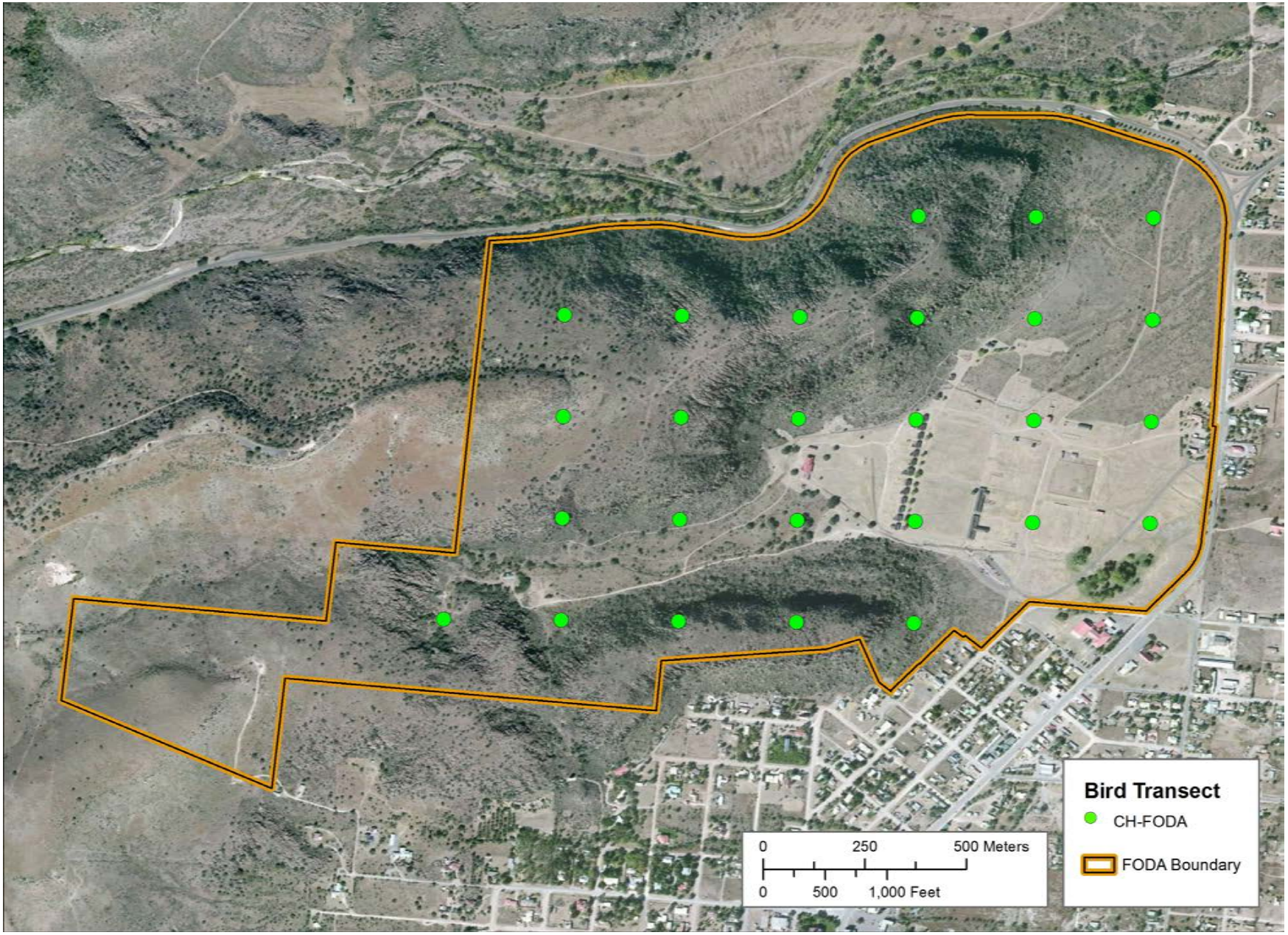

Figure 3.4.1. Point locations targeted for annual sampling at Fort Davis NHS.

Table 3.4.2. Number of birds counted of each species in each habitat class, Fort Davis NHS, 2012

Species	# of birds counted	
	Total (grassland)	% of total
Cassin's Kingbird	57	9
House Sparrow	46	7
Black-throated Sparrow	38	6
White-winged Dove	37	6
Canyon Wren	36	6
Rufous-crowned Sparrow	33	5
Turkey Vulture	32	5
Ash-throated Flycatcher	30	5
European Starling	27	4
Blue Grosbeak	19	3
Lark Sparrow	19	3
Barn Swallow	18	3
Canyon Towhee	16	3
Mourning Dove	16	3
House Finch	14	2
Rock Wren	14	2
Cactus Wren	13	2
Eurasian Collared-Dove	13	2
Bewick's Wren	11	2
Black-crested Titmouse	10	2
Cliff Swallow	10	2
Common Raven	10	2
Northern Cardinal	10	2
Red-tailed Hawk	9	1
Verdin	8	1
Brewer's Sparrow	7	1
Black-chinned Hummingbird	6	1
Bushtit	6	1
Scott's Oriole	6	1
Summer Tanager	6	1
Yellow-rumped Warbler	5	1
Brown-headed Cowbird	4	1
Chipping Sparrow	4	1
Gray Flycatcher	4	1
Northern Mockingbird	4	1
Spotted Towhee	4	1
Blue-gray Gnatcatcher	3	0
MacGillivray's Warbler	3	0
Pyrrhuloxia	3	0
Acorn Woodpecker	2	0
Cassin's Sparrow	2	0
Green-tailed Towhee	2	0
Ladder-backed Woodpecker	2	0
Virginia's Warbler	2	0
Western Tanager	2	0
Broad-tailed Hummingbird	1	0
Chihuahuan Raven	1	0
Great-tailed Grackle	1	0
Lesser Nighthawk	1	0
Phainopepla	1	0
Say's Phoebe	1	0
Western Scrub-Jay	1	0
Wilson's Warbler	1	0
Unidentified Hummingbird	*2*	*0*
Unidentified Bird	*1*	*0*
Unidentified Kingbird	*1*	*0*
Unidentified Sparrow	*1*	*0*
Total	**636**	**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/not using the habitat.

3.5 Guadalupe Mountains National Park

3.5.1 2012 sampling

During May 2012, we sampled a total of 11 transects/grids at Guadalupe Mountains NP (Figure 3.5.1). We conducted 126 point counts on ten grids in grassland habitat and 26 point counts on one transect in riparian habitat (Table 3.5.1); we conducted a total of 152 point counts at the park in 2012. The grassland grids were surveyed once, while the riparian transect was surveyed twice.

3.5.2 Results and discussion

During 2012, 1,293 birds of 68 species were counted at Guadalupe Mountains NP (Table 3.5.2). Black-throated Sparrow had the highest number of individuals counted (20% of the total number of birds counted). Other species counted in relatively high numbers included Northern Mockingbird (11%), Ash-throated Flycatcher (7%), Mourning Dove (4%), Scott's Oriole (4%), Rufous-crowned Sparrow (4%), and Blue Grosbeak (3%). Two new species were recorded at the park in 2012: Eastern Phoebe (a migrant) and Orchard Oriole (one female), both in grassland habitat.

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Black-throated Sparrow (*Amphispiza bilineata*) had the highest number of individuals counted at Guadalupe Mountains NP in 2012.

Species observed in the highest numbers in grassland habitat included Black-throated Sparrow, Northern Mockingbird, Ash-throated Flycatcher, Mourning Dove, Scott's Oriole, Blue Grosbeak, Cactus Wren, and Pyrrhuloxia. Species observed in the highest numbers in riparian habitat included Plumbeous Vireo, Black-chinned Sparrow, Black-headed Grosbeak, Bewick's Wren, Spotted Towhee, Rufous-crowned Sparrow, and Warbling Vireo. Infrequently observed species included several Black-chinned Sparrows, Gray Vireo at one grassland grid, and several Loggerhead Shrikes at grassland grids.

Table 3.5.1. Habitat class, number of points, and sampling dates for each transect or grid at Guadalupe Mountains NP, 2012

Transect/Grid	Habitat class	# points	# visits	Visit 1	Visit 2
CH-GM1	Grassland	13	1	5/11/2012	--
CH-GM2	Grassland	10	1	5/16/2012	--
CH-GM3	Grassland	16	1	5/12/2012	--
CH-GM4	Grassland	14	1	5/16/2012	--
CH-GM5	Grassland	14	1	5/14/2012	--
CH-GM6	Grassland	12	1	5/15/2012	--
CH-GM7	Grassland	12	1	5/17/2012	--
CH-GM8	Grassland	13	1	5/17/2012	--
CH-GM9	Grassland	9	1	5/14/2012	--
CH-GM10	Grassland	13	1	5/15/2012	--
CH-GMRI	Riparian	14[1]	2	5/10/2012	5/19/2012

[1] 14 points were sampled during the first visit, and 12 points were sampled on the second visit (due to logistical constraints).

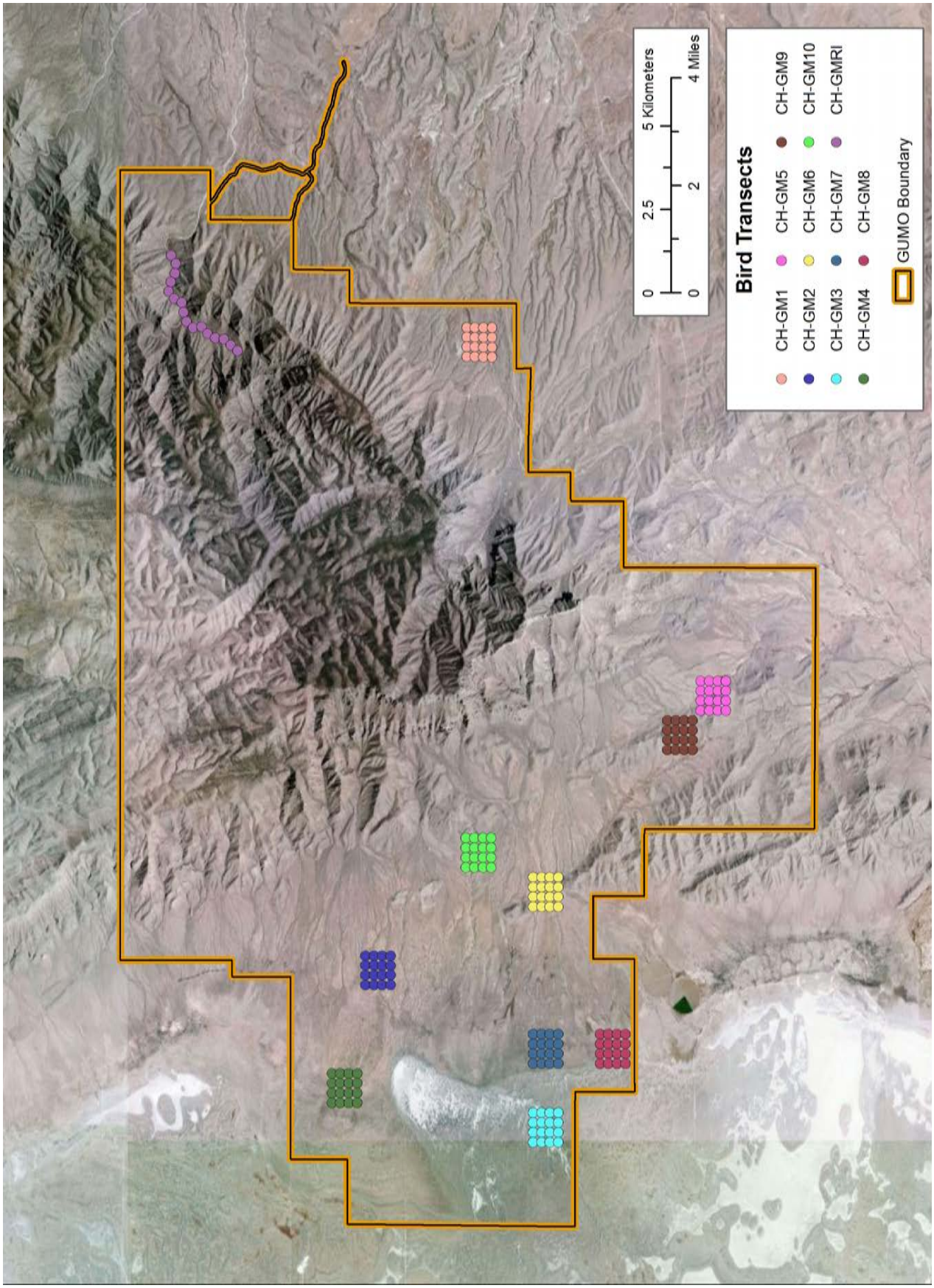

Figure 3.5.1. Point locations targeted for annual sampling at Guadalupe Mountains NP.

Table 3.5.2. Number of birds counted of each species in each habitat class, Guadalupe Mountains NP, 2012

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Black-throated Sparrow	260	---	260	20
Northern Mockingbird	143	---	143	11
Ash-throated Flycatcher	80	14	94	7
Mourning Dove	58	---	58	4
Scott's Oriole	42	8	50	4
Rufous-crowned Sparrow	30	17	47	4
Blue Grosbeak	39	4	43	3
Cactus Wren	38	---	38	3
Pyrrhuloxia	34	---	34	3
Plumbeous Vireo	---	33	33	3
Black-chinned Sparrow	1	28	29	2
Black-headed Grosbeak	1	28	29	2
Western Kingbird	27	---	27	2
Bewick's Wren	7	19	26	2
House Finch	23	3	26	2
Spotted Towhee	1	19	20	2
Lesser Nighthawk	19	---	19	1
Chipping Sparrow	18	---	18	1
Warbling Vireo	---	17	17	1
Brown-headed Cowbird	13	3	16	1
Curve-billed Thrasher	16	---	16	1
Canyon Wren	---	13	13	1
Verdin	12	1	13	1
Say's Phoebe	12	---	12	1
Scaled Quail	12	---	12	1
Western Wood-Pewee	---	11	11	1
Blue-gray Gnatcatcher	2	7	9	1
Brewer's Blackbird	4	5	9	1
Loggerhead Shrike	9	---	9	1
Canyon Towhee	8	---	8	1
Ladder-backed Woodpecker	3	5	8	1
Western Tanager	---	8	8	1
Band-tailed Pigeon	---	7	7	1
Dusky Flycatcher	1	6	7	1
House Wren	---	7	7	1
White-winged Dove	5	2	7	1
Cassin's Kingbird	---	6	6	0
Gray Flycatcher	4	2	6	0
Hepatic Tanager	---	6	6	0
Cliff Swallow	5	---	5	0
Crissal Thrasher	5	---	5	0

Table 3.5.2. Number of birds counted of each species in each habitat class, Guadalupe Mountains NP, 2012, cont.

Species	Habitat class		# of birds counted	
	Grassland	Riparian	Total	% of total
Gray Vireo	5	---	5	0
Green-tailed Towhee	3	2	5	0
Lazuli Bunting	5	---	5	0
Mountain Chickadee	---	5	5	0
White-throated Swift	1	3	4	0
Brewer's Sparrow	3	---	3	0
Rock Wren	3	---	3	0
Summer Tanager	---	3	3	0
Yellow-rumped Warbler	1	2	3	0
Common Yellowthroat	---	2	2	0
Greater Roadrunner	2	---	2	0
Lark Bunting	2	---	2	0
Lesser Goldfinch	2	---	2	0
Turkey Vulture	2	---	2	0
Black Phoebe	1	---	1	0
Black-chinned Hummingbird	1	---	1	0
Black-tailed Gnatcatcher	1	---	1	0
Bushtit	---	1	1	0
Common Raven	1	---	1	0
Eastern Phoebe	**1**	**---**	**1**	**0**
MacGillivray's Warbler	1	---	1	0
Northern Waterthrush	---	1	1	0
Orchard Oriole	**1**	**---**	**1**	**0**
Red-winged Blackbird	1	---	1	0
Swainson's Hawk	1	---	1	0
Vesper Sparrow	1	---	1	0
Wilson's Warbler	---	1	1	0
Unidentified Bird	*6*	*1*	*7*	*1*
Unidentified Sparrow	*6*	---	*6*	*0*
Unidentified Hummingbird	*1*	*3*	*4*	*0*
Unidentified Flycatcher	*1*	*1*	*2*	*0*
Unidentified Empidonax	*1*	---	*1*	*0*
Unidentified Finch	*1*	---	*1*	*0*
Unidentified Tanager	---	*1*	*1*	*0*
Unidentified Thrasher	*1*	---	*1*	*0*
Total	**988**	**305**	**1,293**	**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/not using the habitat.

3.6 White Sands National Monument

3.6.1 2012 sampling

During May and June of 2012, we sampled 10 transects/grids at White Sands NM (Figure 3.6.1). We conducted 118 point counts on 10 grids in grassland habitat (Table 3.6.1). Each point was surveyed once in 2012.

3.6.2 Results and discussion

During 2012 surveys, 565 birds of 33 species were counted at White Sands NM (Table 3.6.2). Black-throated Sparrow had the highest number of individuals counted (21% of the total number of birds counted). The next species counted in the highest numbers were Northern Mockingbird (18%), Cassin's Sparrow (10%), Mourning Dove (9%), Western Kingbird (7%), Horned Lark (6%), and Ash-throated Flycatcher (4%).

Several species were counted only once or twice, including Barn Swallow, Brown-headed Cowbird, Common Raven, Greater Roadrunner, Ladder-backed Woodpecker, Lark Sparrow, Lesser Goldfinch, Swainson's Hawk, Warbling Vireo, Western Wood-Pewee, and Yellow-rumped Warbler. Loggerhead Shrike was recorded for the first time on surveys in White Sands NM this year. No new species were detected for the park in 2012.

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Several Gambel's Quail (*Callipepla gambelii*) were observed at White Sands NM in 2012.

Table 3.6.1. Habitat class, number of points, and sampling dates for each transect or grid at White Sands NM, 2012

Transect/Grid	Habitat class	# points	# visits	Visit Date
CH-WH1	Grassland	10	1	6/1/2012
CH-WH2	Grassland	8	1	6/4/2012
CH-WH3	Grassland	16	1	5/29/2012
CH-WH5	Grassland	14	1	5/28/2012
CH-WH6	Grassland	16	1	5/30/2012
CH-WH7	Grassland	12	1	5/27/2012
CH-WH8	Grassland	8	1	6/8/2012
CH-WH9	Grassland	12	1	5/30/2012
CH-WH10	Grassland	12	1	5/28/2012
CH-WH11	Grassland	10	1	5/27/2012

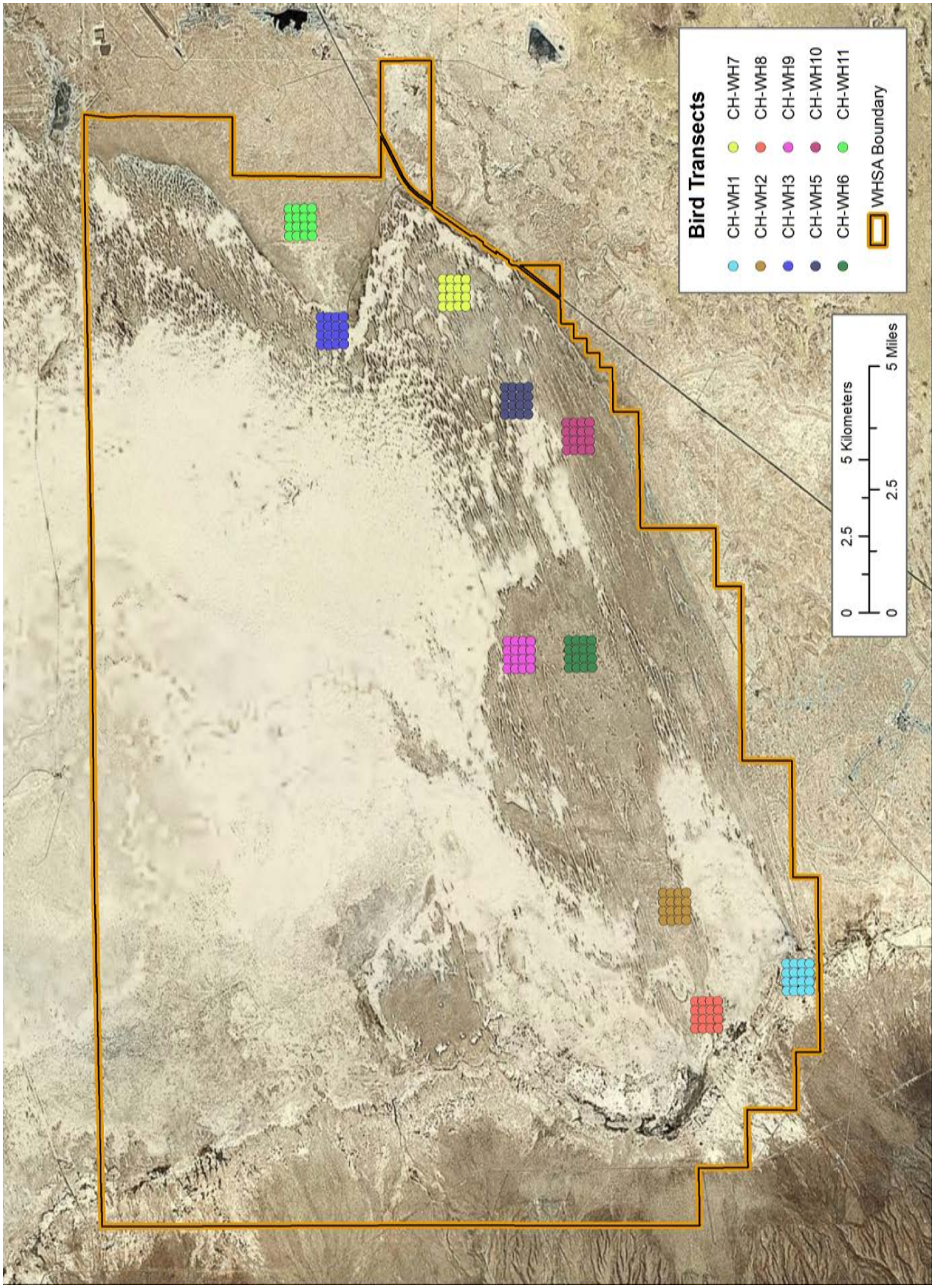

Figure 3.6.1. Point locations targeted for annual sampling at White Sands NM.

Table 3.6.2. Number of birds counted of each species in each habitat class, White Sands NM, 2012

Species	# of birds counted	
	Total (grassland)	% of total
Black-throated Sparrow	120	21
Northern Mockingbird	101	18
Cassin's Sparrow	58	10
Mourning Dove	50	9
Western Kingbird	37	7
Horned Lark	35	6
Ash-throated Flycatcher	22	4
Scott's Oriole	19	3
Eastern Meadowlark	16	3
Blue Grosbeak	13	2
Lesser Nighthawk	11	2
Verdin	8	1
House Finch	7	1
Scaled Quail	7	1
Gambel's Quail	6	1
Loggerhead Shrike	6	1
White-winged Dove	6	1
White-crowned Sparrow	5	1
Cassin's Kingbird	3	1
Common Nighthawk	3	1
Say's Phoebe	3	1
Common Raven	2	0
Curve-billed Thrasher	2	0
Lesser Goldfinch	2	0
Western Wood-Pewee	2	0
Yellow-rumped Warbler	2	0
Barn Swallow	1	0
Brown-headed Cowbird	1	0
Greater Roadrunner	1	0
Ladder-backed Woodpecker	1	0
Lark Sparrow	1	0
Swainson's Hawk	1	0
Warbling Vireo	1	0
Unidentified Bird	*10*	*2*
Unidentified Accipiter	*1*	*0*
Unidentified Empidonax	*1*	*0*
Total	**565**	**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/not using the habitat.

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