

**Baseline Assessment of the Inventory of Bird Species of the Great Basin National
Park and Update of the National Park Service NPSpecies Database**

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Table of Contents

Acknowledgements.....	3
1. Introduction.....	4
2. Objectives.....	5
3. Methods.....	5
4. Results	7
5. Conclusions.....	8
6. Recommendations.....	9
Appendices	
1. Species List.....	10
2. Species List Notes.....	16
3. Species classification definitions.....	19
4. Literature Searched.....	22
5. Museums Searched.....	24
6. Organized Observations.....	26
7. NBC Observation Locations.....	29
8. Nevada Breeding Bird Atlas Observation Locations.....	34
9. NDOW Raptor Observation Locations.....	39
10. Interviews.....	40
11. Project Budget.....	

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1. Introduction

The Servicewide Inventory and Monitoring (I&M) Program, initiated by the National Park Service (NPS) in 1992, coordinates systematic efforts to acquire 12 basic data sets for parks with significant natural resources including, basic information on air and water quality; base cartography; weather data; geology; soil, and vegetation maps; a natural resource bibliography; and information about the occurrence, relative abundance, and distribution of vertebrate and vascular plant species. In addition, with the passing of the National Parks Omnibus Management Act in 1998, Congress mandated a program to establish baseline inventory and monitoring information on the condition of National Park System resources. In order to organize the complex task of conducting these inventories, the Servicewide I&M Program organized the 265 park units into Inventory and Monitoring Networks based on similarity of natural resource attributes. This project is part of the Mojave Network unit which consists of six NPS units in the Mojave and Great Basin biomes: Death Valley National Park (DEVA), Great Basin National Park (GRBA), Joshua Tree National Park (JOTR), Lake Mead National Recreation Area (LAME), Manzanar National Historic Site (MANZ) and Mojave National Preserve (MOJA).

In order to accomplish the goals of establishing baseline inventories and implement monitoring, the NPS has three major objectives for NPS inventories and the Mojave Network.

1. To document the occurrence of at least 90 percent of the species of vertebrates and vascular plants currently estimated to occur in the park.
2. To describe the distribution and relative abundance of species of special management interest occurring within park boundaries. These species include species of special concern, such as Threatened and Endangered species, exotics, and other.
3. To provide baseline information needed to develop a general monitoring strategy and design that can be implemented by parks once inventories have been completed.

These objectives were addressed by this project in regards to the avian species in Great Basin National Park. Through research of literature, museums, databases, and observations, the goal was to document at least 90% of bird species which commonly occur in GRBA. In addition, special attention to the relative abundance was given to Threatened and Endangered species, exotics, and birds of special management interest. This research and data-mining effort's goal was further to provide baseline information that can be used to develop a general bird monitoring strategy for the park.

In an effort to efficiently organize the large amount of information that will be collected by the Servicewide Inventory and Monitoring (I&M) Program, the NPS developed the online databases, NPSpecies and NatureBib. The NPSpecies database was designed to store, manage, and disseminate scientific information on the biodiversity of organisms in NPS units. The NatureBib database is a web-based database for scientific citations presented as bibliographic references. NatureBib is an attempt to organize into one location all bibliographic information related to the national parks. All information gathered as part of this project will be entered into the NPSpecies database and all bibliographic references will be entered into NatureBib.

2. Objectives

Data Mining

The objectives of this project were to: (1) Document the occurrence of up to 90% of breeding, summer resident, winter resident, and migratory bird species currently estimated to occur within Great Basin National Park; (2) Determine existing level of documentation for each potentially occurring bird species; (3) Undertake additional “data-mining” activities to increase the level of documentation for each species, including conducting museum and literature searches and review of Park observation cards; and (4) Update National Park Service’s NPBib database.

This project sought only to document breeding, summer resident, winter resident, and migratory bird species estimated to occur within GRBA. This excludes vagrant species which may occur in the park on an infrequent or accidental basis. Therefore, the species list generated in this report is a list of species thought to regularly occur in the park, not a exhaustive list of all species which could possibly occur in the Park.

NPSpecies Database

An additional objective of this project was to: (1) Update the existing NPSpecies database (observations, museum specimens, citations) including the species list (“Park-Status” field) and checklist fields (abundance, residency, nativity, and cultivation).

The NPSpecies database has an expansion, NPSpecies+, which is used for entering data and has expanded capability to enter museum voucher details. This is the version of the software used for this project.

3. Methods

In order to gather reliable bird documentation, assign species status, and populate the NPSpecies database, the following process was used.

First, data was collected through interviews, literature searches, museum searches, observation cards, and databases/organized surveys.

Interviews:

Interviews with NPS (GRBA) personnel, GRBA park volunteers, local birders, and others with potential knowledge or sighting information on the park were conducted. These interviews were conducted to determine the existing level of bird information for the park, determine any specific concerns about bird species in the park, and for specific species questions that arose during the data gathering. These interviews were conducted either on the phone or in-person and typically took anywhere from 10 to 90 minutes.

Literature Search:

Physical searches for existing information in hard copy and/or electronic format were conducted at GRBA main resource management office (Baker, NV). Literature searches were also conducted online and through the University of Nevada – Reno library with the goal of documenting all published records of bird sightings in or near GRBA. Literature was then evaluated for reliability and location of the documented records in relation to the Park. If a literature reference contained sighting information from within the Park or from its immediate vicinity, it was included. Unpublished data was also evaluated and

included if the accuracy of the bird identification was considered reliable and from within the GRBA boundaries.

Museum Search:

Museum collections were searched in order to document all voucher specimens that were taken from within GRBA. All museum searches were performed online or via phone/email with the collection curator. For all searches, the following keywords were used to search for relevant vouchers: *nevada, wheeler, lehman, baker, great basin, white pine county, and snake range*. If a keyword was located, the voucher description was evaluated to determine if the specimen was taken from within the GRBA boundaries. Because GRBA was not formed until fairly recently (1986), searching all of the keywords is especially important as most specimens were taken from the park area long before the park was established.

All museums listed in this project's Task Agreement were searched. In addition, other museums were searched which we felt were likely holders of specimens taken from GRBA or were recommended as possible candidates during our interviews. A complete list of museum's searched is in Appendix 5.

All vouchers that were found to be taken from GRBA were added to NPSpecies along with as many voucher details as were available.

Observations:

Observations can be subdivided into two major groups: casual observations and organized surveys.

Casual observations include GRBA observation cards and bird-watchers' reports. Observation cards, which contain casual observations reported by GRBA visitors, were gathered and screened for species documentation. These observations were investigated and verified on a case-by-case basis. In addition, local bird-watchers' reports from within the park area were investigated. The casual observers were evaluated in their bird identification skills based on birding experience to provide a basis for whether to accept or reject their records. If no information about the observer could be obtained, as in for example an anonymous or out-of-state observation card, they were disregarded.

Organized surveys include bird survey data collected according to a prescribed protocol and submitted to data bases for regional monitoring networks. These data set may not be in a published format and need to be accessed through the data networks, such as GBBO's Nevada Bird Count, GBBO's Breeding Bird Atlas, Audubon's Christmas Bird Count, or USGS' Breeding Bird Survey. Each of the databases of this sort that were known to exist were researched for bird sighting information within the GRBA boundaries.

Once the documented literature references, museum vouchers, and observations were collected and entered into NPSpecies, species status, abundance, residency, and nativity was determined. This process started with reviewing each species along with the level of documented evidence and the strength of that evidence. If a species had any documented reliable sightings within the park boundaries and was determined to be a winter resident, summer resident, breeder, or migrant, its status was listed as Present. If a species was documented just outside of the boundaries but is likely to also exist in the park, it was labeled as Probably Present. Abundance, Residency, and Nativity were all determined based on the definitions (see Appendix 3) and our

subjective evaluation of the documented evidence. In addition, species that we felt should occur regularly in GRBA but did not have documented evidence were added to the species list. These undocumented species were given a species status of “Unconfirmed”.

4. Results

Our research determined that there are 139 confirmed and 11 unconfirmed bird species that are either breeding, resident for 2 months or more, or regular migrants within GRBA.

According to the Mojave Network Biological Inventory Study Plan, 124 species were documented as regularly occurring in GRBA at the start of this project. Through a combination of literature searches, museum vouchers, and observations, we were able to increase this level to 139 species or 93% of the species total.

A complete list of these species, and documented subspecies, along with their status, abundance, residency, and nativity is in Appendix 1. The following is a detailed breakdown of the literature, museum vouchers, and observations used to document the GRBA species inventory.

Literature Search:

Prior to this project, seven literature references were identified in NPSpecies for GRBA. One of these existing references, *Annotated bibliography of biological collections from Great Basin National Park: Volume II Fauna* by Baggs J.E. was only a literature review and not a primary source of bird sighting data. Because it was not a primary source, it was removed from NPSpecies.

Seven additional references were added to NPSpecies bringing the literature reference total to 13. These references document a total of 124 species within the park or vicinity. See Appendix 4 for the bibliography of all literature searched.

Museum Search:

According to the Mojave Network Biological Inventory Study Plan, 64 bird species had been vouchered within GRBA, all from University of California Berkeley Museum of Vertebrate Zoology (U.C. Berkeley).

A total of 14 museums were searched (including a re-search of U.C. Berkeley for additional voucher information). Of those, two contained specimens from GRBA: U.C. Berkeley and Nevada State Museum.

A total of 337 vouchers were identified (330 from U.C. Berkeley and 7 from Nevada State Museum). All but eight of these vouchers were documented from within the park boundaries. The remaining eight, while in the vicinity of the park, were either from outside of the park boundaries or had unknown specific locations. A total of 64 bird species were vouchered which was unchanged from the previously known vouchered species.

At the start of this project, NPSpecies only contained one museum voucher. We added a total of 336 entries to NPSpecies along with all available voucher information. Although data was entered using the expanded NPSpecies+ database, none of the voucher records contained sufficient detail to require the use of the extra ANCS forms available in that version of the database.

For a complete list of museums searched, see Appendix 5.

Observations:

Before this project, no observed species had been documented for GRBA in NPSpecies. After this project, a total of 126 observed species have been documented in the GRBA or vicinity. We added 1545 well-documented individual observations to NPSpecies, 1412 of which were from within the park boundaries. The remaining 133, while in the vicinity of the park, were either from outside of the park boundaries or had unknown specific locations.

These observations included both casual birder observations and data from organized bird surveys. For a list of organized survey data sources searched, see Appendix 6.

5. Conclusions

We conclude that there are a total of 150 species which are summer resident, winter resident, breeding, or migratory within GRBA.

Of these species, 43% have been documented through museum vouchers, 83% have been document through literature, and 84% have been documented through observations. In total, 93% species have been documented through some combination of these sources.

No Threatened and Endangered bird species were found to be resident, breeding, or migrating through GRBA. The Greater Sage-grouse is a species of concern that historically reproduced within the park, but that we could not confirm as a current, regular species for GRBA. Despite the lack of recent documentation, this is one of the species that a GRBA monitoring effort may include in future inventories as it is possible that it recovers in the protected habitats of the Park. Other species that deserve additional attention are California Quail, Fox Sparrow, and Peregrine Falcon. A quail species occurs commonly just outside the Park boundaries and, based on all available information, this appears to be California Quail which is the predominant quail species of the Great Basin. However, the Mojave Desert is so close to the eastern Park boundary, where these quail have been observed, that there is a possibility that they could also be Gambel's Quail, the species that is more common to the Mojave Desert. Fox Sparrow is a species that may be underestimated in their abundance by the currently available records for GRBA. Peregrine Falcons have been released by NDOW in recent years in the vicinity of the Park, and while they occupied the Park in some years, only future monitoring efforts will determine whether or not they are established permanently in this region.

Birds are generally a very difficult taxon for this type of small-scale inventory or monitoring effort. About 75% of the Great Basin's avifauna is migratory, and most species are also seasonal vagrants at least during part of their life. In addition, GRBA has a great variety of primarily montane habitats, but small sections of the Park lapping into the lowlands. For a data mining and inventory project for birds, these parameters make it difficult to conclude in any definitive way which species that are found in the general region are truly absent from the Park. For instance, migrants that regularly occur during wet cycles may be all but absent during a drought cycle. It is therefore important to qualify the findings of this report by noting that, at least for birds, there is a very fluid continuum between NPS' definition of a vagrant (very rare and not documented every year), a migrant (may be rare but typically documented every year), and a resident (may be rare, but stays at least for 2 months in habitats of the Park). Only long-term monitoring will allow a biologist to achieve any accuracy in these classifications for birds.

6. Recommendations

The following are recommendations for future research that could further improve the GRBA bird species inventory.

- We recommend that landbird monitoring in GRBA is continued as part of the Great Basin Bird Observatory's point count network, the Nevada Bird Count. Currently, there are seven survey routes that have been established within the Park. The network function of the statewide program allows these data to be compared with data from other Parks, as well as to data from similar habitats under different land ownerships.
- To assist in GRBA's resource management planning, we also recommend examining the check list of status and abundance of the birds documented in this project for species of conservation concern for this region. We especially recommend for resource management and monitoring efforts to address the needs of those species that are recognized as high priorities for the Intermountain West, the Great Basin, and Nevada, by the national conservation initiative for landbirds, Partners In Flight (www.partnersinflight.org; note on the website especially the Nevada Bird Conservation Plan edited by Larry Neel, 1999). For example, GRBA has a significant population of Black Rosy-finches, whose breeding habitat is restricted to the alpine tundra, an exceedingly restricted habitat type in the Intermountain West. Monitoring of these species should be integrated with ongoing regional efforts, but in some cases, such as the Black Rosy-finch, the Park may need to develop monitoring plans specifically for the GRBA due to the general lack of information and monitoring coverage for these species.
- Most owl species were listed as "Probably Present" in this report. Because of their nocturnal nature, owls are undercounted in most bird surveys and casual observations. It would be valuable to conduct nighttime surveys during the mating season of most owls (early to mid spring), either using passive survey techniques or playback of calls, in order to confirm which species occupy the Park. Also, poorwills and night-hawks are better assessed during night surveys than during typical birding activities.
- Several songbirds and other diurnal landbirds were surprisingly rarely recorded or unconfirmed, given the habitats that are present in the Park, including Black-chinned Sparrow, Fox Sparrow, Greater Sage-grouse, Great Blue Heron, and Swainson's Thrush. It should also be made a priority to confirm that the "Solitary Vireo" that breeds in the Park is indeed the Plumbeous Vireo, and whether or not the Cassin's Vireo occurs as a spring or fall migrant in the Park.
- We also recommend that water bodies within the Park are visited regularly to determine the presence of additional ducks, shorebirds, or other waterbirds. Although species richness of these groups will likely never be high for the Park, there was uncertainty in our data mining project as to which of these species were actually present within the Park boundaries.

Appendix 1. Species List

The following is a list of the summer or winter resident, breeding, or migratory bird species that commonly occur in Great Basin National Park along with NPSpecies classification and documented evidence counts. The list is in the taxonomic order that follows the current American Ornithologists' Union (AOU) standard. See Appendix 2 for notes on this species list.

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Podilymbus podiceps</i>	Pied-billed Grebe	Unconfirmed	Unknown	Unknown	Native			
<i>Anas platyrhynchos</i>	Mallard	Present in Park	Common	Breeder	Native	2		1
<i>Anas strepera</i>	Gadwall	Unconfirmed	Unknown	Unknown	Native			
<i>Anas americana</i>	American Wigeon	Unconfirmed	Unknown	Unknown	Native			
<i>Anas crecca</i>	American Green-winged Teal	Present in Park	Common	Migratory	Native	2		
<i>Anas discors</i>	Blue-winged Teal	Unconfirmed	Unknown	Unknown	Native			
<i>Anas cyanoptera</i>	Cinnamon Teal	Present in Park	Uncommon	Migratory	Native	1		
<i>Anas clypeata</i>	Northern Shoveler	Unconfirmed	Unknown	Unknown	Native			
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	Present in Park	Occasional	Unknown	Native			1
<i>Callipepla gambelii</i>	Gambel's Quail	Probably Present	Rare	Resident	Native			1
<i>Alectoris chukar</i>	Chukar	Present in Park	Uncommon	Resident	Non-Native	1		1
<i>Dendragapus obscurus</i>	Blue Grouse	Present in Park	Uncommon	Resident	Native	5	1	6
<i>Dendragapus obscurus oreinus</i>	Blue Grouse	Present in Park	Unknown	Unknown	Native		4	
<i>Centrocercus urophasianus</i>	Greater Sage-grouse	Historic	NA	NA	NA			1
<i>Phalaropus tricolor</i>	Wilson's Phalarope	Present in Park	Occasional	Unknown	Native	1		1
<i>Gallinago gallinago delicata</i>	Wilson's Snipe	Present in Park	Uncommon	Unknown	Native	1	2	6
<i>Actitis macularia</i>	Spotted Sandpiper	Present in Park	Uncommon	Breeder	Native		1	1
<i>Numenius americanus</i>	Long-billed Curlew	Present in Park	Rare	Breeder	Native	2		4
<i>Zenaida macroura</i>	Mourning Dove	Present in Park	Common	Breeder	Native	7		23
<i>Cathartes aura</i>	Turkey Vulture	Present in Park	Uncommon	Migratory	Native	3		3
<i>Circus cyaneus</i>	Northern Harrier	Present in Park	Common	Breeder	Native	8		13
<i>Accipiter striatus</i>	Sharp-shinned Hawk	Present in Park	Uncommon	Breeder	Native	5		6
<i>Accipiter striatus velox</i>	Sharp-shinned Hawk	Present in Park	Unknown	Unknown	Native		1	
<i>Accipiter cooperii</i>	Cooper's Hawk	Present in Park	Uncommon	Breeder	Native	6		11
<i>Accipiter gentilis</i>	Northern Goshawk	Present in Park	Uncommon	Breeder	Native	6		9
<i>Buteo jamaicensis</i>	Red-tailed Hawk	Present in Park	Common	Breeder	Native	7		11
<i>Buteo jamaicensis calurus</i>	Red-tailed Hawk	Present in Park	Unknown	Unknown	Native		1	
<i>Buteo swainsoni</i>	Swainson's Hawk	Present in Park	Rare	Unknown	Native	1		1
<i>Buteo regalis</i>	Ferruginous Hawk	Probably Present	Uncommon	Migratory	Native	3		1
<i>Aquila chrysaetos</i>	Golden Eagle	Present in Park	Common	Breeder	Native	8		21

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Present in Park	Uncommon	Migratory	Native			7
<i>Falco mexicanus</i>	Prairie Falcon	Present in Park	Uncommon	Breeder	Native	3	1	5
<i>Falco peregrinus</i>	Peregrine Falcon	Present in Park	Rare	Breeder	Native			3
<i>Falco columbarius</i>	Merlin	Present in Park	Rare	Migratory	Native			2
<i>Falco sparverius</i>	American Kestrel	Present in Park	Uncommon	Breeder	Native	10		6
<i>Asio otus</i>	Long-eared Owl	Probably Present	Rare	Migratory	Native	2		2
<i>Asio flammeus</i>	Short-eared Owl	Probably Present	Rare	Unknown	Native	1		1
<i>Aegolius acadicus</i>	Northern Saw-whet Owl	Present in Park	Occasional	Breeder	Native			2
<i>Otus kennicottii</i>	Western Screech-Owl	Present in Park	Rare	Breeder	Native			2
<i>Otus flammeolus</i>	Flammulated Owl	Probably Present	Rare	Migratory	Native	1		1
<i>Bubo virginianus</i>	Great Horned Owl	Present in Park	Common	Breeder	Native	3	1	3
<i>Athene cunicularia</i>	Burrowing Owl	Present in Park	Occasional	Unknown	Native	1		3
<i>Glaucidium gnoma</i>	Northern Pygmy-Owl	Present in Park	Rare	Unknown	Native			2
<i>Ceryle alcyon</i>	Belted Kingfisher	Present in Park	Uncommon	Unknown	Native			1
<i>Picoides villosus</i>	Hairy Woodpecker	Present in Park	Common	Breeder	Native	6		18
<i>Picoides villosus leucothorectis</i>	Hairy Woodpecker	Present in Park	Unknown	Unknown	Native		4	
<i>Picoides pubescens</i>	Downy Woodpecker	Present in Park	Uncommon	Breeder	Native	4	1	3
<i>Picoides tridactylus</i>	Three-toed Woodpecker	Present in Park	Rare	Breeder	Native	2	2	2
<i>Picoides tridactylus dorsalis</i>	Three-toed Woodpecker	Present in Park	Unknown	Unknown	Native		3	
<i>Sphyrapicus nuchalis</i>	Red-naped Sapsucker	Present in Park	Common	Breeder	Native	4	11	26
<i>Sphyrapicus thyroideus</i>	Williamson's Sapsucker	Present in Park	Uncommon	Breeder	Native	2		5
<i>Melanerpes lewis</i>	Lewis's Woodpecker	Present in Park	Rare	Resident	Native	1		
<i>Colaptes auratus collaris</i>	Red-shafted Flicker	Present in Park	Common	Breeder	Native		1	2
<i>Colaptes auratus</i>	Red-shafted Flicker	Present in Park	Common	Breeder	Native	8		25
<i>Phalaenoptilus nuttallii</i>	Common Poorwill	Present in Park	Uncommon	Breeder	Native	2		9
<i>Phalaenoptilus nuttallii nuttallii</i>	Common Poorwill	Present in Park	Unknown	Unknown	Native		3	
<i>Chordeiles minor</i>	Common Nighthawk	Present in Park	Common	Breeder	Native	5	2	6
<i>Chordeiles minor hesperis</i>	Common Nighthawk	Present in Park	Unknown	Unknown	Native		5	
<i>Chaetura vauxi</i>	Vaux's Swift	Unconfirmed	Unknown	Unknown	Native			
<i>Aeronautes saxatalis</i>	White-throated Swift	Present in Park	Rare	Breeder	Native	4		2
<i>Archilochus alexandri</i>	Black-chinned Hummingbird	Present in Park	Common	Breeder	Native	2		3
<i>Selasphorus platycercus</i>	Broad-tailed Hummingbird	Present in Park	Common	Breeder	Native	5		24
<i>Selasphorus platycercus platycercus</i>	Broad-tailed Hummingbird	Present in Park	Unknown	Unknown	Native		3	
<i>Selasphorus rufus</i>	Rufous Hummingbird	Present in Park	Common	Resident	Native	2	2	3
<i>Stellula calliope</i>	Calliope Hummingbird	Present in Park	Uncommon	Breeder	Native	3		2
<i>Tyrannus verticalis</i>	Western Kingbird	Present in Park	Common	Resident	Native	4		1
<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher	Present in Park	Uncommon	Unknown	Native	2		3
<i>Sayornis saya</i>	Say's Phoebe	Present in Park	Common	Breeder	Native	2		2

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Present in Park	Uncommon	Breeder	Native	1	2	6
<i>Contopus sordidulus</i>	Western Wood-Pewee	Present in Park	Uncommon	Breeder	Native	3		40
<i>Empidonax occidentalis</i>	Cordilleran Flycatcher	Present in Park	Uncommon	Breeder	Native	4		11
<i>Empidonax occidentalis hellmayri</i>	Cordilleran Flycatcher	Present in Park	Unknown	Unknown	Native		1	
<i>Empidonax hammondi</i>	Hammond's Flycatcher	Present in Park	Uncommon	Breeder	Native	3	2	3
<i>Empidonax oberholseri</i>	Dusky Flycatcher	Present in Park	Common	Breeder	Native	4	3	5
<i>Empidonax wrightii</i>	Gray Flycatcher	Present in Park	Rare	Unknown	Native	3		3
<i>Pica hudsonia</i>	American Magpie	Present in Park	Common	Breeder	Native	3		9
<i>Cyanocitta stelleri</i>	Steller's Jay	Present in Park	Common	Breeder	Native	5		16
<i>Cyanocitta stelleri macrolopha</i>	Steller's Jay	Present in Park	Unknown	Unknown	Native		9	
<i>Aphelocoma californica</i>	Western Scrub-Jay	Present in Park	Common	Breeder	Native	6	4	24
<i>Corvus corax</i>	Common Raven	Present in Park	Common	Breeder	Native	8		27
<i>Corvus corax sinuatus</i>	Common Raven	Present in Park	Unknown	Unknown	Native		1	
<i>Corvus brachyrhynchos</i>	American Crow	Present in Park	Common	Breeder	Native	3		4
<i>Nucifraga columbiana</i>	Clark's Nutcracker	Present in Park	Common	Breeder	Native	7	1	31
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay	Present in Park	Common	Breeder	Native	7		12
<i>Sturnus vulgaris</i>	European Starling	Present in Park	Common	Breeder	Non-Native			2
<i>Molothrus ater</i>	Brown-headed Cowbird	Present in Park	Common	Breeder	Native	3		22
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	Unconfirmed	Unknown	Unknown	Native			
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	Present in Park	Common	Breeder	Native	1		2
<i>Agelaius phoeniceus nevadensis</i>	Red-winged Blackbird	Present in Park	Unknown	Unknown	Native		1	
<i>Sturnella neglecta</i>	Western Meadowlark	Present in Park	Common	Breeder	Native	4		11
<i>Icterus parisorum</i>	Scott's Oriole	Unconfirmed	Unknown	Unknown	Native			
<i>Icterus bullockii</i>	Bullock's Oriole	Present in Park	Uncommon	Breeder	Native	4		3
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird	Present in Park	Common	Breeder	Native	6		8
<i>Quiscalus mexicanus</i>	Great-tailed Grackle	Present in Park	Occasional	Migratory	Native	1		
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Present in Park	Common	Migratory	Native	2		
<i>Carpodacus cassinii</i>	Cassin's Finch	Present in Park	Common	Breeder	Native	8	2	46
<i>Carpodacus mexicanus</i>	House Finch	Present in Park	Common	Breeder	Native			1
<i>Loxia curvirostra</i>	Red Crossbill	Present in Park	Common	Breeder	Native	4		14
<i>Loxia curvirostra stricklandi</i>	Red Crossbill	Present in Park	Unknown	Unknown	Native		3	
<i>Carduelis tristis</i>	American Goldfinch	Probably Present	Uncommon	Unknown	Native			1
<i>Carduelis psaltria</i>	Lesser Goldfinch	Present in Park	Occasional	Unknown	Native	1		1
<i>Carduelis pinus</i>	Pine Siskin	Present in Park	Common	Breeder	Native	7		22
<i>Carduelis pinus pinus</i>	Pine Siskin	Present in Park	Unknown	Unknown	Native		4	
<i>Poocetes gramineus</i>	Vesper Sparrow	Present in Park	Common	Breeder	Native	5		3
<i>Poocetes gramineus confinis</i>	Vesper Sparrow	Present in Park	Unknown	Unknown	Native		2	
<i>Passerculus sandwichensis</i>	Savannah Sparrow	Present in Park	Rare	Unknown	Native	2		1

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Chondestes grammacus</i>	Lark Sparrow	Present in Park	Rare	Unknown	Native	2		3
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	Present in Park	Common	Resident	Native	6		3
<i>Zonotrichia leucophrys gambelii</i>	White-crowned Sparrow (Gambel's)	Present in Park	Unknown	Unknown	Native		5	
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow	Unconfirmed	Unknown	Unknown	Native			
<i>Spizella passerina</i>	Chipping Sparrow	Present in Park	Common	Breeder	Native	7		62
<i>Spizella passerina arizonae</i>	Chipping Sparrow	Present in Park	Unknown	Unknown	Native		23	
<i>Spizella breweri</i>	Brewer's Sparrow	Present in Park	Common	Breeder	Native	6		6
<i>Spizella breweri breweri</i>	Brewer's Sparrow	Present in Park	Unknown	Unknown	Native		3	
<i>Junco hyemalis</i>	Dark-eyed Junco	Present in Park	Common	Breeder	Native	8		12
<i>Junco hyemalis hyemalis</i>	Dark-eyed Junco (Slate-colored)	Unconfirmed	Unknown	Unknown	Native			
<i>Junco hyemalis oreganus</i>	Dark-eyed Junco (Oregon)	Present in Park	Uncommon	Resident	Native		4	
<i>Junco hyemalis caniceps</i>	Dark-eyed Junco (Gray-headed)	Present in Park	Common	Breeder	Native		27	7
<i>Amphispiza bilineata</i>	Black-throated Sparrow	Present in Park	Occasional	Resident	Native	4		
<i>Amphispiza belli</i>	Sage Sparrow	Present in Park	Uncommon	Breeder	Native	2		1
<i>Melospiza melodia</i>	Song Sparrow	Present in Park	Uncommon	Unknown	Native	2		1
<i>Melospiza melodia fallax</i>	Song Sparrow	Present in Park	Unknown	Unknown	Native		1	
<i>Melospiza melodia montana</i>	Song Sparrow	Present in Park	Unknown	Unknown	Native		1	
<i>Passerella iliaca</i>	Fox Sparrow	Present in Park	Rare	Unknown	Native	2		2
<i>Passerella iliaca schistacea</i>	Fox Sparrow	Present in Park	Unknown	Unknown	Native		1	
<i>Pipilo maculatus</i>	Spotted Towhee	Present in Park	Common	Breeder	Native	7		75
<i>Pipilo maculatus montanus</i>	Spotted Towhee	Present in Park	Unknown	Unknown	Native		18	
<i>Pipilo chlorurus</i>	Green-tailed Towhee	Present in Park	Common	Breeder	Native	7	13	19
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak	Present in Park	Uncommon	Breeder	Native	4		13
<i>Pheucticus melanocephalus melanocephalus</i>	Black-headed Grosbeak	Present in Park	Unknown	Unknown	Native		1	
<i>Passerina amoena</i>	Lazuli Bunting	Present in Park	Common	Breeder	Native	4		30
<i>Piranga ludoviciana</i>	Western Tanager	Present in Park	Common	Breeder	Native	4	2	33
<i>Hirundo pyrrhonota</i>	Cliff Swallow	Present in Park	Rare	Unknown	Native	2	8	
<i>Hirundo rustica</i>	Barn Swallow	Present in Park	Common	Breeder	Native	2		8
<i>Hirundo rustica erythrogaster</i>	Barn Swallow	Present in Park	Unknown	Unknown	Native		3	
<i>Tachycineta bicolor</i>	Tree Swallow	Present in Park	Uncommon	Breeder	Native	6		12
<i>Tachycineta thalassina</i>	Violet-green Swallow	Present in Park	Common	Breeder	Native	9		42
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	Present in Park	Common	Unknown	Native	1		8
<i>Bombicilla cedrorum</i>	Cedar Waxwing	Present in Park	Uncommon	Migratory	Native	3	1	1
<i>Lanius excubitor</i>	Northern Shrike	Unconfirmed	Unknown	Unknown	Native			
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Present in Park	Rare	Resident	Native	4		1
<i>Vireo gilvus</i>	Warbling Vireo	Present in Park	Common	Breeder	Native	6		90
<i>Vireo gilvus leucopolius</i>	Warbling Vireo	Present in Park	Unknown	Unknown	Native		1	

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Vireo solitarius</i>	Blue-headed Vireo	Present in Park	Uncommon	Breeder	Native	2		
<i>Vermivora virginiae</i>	Virginia's Warbler	Present in Park	Uncommon	Breeder	Native	4		9
<i>Vermivora ruficapilla</i>	Nashville Warbler	Unconfirmed	Unknown	Unknown	Native			
<i>Vermivora celata</i>	Orange-crowned Warbler	Present in Park	Uncommon	Migratory	Native	3		1
<i>Vermivora celata orestera</i>	Orange-crowned Warbler	Present in Park	Unknown	Unknown	Native		2	
<i>Dendroica petechia</i>	Yellow Warbler	Present in Park	Common	Breeder	Native	3		16
<i>Dendroica coronata</i>	Yellow-rumped Warbler	Present in Park	Common	Breeder	Native	7		50
<i>Dendroica coronata memorabilis</i>	Yellow-rumped Warbler	Present in Park	Unknown	Unknown	Native		15	
<i>Dendroica nigrescens</i>	Black-throated Gray Warbler	Present in Park	Common	Breeder	Native	5	2	12
<i>Dendroica townsendi</i>	Townsend's Warbler	Present in Park	Occasional	Migratory	Native	1	1	
<i>Oporornis tolmiei</i>	MacGillivray's Warbler	Present in Park	Common	Breeder	Native	6		17
<i>Oporornis tolmiei monticola</i>	MacGillivray's Warbler	Present in Park	Unknown	Unknown	Native		1	
<i>Geothlypis trichas</i>	Common Yellowthroat	Unconfirmed	Unknown	Unknown	Native			
<i>Icteria virens</i>	Yellow-breasted Chat	Present in Park	Common	Breeder	Native	2		3
<i>Wilsonia pusilla</i>	Wilson's Warbler	Present in Park	Common	Migratory	Native	3		1
<i>Wilsonia pusilla pileolata</i>	Wilson's Warbler	Present in Park	Unknown	Unknown	Native		1	
<i>Passer domesticus</i>	House Sparrow	Present in Park	Common	Breeder	Non-Native	1		
<i>Anthus rubescens</i>	American Pipit	Present in Park	Uncommon	Breeder	Native	4		3
<i>Cinclus mexicanus</i>	American Dipper	Present in Park	Uncommon	Breeder	Native	5		3
<i>Cinclus mexicanus unicolor</i>	American Dipper	Present in Park	Unknown	Unknown	Native		1	
<i>Oreoscoptes montanus</i>	Sage Thrasher	Present in Park	Common	Breeder	Native	4		2
<i>Mimus polyglottos</i>	Northern Mockingbird	Present in Park	Uncommon	Breeder	Native			2
<i>Salpinctes obsoletus</i>	Rock Wren	Present in Park	Common	Breeder	Native	5		9
<i>Catherpes mexicanus</i>	Canyon Wren	Present in Park	Uncommon	Breeder	Native	1		1
<i>Thryomanes bewickii</i>	Bewick's Wren	Present in Park	Uncommon	Unknown	Native	1		5
<i>Troglodytes aedon</i>	House Wren	Present in Park	Common	Breeder	Native	7		22
<i>Troglodytes aedon parkmanii</i>	House Wren	Present in Park	Unknown	Unknown	Native		1	
<i>Certhia americana</i>	Brown Creeper	Present in Park	Common	Breeder	Native	3	13	7
<i>Sitta carolinensis</i>	White-breasted Nuthatch	Present in Park	Common	Breeder	Native	5		7
<i>Sitta carolinensis nelsoni</i>	White-breasted Nuthatch	Present in Park	Unknown	Unknown	Native		4	
<i>Sitta canadensis</i>	Red-breasted Nuthatch	Present in Park	Uncommon	Breeder	Native	6	9	25
<i>Sitta pygmaea melanotis</i>	Pygmy Nuthatch	Present in Park	Unknown	Unknown	Native		2	
<i>Sitta pygmaea</i>	Pygmy Nuthatch	Present in Park	Rare	Resident	Native	2		
<i>Baeolophus ridgwayi</i>	Juniper Titmouse	Present in Park	Common	Breeder	Native	2	1	6
<i>Poecile gambeli</i>	Mountain Chickadee	Present in Park	Abundant	Breeder	Native	8		56
<i>Poecile gambeli gambeli</i>	Mountain Chickadee	Present in Park	Unknown	Unknown	Native		1	
<i>Poecile gambeli inyoensis</i>	Mountain Chickadee	Present in Park	Unknown	Unknown	Native		25	
<i>Psaltiriparus minimus</i>	Bushtit	Present in Park	Common	Breeder	Native	5		30

Scientific Name	Common Name	Park Status	Abundance	Residency	Nativity	Literature	Voucher	Observation
<i>Psaltirparus minimus plumbeus</i>	Bushtit	Present in Park	Unknown	Unknown	Native		3	
<i>Regulus satrapa</i>	Golden-crowned Kinglet	Present in Park	Rare	Breeder	Native	2		3
<i>Regulus satrapa olivaceus</i>	Golden-crowned Kinglet	Present in Park	Unknown	Unknown	Native		5	
<i>Regulus calendula</i>	Ruby-crowned Kinglet	Present in Park	Common	Breeder	Native	6		27
<i>Regulus calendula cineraceus</i>	Ruby-crowned Kinglet	Present in Park	Unknown	Unknown	Native		28	
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher	Present in Park	Common	Unknown	Native	2		12
<i>Myadestes townsendi</i>	Townsend's Solitaire	Present in Park	Common	Breeder	Native	8		9
<i>Myadestes townsendi townsendi</i>	Townsend's Solitaire	Present in Park	Common	Breeder	Native		3	
<i>Catharus ustulatus</i>	Swainson's Thrush	Probably Present	Rare	Unknown	Native	1		
<i>Catharus guttatus</i>	Hermit Thrush	Present in Park	Common	Breeder	Native	7		35
<i>Catharus guttatus polionotus</i>	Hermit Thrush	Present in Park	Unknown	Unknown	Native		1	
<i>Catharus guttatus guttatus</i>	Hermit Thrush	Present in Park	Unknown	Unknown	Native		2	
<i>Catharus guttatus auduboni</i>	Hermit Thrush	Present in Park	Unknown	Unknown	Native		15	
<i>Turdus migratorius</i>	American Robin	Present in Park	Common	Breeder	Native	9		86
<i>Turdus migratorius propinquus</i>	American Robin	Present in Park	Unknown	Unknown	Native		3	
<i>Sialia mexicana</i>	Western Bluebird	Present in Park	Rare	Breeder	Native	1		2
<i>Sialia currucoides</i>	Mountain Bluebird	Present in Park	Common	Breeder	Native	7	1	10

Appendix 2. Species List Notes

The following species groups require an explanation concerning their records for the Great Basin National Park, or how they were classified in the data base. All scientific species names are listed in Appendix 1, unless noted otherwise.

Subspecies

The identity of a subspecies can often not be determined during a bird sighting and usually requires careful study of a museum specimen. The museum voucher records that were available to us often specified subspecies that are not recognizable in most other types of records (sightings, nests, etc.). In order not to lose the subspecies information available from museum records, we listed these separately under the correct subspecies name and summarized all other records under the simple species name. In the NPSpecies database and in Appendix 1, we thus have multiple entries for species for which subspecies records exist, usually with one entry that includes most sightings in which subspecies could not be determined and one entry for each subspecies that was identified from museum records. This led to many subspecies entries for which only museum vouchers exist as evidence and whose abundance was labeled “unknown”. Even though a given subspecies may be common in the Park, its relative abundance usually could not be determined with the available data.

Waterbirds

Great Basin National Park has little aquatic habitat and most of it is at high elevations. Lower elevation waterbodies are the most suitable habitat type for high concentrations of waterbirds, which include shorebirds such as sandpipers, plovers, and phalaropes, waterfowl such as ducks, geese, and swans, and other waterbirds, such as loons, grebes, and mergansers. Small alpine lakes and miscellaneous other bodies of water are not enough to attract large numbers of waterbirds. However, aquatic habitat exists near the Park in several areas around the town of Baker. Because of the lack of waterbird habitat in the Park, only a few waterbirds are listed on the Park species list.

Upland Gamebirds

Many upland game species have been actively introduced and re-introduced throughout Nevada. It has been common practice in the past century, and sometimes into the present, for the Nevada Department of Wildlife to stock mountain ranges with a variety of North American and introduced game species, for example Ruffed Grouse (*Bonasa umbellus*), Wild Turkey (*Meleagris gallopavo*), Mountain and California Quails (*Oreortyx pictus* and *Callipepla californica*), Chukar, Himalayan Snowcock (*Tetraogallus himalayensis*), and Gray Partridge (*Perdix perdix*). It is unclear, whether the upland gamebird species that are present in the Park belong to native populations, whether they expanded into the Park from other introduced populations, or whether they have been locally introduced. Because of this gap in information, we generally referred to all North American species as “native”, and all species introduced from other continents as “non-native”.

Greater Sage-grouse

This species has undergone declines throughout the intermountain west and is one of the highest management priorities in Nevada. Credible historic reports exist of a Sage-grouse population including large mating aggregations, or leks, in or near Great Basin National Park. There is no evidence of a current breeding population of Sage-grouse within the Park. Recent reports have only been fly-overs or sightings on the very fringes of the Park. Due to the historic reports of the species, the status is listed as “historic”. However, if the species recovers as a whole, populations within/near the Park may increase as well.

Fox Sparrow

Fox Sparrow is a neotropical migratory bird that breeds in Nevada's montane riparian willows and other deciduous shrub habitats (e.g., manzanita, or squawbush). Although they are only moderately common in most of Nevada's mountain ranges, it comes as somewhat of a surprise, how rarely this species has been documented for Great Basin National Park. This species deserves additional study in the Park to confirm its presence and abundance, as its numbers may currently be underestimated.

Northern Flicker

Two subspecies of Northern Flicker are currently recognized, the Red-shafted Flicker and the Yellow-shafted Flicker, both of which can be determined by observation. All Great Basin National Park sightings for Northern Flicker in which subspecies was specified are the Red-shafted Flicker, as expected for this region. Yellow-shafted Flickers have an eastern distribution, but are occasionally observed in the west, particularly during the non-breeding seasons. It is possible that Yellow-shafted Flickers will be confirmed for the Park area some time in the future.

"Solitary" Vireo

This former species was recently split into three species, Cassin's, Blue-headed, and Plumbeous Vireos. Most records from the Park named the "Solitary" Vireo as the species. Because we preferred not to presume the presence of any species without a museum voucher, we retained the old species name *Vireo solitarius* in the data base and in this report. In the GRBA region, the breeding population and probably the most commonly observed birds of this group are the Plumbeous Vireo. Cassin's Vireo likely migrates through the region that includes the Park, but its primary breeding distribution is located in the Pacific Northwest. In western Nevada, both Plumbeous and Cassin's vireos are commonly recorded during migration, but the occurrence of Cassin's Vireo in the Park should be confirmed in future efforts.

"Northern" Oriole

Similar to "Solitary" Vireo, this species group was split into several oriole species. Several records of from the GRBA area that list "Northern Oriole" as the species are most likely Bullock's Oriole records, which is the most common western oriole species and a confirmed breeder in the Park. Another species that could occur in the region of GRBA is the Scott's Oriole (*Icterus parisorum*), but no records exist from the Park for this overall much less common species.

Yellow-rumped Warbler

Based on the Integrated Taxonomic Information System (ITIS), the Yellow-rumped Warbler has four subspecies, two of which are called Audubon's Warbler and the other two are called Myrtle Warbler. Only the Audubon's Warbler subspecies group commonly occurs in Nevada. We generally grouped sightings of "Audubon's Warbler" under the species name Yellow-rumped Warbler because "Audubon's Warbler" can refer to either of two subspecies. The Yellow-rumped Warbler that breeds in the Park and surrounding region belongs to the "Audubon" group and to the subspecies *Dendroica coronata memorabilis*. The other "Audubon's" Warbler subspecies *D. c. auduboni*, which is to the casual observer indistinguishable from *D.c. memorabilis*, breeds in the boreal region and may migrate through the area of the Park. "Myrtle" Warblers breed to the north and east of British Columbia and only rarely travel through the Great Basin during migration. As in most areas of Nevada, Myrtle Warblers have not been confirmed for the Park.

"Common" Snipe

This species has recently been renamed to Wilson's Snipe. Most or all records for the Park refer to Common Snipe, and for the purpose of this report and data base project, we renamed all of them to reflect the current nomenclature.

"Common" Bushtit

The "Common" Bushtit was recently renamed to simply "Bushtit". All references to Common Bushtit were renamed accordingly in the data base and this report.

"Water" Pipit

This former species was split into two, with the North American species being renamed into American Pipit. All references to "Water" Pipits were renamed accordingly for the data base and this report.

Appendix 3. Species classification definitions.

To enter species data into the NPSpecies database, specific Status, Abundance, Residency, and Nativity categories must be selected for each species. While NPSpecies defines these terms, for the sake of clarification, these definitions have been expanded based on this reports interpretation of the terms. The text as defined in the NPSpecies documentation is below along with some expanded definitions in italics added for the sake of clarifying this report.

STATUS

Present in Park

Species' occurrence in Park is documented and assumed to be extant.

The presence of this species has one or more documented pieces of evidence that the species was observed within the park boundaries. If no documentation exists, even if the species is believed to be in the park, then this category was not used. A species documented in the park but considered vagrant or very rare would still be classified with this status under the rationale that the species was documented in the park so must be classified as present. The rarity of such a species will be addressed with the Abundance category.

Historic

Species' historical occurrence in the Park is documented, but recent investigations indicate that the species is now probably absent.

Documented evidence exists that the species was sighted within the park boundaries. However, no modern evidence exists of the current presence of the species. This category used conservatively for species which have evidence but are widely known to not currently visit the park.

Probably Present

Park is within species' range and contains appropriate habitat. Documented occurrences of the species in the adjoining region of the Park give reason to suspect that it probably occurs within the Park. The degree of probability may vary within this category, including species that range from common to rare.

For this report, this category requires particular clarification. While GRBA doesn't contain much aquatic habitat, it does contain a small alpine lake and sewage lagoon. However, not far outside of the park boundaries there is significant aquatic habitat near the town of Baker. Because of the distance and small amount of similar habitat within the park, sightings near the town of Baker were not classified under this category. Many observations made in this report were by park volunteers Melissa Renfro and John Woodyard who live about one mile from the park boundaries and meticulously record their sightings. Sightings at this location were the source of most of the Probably Present species classifications due to the close proximity to the park boundary.

Unconfirmed

Included for the Park based on weak ("unconfirmed record") or no evidence, giving minimal indication of the species' occurrence in the Park.

Documented evidence exists but some question about the validity of the evidence exists. Not enough to classify it as a False Report but generally weak evidence that cannot be substantiated.

False Report

Species previously reported to occur within the Park, but current evidence indicates that the report was based on a misidentification, a taxonomic concept no longer accepted, or some other similar problem of interpretation.

Used for cases where documentation exists but there is some indications that the report was a misidentification. Usually a 2nd or 3rd hand report in the documentation from observers with unknown bird identification skills.

Encroaching

The species is known to be adjacent to, but not in the Park, and has a great potential to enter the Park.

ABUNDANCE**Abundant**

May be seen daily, in suitable habitat and season, and counted in relatively large numbers.

Difficult classification because of the use of the subjective term “relatively large numbers” in the NPSpecies definition. Used conservatively in our species list.

Common

May be seen daily, in suitable habitat and season, but not in large numbers.

Uncommon

Likely to be seen monthly in appropriate season/habitat. May be locally common.

Rare

Present, but usually seen only a few times each year.

Occasional

Occurs in the Park at least once every few years, but not necessarily every year.

Used for vagrant species and exceptionally rare species.

Unknown

Abundance unknown.

Conservatively used category used for species where the abundance cannot be determined. Used mainly for species that have a “Probably Present” Status.

N/A

Field is only to be filled out for species which are “Present” or “Probably Present” species. The N/A is used as a placeholder for species whose Status is something other than “Present” or “Probably Present”.

RESIDENCY**Breeder**

Population reproduces in the Park.

Resident

A significant population is maintained in the Park for more than two months each year, but it is not known to breed there.

Migratory

Migratory species that occurs in Park approximately two months or less each year and does not breed there.

Vagrant

Park is outside of the species' usual range.

Unknown

Residency status in Park is unknown.

N/A

Field is only to be filled out for species which are “Present” or “Probably Present” species. The N/A is used as a placeholder for species whose Status is something other than “Present” or “Probably Present”.

NATIVITY

Native

Species is native to the area.

Species is native to North America.

Non-native

Species is not native to the area.

Species is not native to North America and was introduced after European colonization.

Unknown

Nativity status is unknown.

N/A

Field is only to be filled out for species which are “Present” or “Probably Present” species. The N/A is used as a placeholder for species whose Status is something other than “Present” or “Probably Present”.

Appendix 4. Literature Searched

All literature, published and unpublished, related to bird species sightings within Great Basin National Park were reviewed. Unpublished data was evaluated and included only if considered reliable enough to provide accurate species information. The following is a list of the literature that had relevant sighting information and which was entered into NPSpecies and NatureBib.

Alcorn, J.R. 1988. *The Birds of Nevada*: Fairview West Publishing.

Bellamy, Anne. 1993. Northern Goshawk Survey - Great Basin National Park. National Park Service, Unpublished data.

Gabrielson, Ira N. 1949. Bird Notes from Nevada. *Condor*: 51:p.179-187.

Halterman, M.D. et al. 1999. Assessing the Impact of Brown-headed Cowbird Parasitism in Eight National Parks. *Studies in Avian Biology*. 18: 153-159.

Halterman, Mary D., Laymon, Stephan A. 1999. The Effects of Brown-headed Cowbird Parasitism on Neotropical Migrants in Great Basin National Park. Unpublished manuscript on file GRBA RM.

Johnson, Ned K. 1975. Controls of Number of bird Species on Montane Islands in the Great Basin. *Evolution*: 25:p.545-567.

Johnson, Ned K. 1978. Patterns of avian geography and speciation in the intermountain region. In *Great Basin Naturalist Memoirs: Intermountain Biogeography: A Symposium 2*: 137-159

Linsdale, Jean M. 1936. *The Birds of Nevada*. Cooper Ornithological Club, Berkeley, CA.

Medin, Dean E. 1984. Breeding Birds of An Ancient Bristlecone Pine Stand in East Central Nevada. *Great Basin Naturalist* 44(2):272-276.

Medin, Dean E. 1987. Breeding Birds of an Alpine Habitat in the Southern Snake Range, Nevada. *Western Birds*: 18:p.163-169.

Medin, Dean E. 1990. Birds of a shadscale (*Atriplex confertifolia*) habitat in east central Nevada. *Great Basin Naturalist* 50: 295-298

Medin, Dean E. 1990. Birds of an upper sagebrush-grass zone habitat in east-central Nevada. Res. Pap. INT-433. Ogden, UT:U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 7p

Medin, Dean E., Welch, Bruce L., Clary, Warren P. 2000. Bird Habitat Relationships along a Great Basin Elevational Gradient RMRS-RP-23: United States Department of Agriculture.

Woodyard, J., M. Renfro, B.L. Welch, & K. Heister. 2003. A 20-Year Recount of Bird Populations Along a Great Basin Elevational Gradient. Res.Pap. RMRS-RP-43 Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. 11p.

The following references were identified as primary bibliographic references in the Mojave Network Biological Inventory Study Plan but were excluded from this report and NPSpecies for reasons that follow each reference.

Medin, Dean E. 1992. Birds of a Great Basin Sagebrush Habitat in East Central Nevada. USDA Forest Service Intermountain Research Station. Research Paper INT-452.

This study area took place in the lowland valley outside of the park. The median elevation of the study area was 1,710m which is significantly lower than the elevation of the GRBA which is generally around 2,000m at its lowest points.

Baggs, J. E. 1993a. Annotated bibliography of biological collections from Great Basin National Park: Volume II Fauna. Cooperative National Park Resource Studies Unit, University of Nevada, Las Vegas. NPS/WRUNLV/NRTR-93/2 D40. Contribution Number CPSU/UNLV 051/02. 210 pp.

This reference is more of a literature review than a primary source for bird sighting data. All references cited in the Baggs reference, except for one, are separately listed in this reports bibliography and were entered into NPSpecies. The one reference not used for this report was a GRBA park species list by Linelle Wagner. The Wagner species list was determined to include areas outside of the park area and/or used large-scale species distribution maps to determine species presence. In either case, it could not be relied upon as a source of bird sighting data for this project.

Appendix 5. Museums Searched.

The following is a detailed list of museums searched for bird vouchers taken from Great Basin National Park. The entries are in the following format:

Name of Museum searched
Method of search (online, phone/fax, in person)
Address or contact information
Comments/Notes

California Academy of Sciences

Online database

<http://www.calacademy.org/research/bmammals/collections.html>

Cornell University Museum of Vertebrates

Online database

<http://cumv.bio.cornell.edu/ornithology/index.html>

Monte L. Bean Museum, Brigham Young University

Phone

Clayton White, Curator

801-422-4860

Museum of Comparative Zoology - Harvard University

Online database

<http://www.mcz.harvard.edu/Departments/Ornithology/index.cfm>

Nevada State Museum

Phone/Email

George D. Baumgardner, Ph.D.

Curator of Natural History

Nevada State Museum

600 North Carson Street

Carson City, NV 89701

775-687-4810 ext 249

New Mexico Museum of Natural History

Email

Dr. David Hafner

Curator of Vertebrate Zoology

dhafner@nmmnh.state.nm.us

San Diego Natural History Museum

Email

Phil Unitt, Collection Manager, at (619) 232-3821 ext. 235

birds@sdnhm.org.

Smithsonian National Museum of Natural History

Online database

<http://www.nmnh.si.edu/vert/birds/birds.html>

U.C. Berkeley, Museum of Vertebrate Zoology

Online database

<http://www.mip.berkeley.edu/mvz/collections/index.html>

University of Michigan, Museum of Zoology

Online database

http://www.ummz.lsa.umich.edu/birds/Research_Collection.html

University of Nevada, Las Vegas, Herbarium

Searched By Park Service

University of Nevada, Las Vegas, Marjorie Barrick Museum

Phone

Executive Director

Dr. Donald H. Baepler

baepler@unlv.nevada.edu

University of Washington, Burke Museum

Online database

Robert C. Faucett

Collections Manager, Ornithology

Office: 206-543-1668

The online database is not yet publicly available. Special access was granted for this project by Robert Faucett.

Utah Museum of Natural History

Searched By Park Service

The following museum was contacted but no reply to either phone or email messages were returned.

New Mexico Museum of Southwestern Biology

Phone/Email – No response to phone message or email

J. David Ligon, Curator, MSB–Birds

Professor, UNM-Department of Biology

jdligon@unm.edu

(505) 277-3858

Appendix 6. Organized Observations.

Included in the observation category are bird sightings that were part of an organized, but unpublished, study effort or ongoing monitoring plan. For our review, this category includes any bird sighting that was done as part of an organized effort and whose data was centrally collected by an organization. The datasets can include a repository of data sheets, data entered into a spreadsheet, data stored in a database, anything that is a centrally located repository of bird sighting data collected in an organized way.

Each repository listed below is followed by a subjective analysis of the quality of the data. The main two criteria used to determine quality is the presence of specific location information and birder identification skill. Specific location is needed to accurately place the sightings within GRBA. Birder identification skill must be high in order to reduce the occurrence of misidentifications.

Great Basin Bird Observatory, Nevada Breeding Bird Atlas

Project survey period : 1997-2000

of survey points within GRBA : 31

The GBBO surveyed 800 plots across Nevada as part of the Breeding Bird Atlas project between 1997 and 2000. The purpose of the project was to document, throughout the State, evidence of probable or confirmed breeding for birds that breed in Nevada on a regular basis. Methods used were time-unlimited area searches of square plots, randomly placed, within each of 18 landcover (habitat) types. This project led to the first comprehensive maps for Nevada breeding bird distributions. The Atlas is expected to be published in 2005. The Breeding Bird Atlas transects located within or near GRBA are illustrated in Appendix 8.

Data Quality: The Breeding Bird Atlas data are generally accurate and reliable. Atlas surveyors were recruited from the birding community and possessed high skill levels in bird identification. Sighting information contains specific UTM coordinates for each sighting and the data was thoroughly screened by the Atlas authors for outliers and unusual bird sightings. Unusual records underwent additional scrutiny before they were included in the Atlas data base.

National Audubon Society, Christmas Bird Count. (with Cornell Lab of Ornithology).

Project survey period : 1996 – present (ongoing)

of survey points within GRBA : 0

The National Audubon Society's Christmas Bird Count (CBC) is an annual 15-mile diameter circle Area Search for birds, conducted on one day in the winter by volunteers. Results from the CBC achieve the primary objective of monitoring the status and distribution of bird populations across the Western Hemisphere. The Count has been conducted since 1900, and results are available from a national website sponsored by the National Audubon Society and the Cornell Lab of Ornithology. One of these count circles, Snake Valley, overlaps a portion of Great Basin National Park. The Snake Valley Count Circle includes: Great Basin National Park Visitor Center, residential and picnic areas; Grey Cliffs; Pole, Can Young, Young, Snake, Big Wash, and Lexington drainages; the town of Baker; about one mile (1.6 km) up the short-cut road from Hwy 487; the fish hatchery; the town of Garrison; 4¾ miles (7.6 km) north on Utah 159 from Garrison towards the Border Inn, 2¾ (4.4 km) miles up the Ferguson Trail from Hwy 159; part of the Burbank Hills; and Pruess Reservoir.

Data Quality: The Christmas Bird Count is an all-volunteer, open participation, survey that is carried out under the leadership of an experienced birder. However, due to the large group of people involved in the count, a variety of bird identification skills contribute to these data sets. As such, CBC data may be considered only moderately accurate. The coordinator of the Snake Valley CBC circle is Melissa Renfro, an experienced birder and GRBA volunteer. Melissa organizes, screens, and enters the data for the CBC and can be relied upon to catch obvious errors that might have occurred during the count. However, the CBC circle which includes some of the Park area also includes data from areas outside of the Park boundaries and habitats not found within the Park boundaries. The CBC sightings are not recorded with specific UTM locations so the sightings from the Park portion of the CBC circle cannot be separated from the remainder of the sightings. Therefore, CBC data were not entered directly into NPSpecies as a primary source of data but were used, when necessary, only to help determine species status and abundance listings.

Nevada Partners In Flight/Great Basin Bird Observatory, Nevada Bird Count.
Project survey period : 2002 – present (ongoing)
of survey points within GRBA : 7 transects

The Nevada Bird Count (NBC) is a cooperative effort by Nevada agencies and non-governmental organizations to improve coordination among existing bird surveys. The program's overall goal is to provide more comprehensive access to scientifically sound information for management agencies concerned with bird conservation needs. The first module of the NBC was implemented in 2002 and consists of a breeding landbird monitoring network, targeting species of concern to Nevada's resource managers. Approximately 130-180 transects have currently been established across the state. Point count surveys are conducted at 10 points along each transect, located 300m apart. These transects complement those previously established by Bureau of Land Management, Nevada Department of Wildlife, and U.S. Forest Service across the state. The NBC transects located withing or near GRBA are illustrated in Appendix 7.

Data Quality: Participants in the Nevada Bird Count program are experienced birders who have previously obtained experience and knowledge in bird identification. Nevada Bird Count data are also thoroughly screened by the Great Basin Bird Observatory for outliers and unusual bird sightings. Unusual records undergo additional scrutiny before they are included in the Nevada Bird Count database. As such, Nevada Bird Count data can be relied upon as accurate.

Nevada Department of Wildlife (NDOW) and Others, Raptor Surveys
Project survey period : ~1969 – present (ongoing)
of survey points within GRBA : N/A (variable survey locations)

The National Park Service (e.g. LAME) and NDOW assess nest sites in southern Nevada (Mojave portion) using on-the-ground area searches for platform nests. NDOW has extended this effort into the central portion of the state through their Tonopah office. Some raptor nest surveys have been conducted using aerial surveys. Wintering raptor surveys also are conducted by NDOW in the greater Elko area of Nevada. In the Goshute Mountains in eastern Nevada, HawkWatch International has monitoring raptor populations since 1983 using a combination of surveys and raptor banding. These efforts are part of a raptor assessment and monitoring plan designed in the 1970's for the entire Great Basin. The Great Basin Bird Observatory is currently working with NDOW and HawkWatch International to expand efforts to monitor wintering

raptors and implement a Great Basin-wide raptor monitoring program. The NBC transects located within or near GRBA are illustrated in Appendix 9.

Data Quality: The NDOW Raptor Survey information was collected by a variety of individuals from several government agencies. Some are only identified only by their first name or ID number. We did not have sufficient information about of the sightings and how the data were screened to clearly evaluate data quality. As a general rule, though, raptor data are less vulnerable to observer-related problems than other landbird data. While we believe this information to be accurate, it was generally not relied upon to be a primary source for species presence/abundance within the Park.

North American Breeding Bird Survey. USGS (with USFS, NPS, etc.).

Project survey period : ongoing

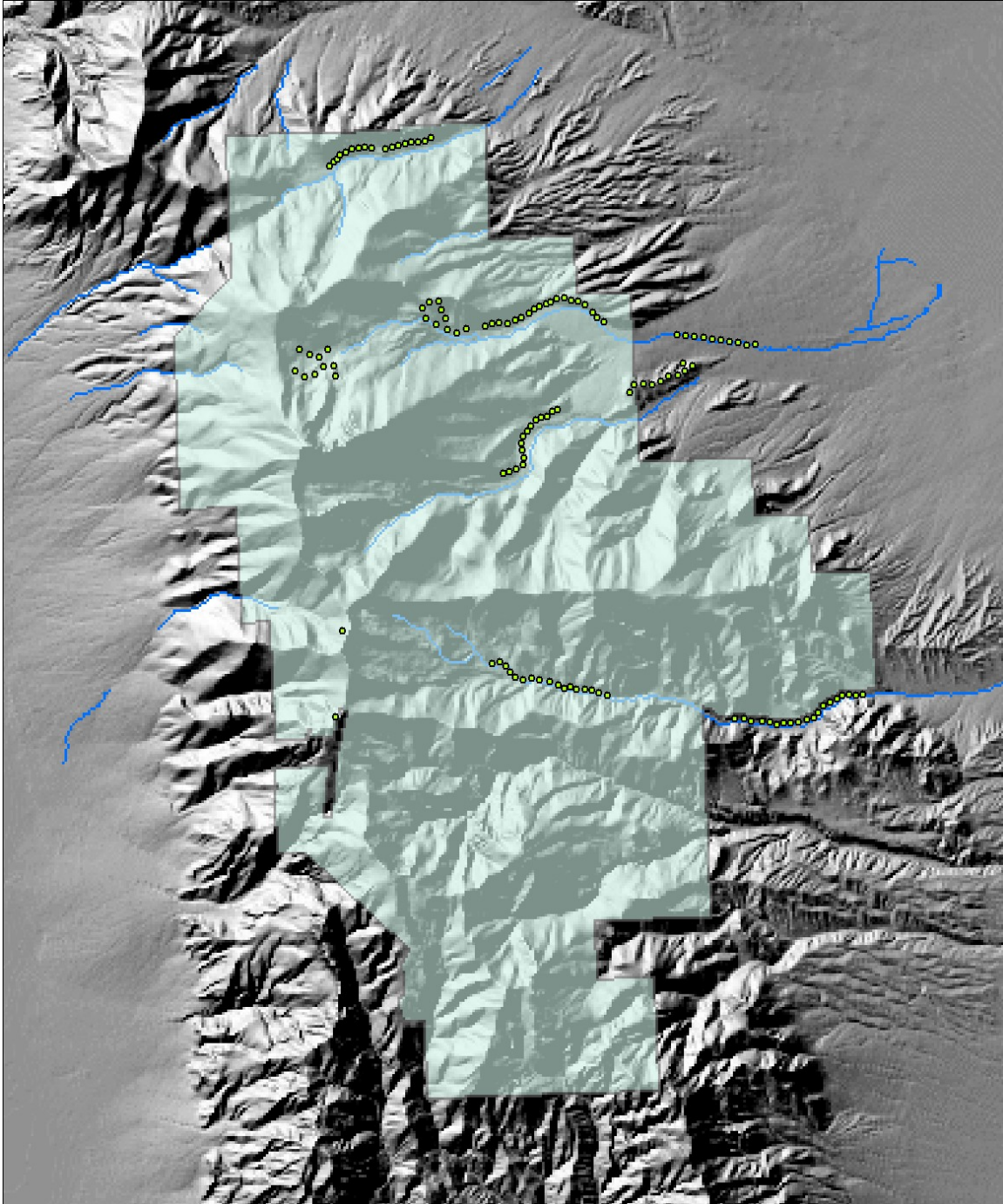
of survey points within GRBA : 0

Begun in 1966, the North American Breeding Bird Survey (BBS) was first administrated by the US Fish and Wildlife Service, and is currently being administered by the U.S. Geological Survey, Patuxent Wildlife Research Center. The survey is conducted once in June across North America, at over 3500 routes. Routes are 24.5 miles long, with observers stopping every 0.5 miles to record all birds seen and heard during a 3-minute point count. Analysis of the data results in continent-scale abundance maps, and trend information on individual species and groups such as neotropical migrants. Breeding Bird Survey routes are located in and around several Mojave Network NPS units. There are 42 BBS routes in Nevada, but only a small proportion have been surveyed on a regular basis. There is one BBS route located near to GRBA, in Spring Valley to the west of the park.

Data Quality: The BBS route near to GRBA is located too far away to provide useful sighting data. In addition, since the routes traverses the length of the valley floor, it is comprises of lowland habitat that is different from the upland habitat of GRBA. Because of these two factors, the BBS data was not used for this inventory project.

Appendix 7. NBC Observation Locations.

The following map graphically depicts the locations of the sightings included in the Nevada Bird Count (NBC) database. A complete list of the observation point coordinates also listed.



The following table lists the UTM locations of the NBC points in the map above.

TransectID	Point	Easting	Northing	Datum	From Park
CF-4248	1	733286	4321135	NAD 27	Yes
CF-4248	2	733039	4320915	NAD 27	Yes
CF-4248	3	733146	4320646	NAD 27	Yes
CF-4248	4	733458	4320680	NAD 27	Yes
CF-4248	5	733498	4320379	NAD 27	Yes
CF-4248	6	732911	4320439	NAD 27	Yes
CF-4248	7	732620	4320371	NAD 27	Yes
CF-4248	8	732360	4320521	NAD 27	Yes
CF-4248	9	732484	4321123	NAD 27	Yes
CF-4248	10	732758	4320990	NAD 27	Yes
MTM-5012	1	737181	4321709	NAD 27	Yes
MTM-5012	2	736913	4321598	NAD 27	Yes
MTM-5012	3	736640	4321693	NAD 27	Yes
MTM-5012	4	736324	4321828	NAD 27	Yes
MTM-5012	5	736050	4322018	NAD 27	Yes
MTM-5012	6	735951	4322286	NAD 27	Yes
MTM-5012	7	736141	4322460	NAD 27	Yes
MTM-5012	8	736398	4322497	NAD 27	Yes
MTM-5012	9	736466	4322251	NAD 27	Yes
MTM-5012	10	736592	4322008	NAD 27	Yes
LR-ROW	1	743101	4321534	NAD27	No
LR-ROW	2	743350	4321517	NAD27	No
LR-ROW	3	743600	4321498	NAD27	No
LR-ROW	4	743856	4321481	NAD27	No
LR-ROW	5	744098	4321420	NAD27	No
LR-ROW	6	744350	4321401	NAD27	No
LR-ROW	7	744596	4321361	NAD27	No
LR-ROW	8	744844	4321330	NAD27	No
LR-ROW	9	745083	4321257	NAD27	No
LR-ROW	10	745319	4321274	NAD27	No
PJ-BAKER	1	741792	4319918	NAD 27	No
PJ-BAKER	2	741913	4320131	NAD 27	No
PJ-BAKER	3	742166	4320163	NAD 27	No
PJ-BAKER	4	742414	4320132	NAD 27	No
PJ-BAKER	5	742645	4320240	NAD 27	No
PJ-BAKER	6	742866	4320376	NAD 27	No
PJ-BAKER	7	743129	4320400	NAD 27	No
PJ-BAKER	8	743342	4320536	NAD 27	No
PJ-BAKER	9	743539	4320686	NAD 27	No
PJ-BAKER	10	743294	4320752	NAD 27	No
MR-US	79	739766	4311697	NAD 27	Yes

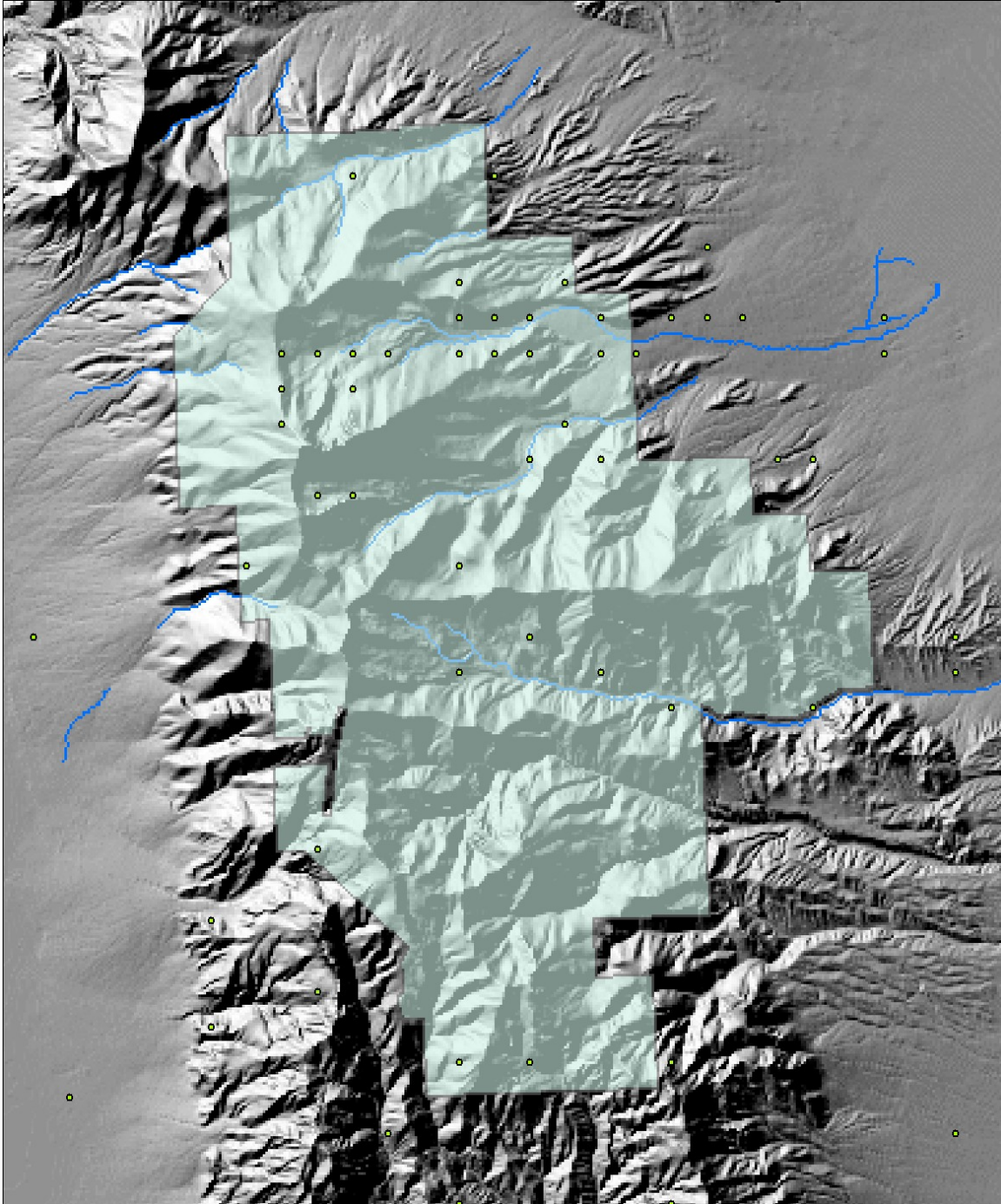
TransectID	Point	Easting	Northing	Datum	From Park
MR-US	78	739931	4311594	NAD 27	Yes
MR-US	77	740108	4311636	NAD 27	Yes
MR-US	76	740283	4311554	NAD 27	Yes
MR-US	75	740521	4311571	NAD 27	Yes
MR-US	74	740716	4311550	NAD 27	Yes
MR-US	73	740904	4311469	NAD 27	Yes
MR-US	89	741154	4311406	NAD 27	Yes
MR-US	88	737910	4312287	NAD 27	Yes
MR-US	87	738119	4312330	NAD 27	Yes
MR-US	86	738300	4312230	NAD 27	Yes
MR-US	85	738409	4312058	NAD 27	Yes
MR-US	84	738564	4311904	NAD 27	Yes
MR-US	83	738788	4311837	NAD 27	Yes
MR-US	81	739012	4311891	NAD 27	Yes
MR-US	90	739244	4311844	NAD 27	Yes
MR-US	80	739538	4311783	NAD 27	Yes
MR-STW	55	733320	4326291	NAD 27	Yes
MR-STW	56	733456	4326406	NAD 27	Yes
MR-STW	57	733539	4326491	NAD 27	Yes
MR-STW	58	733622	4326618	NAD 27	Yes
MR-STW	59	733779	4326684	NAD 27	Yes
MR-STW	60	733955	4326772	NAD 27	Yes
MR-STW	61	734141	4326791	NAD 27	Yes
MR-STW	62	734323	4326815	NAD 27	Yes
MR-STW	63	734516	4326811	NAD 27	Yes
MR-STW	64	734516	4326811	NAD 27	Yes
MR-STW	65	734902	4326789	NAD 27	Yes
MR-STW	66	735083	4326825	NAD 27	Yes
MR-STW	67	735262	4326880	NAD 27	Yes
MR-STW	68	735463	4326935	NAD 27	Yes
MR-STW	69	735630	4326968	NAD 27	Yes
MR-STW	70	735832	4326977	NAD 27	Yes
MR-STW	71	736004	4327001	NAD 27	Yes
MR-STW	72	736175	4327083	NAD 27	Yes
MR-BD	40	739758	4319444	NAD 27	Yes
MR-BD	41	739593	4319391	NAD 27	Yes
MR-BD	42	739461	4319236	NAD 27	Yes
MR-BD	43	739289	4319210	NAD 27	Yes
MR-BD	44	739131	4319152	NAD 27	Yes
MR-BD	45	738985	4318989	NAD 27	Yes
MR-BD	46	738909	4318830	NAD 27	Yes
MR-BD	47	738769	4318685	NAD 27	Yes
MR-BD	48	738728	4318494	NAD 27	Yes
MR-BD	49	738762	4318293	NAD 27	Yes
MR-BD	50	738793	4318086	NAD 27	Yes
MR-BD	51	738770	4317883	NAD 27	Yes

TransectID	Point	Easting	Northing	Datum	From Park
MR-BD	52	738208	4317649	NAD 27	Yes
MR-BD	53	738391	4317706	NAD 27	Yes
MR-BD	54	738592	4317771	NAD 27	Yes
MR-SD	1	748342	4311414	NAD 27	Yes
MR-SD	2	748144	4311397	NAD 27	Yes
MR-SD	3	747951	4311416	NAD 27	Yes
MR-SD	4	747774	4311387	NAD 27	Yes
MR-SD	5	747607	4311295	NAD 27	Yes
MR-SD	6	747430	4311204	NAD 27	Yes
MR-SD	7	747241	4311100	NAD 27	Yes
MR-SD	8	747095	4310917	NAD 27	Yes
MR-SD	9	746959	4310768	NAD 27	Yes
MR-SD	10	746764	4310728	NAD 27	Yes
MR-SD	11	746517	4310646	NAD 27	Yes
MR-SD	12	746319	4310628	NAD 27	Yes
MR-SD	13	746115	4310616	NAD 27	Yes
MR-SD	14	745914	4310580	NAD 27	Yes
MR-SD	15	745723	4310656	NAD 27	Yes
MR-SD	16	745523	4310679	NAD 27	Yes
MR-SD	17	745203	4310675	NAD 27	Yes
MR-SD	18	745000	4310731	NAD 27	Yes
MR-SD	19	744739	4310734	NAD 27	Yes
MR-LD	20	737710	4321793	NAD 27	Yes
MR-LD	21	737903	4321858	NAD 27	Yes
MR-LD	22	738091	4321890	NAD 27	Yes
MR-LD	23	738343	4321859	NAD 27	Yes
MR-LD	24	738555	4321964	NAD 27	Yes
MR-LD	25	738738	4322029	NAD 27	Yes
MR-LD	26	738937	4322163	NAD 27	Yes
MR-LD	27	739091	4322261	NAD 27	Yes
MR-LD	28	739247	4322341	NAD 27	Yes
MR-LD	29	739436	4322409	NAD 27	Yes
MR-LD	30	739543	4322458	NAD 27	Yes
MR-LD	31	739718	4322568	NAD 27	Yes
MR-LD	32	739930	4322576	NAD 27	Yes
MR-LD	33	740139	4322525	NAD 27	Yes
MR-LD	34	740332	4322482	NAD 27	Yes
MR-LD	35	740510	4322385	NAD 27	Yes
MR-LD	36	740728	4322171	NAD 27	Yes
MR-LD	37	740865	4322024	NAD 27	Yes
MR-LD	38	741054	4321920	NAD 27	Yes
MR-US	73	740904	4311469	NAD 27	Yes
MR-US	74	740716	4311550	NAD 27	Yes
MR-US	75	740521	4311571	NAD 27	Yes
MR-US	76	740283	4311554	NAD 27	Yes
MR-US	77	740108	4311636	NAD 27	Yes

TransectID	Point	Easting	Northing	Datum	From Park
MR-US	78	739931	4311599	NAD 27	Yes
MR-US	79	739766	4311697	NAD 27	Yes
MR-US	80	739538	4311783	NAD 27	Yes
MR-US	81	739012	4311891	NAD 27	Yes
MR-US	83	738788	4311837	NAD 27	Yes
MR-US	84	738564	4311904	NAD 27	Yes
MR-US	85	738409	4312058	NAD 27	Yes
MR-US	86	738300	4312230	NAD 27	Yes
MR-US	87	738119	4312330	NAD 27	Yes
MR-US	88	737910	4312287	NAD 27	Yes
MR-US	89	741154	4311406	NAD 27	Yes
MR-US	90	739244	4311844	NAD 27	Yes

Appendix 8. Nevada Breeding Bird Atlas Observation Locations.

The following map graphically depicts the locations of the sightings included in the Nevada Breeding Bird Atlas database. A complete list of the observation point coordinates also listed.

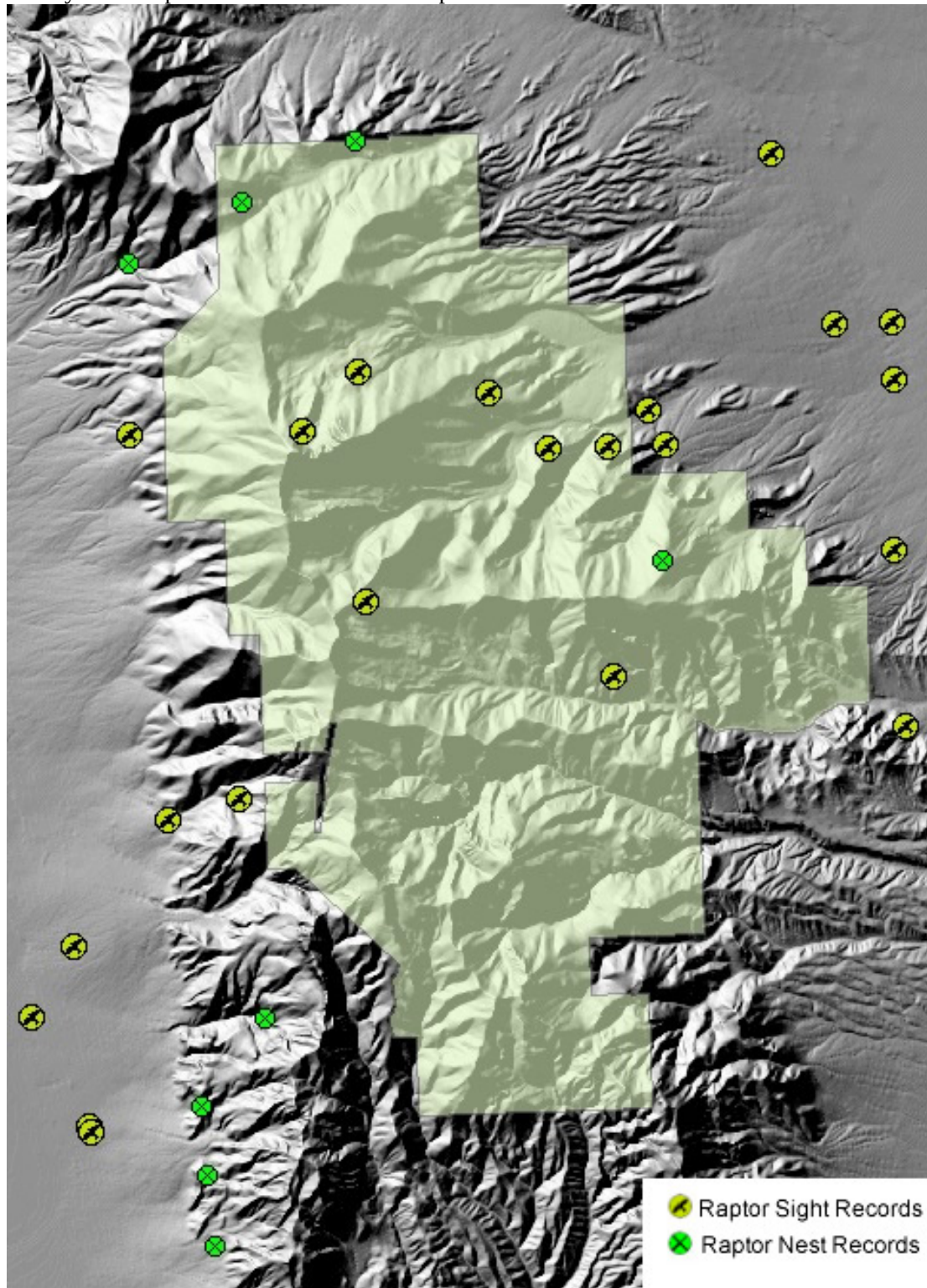


The following table lists the UTM locations of the Atlas points in the map above.

RECORD	SPECIES	HAB_OBS	TYPE	YEAR	CONFIRM	X_AXIS	Y_AXIS
14536	PRFA	AL	1	1999	PO	731000	4315000
21861	CORA	AL	2	1999	PO	732000	4319000
10982	TTWO	MF	2	1998	CF	732000	4320000
3365	SPSA	HR	2	1997	CF	732000	4321000
31696	PEFA		2	2000	CF	733000	4303000
24210	BTHU	MF	1	2000	PO	733000	4307000
496	SSHA	MF	1	1997	PO	733000	4317000
519	SSHA	MF RI	1	1997	PO	733000	4321000
11242	WBNU	MF	2	1998	CF	734000	4320000
4075	INBU	RI	2	1997	PO	734000	4321000
21656	TRES	HR	2	1999	CF	734000	4326000
379	FLOW	MF	1	1997	PR	735000	4299000
405	NOHA	MP	1	1997	PO	735000	4321000
300	NOHA	MS	1	1997	PO	737000	4297000
20667	GWTE	AG	2	1999	PR	737000	4301000
29447	NOHA	RI	2	2000	PO	737000	4312000
318	TUVU	MF MS	1	1997	PO	737000	4315000
3647	WESJ	PJ	2	1997	CF	737000	4321000
3687	MOCH	HR	2	1997	CF	737000	4322000
10923	COPO	MF	2	1998	PO	737000	4323000
21565	COFL	HR	2	1999	CF	738000	4321000
29553	BLGO	RI	2	2000	CF	738000	4322000
20839	NOGO	HR	2	1999	CF	738000	4326000
24000	BLGO	MF	1	2000	PO	739000	4301000
5801	COHA	MF	1	1998	CF	739000	4313000
21466	HAWO	HR	2	1999	CF	739000	4318000
29455	COHA	MF RI	2	2000	PO	739000	4321000
3846	AMRO	HR	2	1997	CF	739000	4322000
10729	RTHA	HR	2	1998	PR	740000	4319000
22248	BTGW	PJ	2	1999	PO	740000	4323000
254	BTHU	RI	1	1997	PO	741000	4295000
3851	AMRO	MF	2	1997	PR	741000	4312000
21985	AMDI	HR	2	1999	CF	741000	4318000
3831	HETH	HR	2	1997	PO	741000	4321000
4218	WEME	PJ	2	1997	CF	741000	4322000
10795	CAQU	UR	2	1998	PR	742000	4321000
13784	GOEA	MF	1	1999	PR	743000	4297000
29790	WTSW	BA	2	2000	CF	743000	4301000
29457	COHA	RI	2	2000	CF	743000	4311000
10692	NOHA	HR	2	1998	CF	746000	4318000
20603	GBHE	LR	2	1999	PO	747000	4311000
10693	NOHA	HR	2	1998	PO	747000	4318000

Appendix 9. NDOW Raptor Observation Locations.

The following map graphically depicts the locations of the sightings from the NDOW Raptor Surveys. A complete list of the observation point coordinates also listed.



List of Raptor Sight Records from the GRBA vicinity.

Scientific Name	Common Name	Date	Year	Reporter	Location	Easting	Northing	From Park
Accipiter cooperii	hawk, Cooper's	12/01	1975	Raymond	Deer Lodge Rd.	749381	4320414	No
Accipiter gentilis	goshawk, Northern	04/23	1974	Sundstrom	Pine Cr. & Ridge Cr. <W side snake Rng.>	728092	4318847	No
Accipiter gentilis	goshawk, Northern	12/17	1977	Lucas	Baker Cr. <S.snake Rng.>	739772	4318505	Yes
Accipiter gentilis	goshawk, Northern	10/03	1976	Windous, Luc	Pole Canyon	741384	4318554	Yes
Accipiter striatus	hawk, Sharp-shinned	12/12	1973	Wickersham	Hub Basin	731126	4308729	No
Aquila chrysaetos	eagle, Golden	10/10	1971	unknown	Shoshone	725347	4302606	No
Aquila chrysaetos	eagle, Golden	03/08	1976	3207	Spring Valley	726544	4304578	No
Aquila chrysaetos	eagle, Golden	03/10	1972	Wickersham	Spring Valley	726544	4304578	No
Aquila chrysaetos	eagle, Golden	06/08	1971	Cain	Shoshone ponds area	726984	4299559	No
Aquila chrysaetos	eagle, Golden	07/16	1973	Dodge	Shoshone ponds, 1 mi. W of <Spring Valley>	726984	4299559	No
Aquila chrysaetos	eagle, Golden	10/02	1971	Cain	Shoshone ponds, near	726984	4299559	No
Aquila chrysaetos	eagle, Golden	12/12	1973	Wickersham	Hub Basin	731126	4308729	No
Aquila chrysaetos	eagle, Golden	07/26	1980	Jamison	Tule Desert	741384	4318554	Yes
Aquila chrysaetos	eagle, Golden	05/13	1977	Papez	Rose Valley	741580	4312128	Yes
Aquila chrysaetos	eagle, Golden	12/09	1976	3207	Rose Valley	742995	4318604	No
Aquila chrysaetos	eagle, Golden	08/02	1975	Laswell	Spring Valley	747720	4321973	No
Aquila chrysaetos	eagle, Golden	12/29	1974		Lake Mead, Bighorn Island	749330	4322024	No
Asio otus	owl, Long-eared	01/11	1974	Jamison	Eagle Valley Res., 8 mi. N of <Spring Val	745966	4326751	No
Athene cunicularia	owl, Burrowing	06/10	1978	Ely BLM	Spring Valley	727045	4299422	No
Athene cunicularia	owl, Burrowing	07/12	1974	Oakleaf	Pole Canyon, Big; road to (in middle of f	729140	4308124	No
Buteo jamaicensis	hawk, Red-tailed	05/09	1973		Juanita Springs	742513	4319565	No
Falco mexicanus	falcon, Prairie	03/01	1973	Wickersham	Spring Valley	726544	4304578	No
Falco peregrinus	falcon, Peregrine	11/26	0	Perkins	Wheeler, E of	734646	4314196	Yes
Haliaeetus leucocephal	eagle, Bald	12/06	1977	Anderson	Blue Lake	734454	4320656	Yes
Haliaeetus leucocephal	eagle, Bald	03/04	1976	Windous	Lehman Caves	738112	4320066	No
Haliaeetus leucocephal	eagle, Bald	01/01	1975	Laughlin	Baker, 2 mi S	749363	4315646	No
Haliaeetus leucocephal	eagle, Bald	01/20	1975	Pintar	Lexington Canyon	749686	4310769	No
Otus kennicottii	screech-owl, Wester	02/15	1981	Collie	Wheeler Peak	732899	4318988	Yes

List of Raptor Nest Records from the GRBA vicinity.

NEST_ID	Common Name	Easting	Northing	Location	Date	Last Check	Last Used	Biologist
1091	Cooper's Hawk	728107	4323690	S SNAKE RNG/WILLARD CK	12/10/1977	1/1/1978		Lucas
1032	Cooper's Hawk	734417	4327108	S SNAKE RNG/STRAWBERRY CK	6/1/1977	1/1/1980	1/1/1978	Stiver
977	Cooper's Hawk	742963	4315418	S SNAKE RNG/CAN YOUNG CANYON	5/11/1977	1/1/1980	1/1/1978	Reed
1088	Northern Goshawk	731263	4325398	S SNAKE STRAWBERRY CR	11/30/1977	1/1/1977		Wickersha
394	Prairie Falcon	730136	4300161	S SNAKE RNG/HILL TOP MINE AREA	6/1/1974	1/1/1976	1/1/1976	Lucas
395	Prairie Falcon	730272	4298236	S SNAKE RNG/ORIOLE&EVERETT MIN	6/1/1974	1/1/1976	1/1/1976	Lucas
273	Prairie Falcon	731885	4302622	SW end of	1/1/1974	1/1/1974	1/1/1974	Magee
1090	Sharp-shinned Hawk	728107	4323690	S SNAKE RNG/WILLARD CK	12/10/1977	1/1/1977		Lucas

Appendix 10. Interviews.

The following people were interviewed for this project. Interviews were typically 10-90 minutes in duration with some follow-up via phone and email.

Name	Notes
Neal Darby Fish and Wildlife Biologist Great Basin National Park	In addition to general resource information, Neal Darby provided first-hand knowledge of park species, particularly game species.
JoAnne Black Curator Great Basin National Park	JoAnne Black was interviewed provided information about and access to the ANCS+ database.
Bryan Hamilton Great Basin National Park	Bryan Hamilton had started work on the bird inventory and provided us with information, spreadsheets, and existing information that he had gathered.
Jason Williams Non-Game Wildlife Biologist NDOW	Jason Williams was able to provide Raptor Survey records from within and near GRBA.
Melissa Renfro Volunteer Great Basin National Park	An experienced birder and local to the GRBA vicinity, Melissa's experience with the park and park species was indispensable in helping with this project.
John Woodyard Volunteer Great Basin National Park	Another experienced birder and local to the GRBA vicinity, John's personal birding database contained a wealth of sighting information from GRBA and the vicinity.
Kristina Heister Mojave I&M Network Coordinator National Park Service	Kristina provided instruction and guidance for this project and helped to coordinate all parties involved.

Appendix 11. Project Budget.

Personnel (including benefits)

Museum Search (phone, internet, email) Technician salary: 8 hrs @ \$25/hr	\$200
Literature search Technician salary: 19 hrs @ \$25/hr x 2	\$950
Observations search (Formal and casual) Technician salary: 10 hrs @ \$25/hr	\$250
Interview local experts Technician salary: 8 hrs @ \$25/hr x 2	\$250
Collate data 4 hours Technician salary: 8 hrs @ \$25/hr	\$200
Database Update Technician salary: 50 hrs @ \$25/hr x 2	\$2,500
Report Production Technician salary: 24 hrs @ \$25/hr	\$600
Travel expenses to Great Basin Natl. Park	\$950
<i>UNR/CESU overhead (15%)</i>	<i>\$885</i>