

**Annotated List of Animal Species Observed In and Adjacent to the Mojave Desert  
Portion of Grand Canyon — Parashant National Monument**



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# **Annotated List of Animal Species Observed In and Adjacent to the Mojave Desert Portion of Grand Canyon — Parashant National Monument**

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**Abstract.** Observations of animals in the Mojave Desert portion of Grand Canyon — Parashant National Monument were recorded, providing evidence for the presence of 93 species of birds, 20 species of mammals, 15 species of herps, and 18 species of odonates. Some of these species have not previously been documented in the area. The only surprising observation was of two Uinta Chipmunks (*Tamias umbrinus*) at Middle Spring. These animals were outside of the expected range, outside of typical habitat, below the expected elevation, and vocalized in a manner unexpected for a chipmunk. It is possible that these chipmunks are Pleistocene relicts stranded at the spring and isolated from others of their kind, possibly representing an undescribed subspecies.

**Introduction.** Grand Canyon — Parashant National Monument (PARA) lies in the little-visited northwest corner of Arizona, north of the Colorado River, west of Grand Canyon National Park (GRCA), and east of the Nevada State Line. In this region, Lake Mead and the Colorado River (300-ft setback from maximum pool height) are included in Lake Mead National Recreation Area (LAKE).

For many years, animal observations have been recorded at LAKE, GRCA, and higher-elevation portions of PARA. However, little has been recorded in the lower-elevation, western portion of PARA where habitat is typical of the Mojave Desert. The objective of this report was to provide records of animal species observed in the Mojave Desert portion of PARA, with additional records of observations within a few miles of the boundaries of PARA. Species recorded outside of PARA are expected to occur within the National Monument.

Southwestern PARA lies in the Mojave Desert and experiences climate conditions typical for that desert (hot, dry summers; cold, dry winters). Vegetation in this area also is typical of the Mojave Desert. It is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) at the lowest elevations, by a diverse assemblage of shrubs at middle elevations, and by Pinyon-Juniper Woodland (*Pinus monophylla* and *Juniperus osteosperma*) at higher elevations. This contrasts with the eastern portions of PARA, where higher elevations, cooler temperatures, and greater precipitation support ponderosa pine (*Pinus ponderosa*) forests, big sagebrush (*Artemisia tridentata*), and other montane species.

**Methods.** I visited the PARA area in 1998, 2001, 2008, and 2011. The primary purpose of the early trips was recreational camping and bird watching. I recorded species presence, location, habitat characteristics, time of day, and weather conditions; and less consistently, counts, behavior, and other notes.

In 1998, I entered PARA at the Mt. Trumbull School House, traversed the area to the east, and exited to Toroweap, where I camped for two nights. In 2001, I entered PARA from Whitney Pass, drove south past Pakoon Springs, and exited via St. Thomas Gap on the same day. In 2008, I spent a day climbing Billy Goat Peak, about 1 mile west of the PARA boundary.

During September 2011, I spent 5 days observing and recording animal species during the fall bird migration (Figure 1). I recorded species presence, location, time of day, weather conditions, counts, behavior, habitat characteristics, and other notes. I entered PARA via Lime Kiln Road, drove south to Whitney Ranch, Pakoon Springs, and Tassi Ranch. I exited PARA via Grand Wash, Cottonwood Wash, and Lime Kiln Road.

The presence of species was determined by visual observation of the animal, or by observation of sign (e.g., calls, songs, tracks, scat, and burrows).



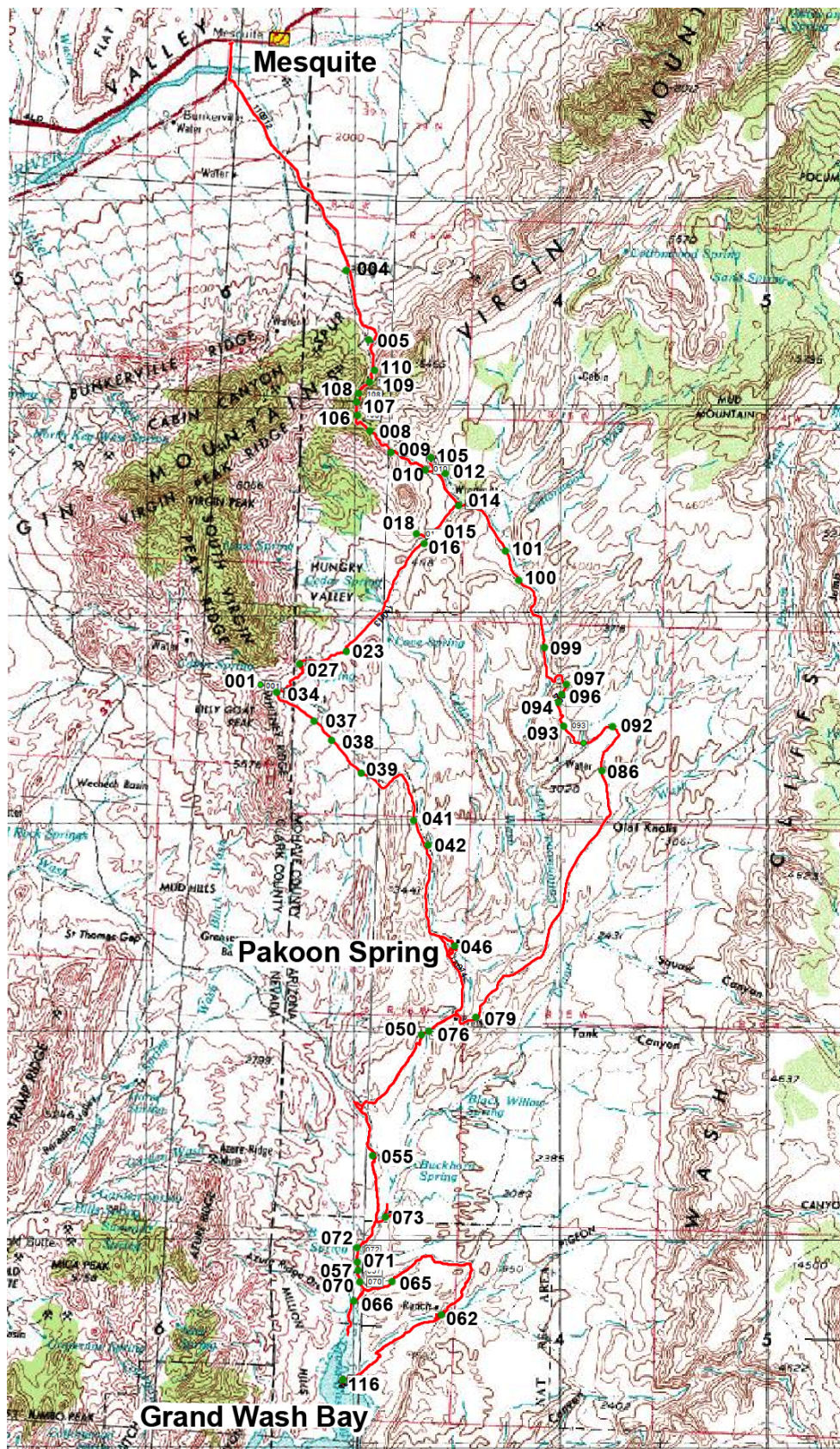


Figure 1. Survey route (red) from Mesquite, Nevada to Grand Wash Bay, Arizona. Site numbers indicate observation record locations (Appendix G).

Bird names follow the American Ornithologists' Union *Check-list of North American Birds* (<http://www.aou.org>). Herp names follow the Society for the Study of Amphibians and Reptiles *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, With Comments Regarding Confidence In Our Understanding. Edition 6.1 Last updated: 24 May 2011* (<http://www.ssarherps.org>). Mammal names follow the American Society of Mammalogists *Don E. Wilson & DeeAnn M. Reeder (eds.). 2005. Mammal Species of the World. A Taxonomic and Geographic Reference (3rd ed), Johns Hopkins University Press, 2,142 pp.* (<http://www.bucknell.edu/msw3/>). Odonate names follow The Dragonfly Society of the Americas *Abbott, J.C. 2007. OdonataCentral: An online resource for the distribution and identification of Odonata. Texas Natural Science Center, The University of Texas at Austin.* (Accessed: October 05, 2011). (<http://www.odonatacentral.org>). Plant names follow the USDA Natural Resources Conservation Service *Plants Database* (<http://plants.usda.gov>).

At each observation site, longitude and latitude were recorded on a hand-held Global Position System (GPS) device with an estimated 3-m maximum position error. Habitat characteristics were also recorded.

**Results.** Observation records of birds, mammals, amphibians, reptiles, and odonates are listed in the appendices. For birds, 93 species (Appendix A) were identified with a high degree of certainty. Birds seen but not identified were not recorded.

For mammals, 19 species (Appendix B) were identified with a high degree of certainty. In addition, feral equids are present (scat, tracks), but none were seen, so these might have been horses or burros. At least 5 species of bats were observed, but only two were identified with any certainty. Small bats and medium-sized bats were seen, and one group of bats had been using Lime Kiln Mine as a maternity site or summer roost (no longer present in the mine). These observations are included.

For herps, 3 species of amphibians were observed (Appendix C). Of these, 1 species of toad was intermediate in defining characteristics, and so is tentatively identified as the more common species. For reptiles, 9 species of lizards and 2 species of snakes were identified (Appendix D) with a high degree of certainty. One well-formed tortoise burrow was found, but it was inactive (no scat or tracks), so the species is listed without full certainty.

For odonates, 10 species of dragonflies and 8 species of damselflies were identified (Appendix E) with a fairly high degree of certainty. One Glider was observed, but not identified to species. In addition, 2 individual Bluets were observed but not identified. These were included to indicate the paucity of these creatures.

Habitat characteristics were recorded at each observation site (Appendix F). These data included visually dominant plant species, other interesting species that caught my eye, and weeds. GPS coordinates for each observation site are presented in Appendix G.

**Discussion.** The Mojave Desert portion PARA appears to be typical Mojave Desert habitat with a typical complement of plant and animal species. Animal species typical of this desert ecosystem, but not yet recorded in the area, should be expected.

The only unusual observation was of two brightly colored chipmunks at Middle Spring (Site 027) on the eastern flank of the South Virgin Peak Ridge. These two chipmunks had bright reddish-orange sides and well-defined dark and light dorsal stripes. Despite being out of range, out of habitat, and too low in

elevation, I interpret these as Uinta Chipmunks (*Tamias umbrinus*). One Cliff Chipmunk (*Tamias dorsalis*) was seen in Lime Kiln Canyon, just north of the PARA boundary, and it was marked typical for that species (dark sides, indistinct dorsal stripes).

The two Uinta Chipmunks barked in a voice atypical for chipmunks. In general, chipmunks bark with a loud, short, high-pitched note. These two chipmunks, however, barked with a quiet, low-pitched note that was more of a huff than a bark. At first, I thought the sounds might be a chukar or quail, but the sound was quite unusual, and when I tracked it down, I saw the chipmunks barking.

When I first saw the chipmunks, one was in a large cactus apple (*Opuntia engelmannii*), perhaps harvesting a ripe fruit, and the other was in a large catclaw acacia tree (*Acacia greggii*). The chipmunk on the ground climbed into the tree, and both retreated some distance into the thicket. I left the area briefly, and when I returned, the two were in their previous positions. Again, the squirrel on the ground climbed into the tree, and both retreated farther back into the thicket of catclaw acacia trees. Despite repeated efforts, I was not able to photograph the chipmunks.

If these are Uinta Chipmunks, they probably represent a population isolated from others of their kind by distance, elevation, and habitat, and given the unique voice, might represent an undescribed subspecies.



## APPENDIX A – BIRDS

Note: NR = Not Recorded

### Anseriformes

#### Green-winged Teal (*Anas crecca*)

Location	Date	Count	Age	Gender	Notes
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	Female	None

### Galliformes, Odontophoridae

#### Gambel's Quail (*Callipepla gambelii*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	NR	None
Mesquite Stock Pond (4)	09/12/2011	2	Adult	NR	None
Lime Kiln Stock Pond (5)	09/12/2011	10	Adult	NR	None
Grave Site (34)	09/13/2011	10	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	8	Adult	NR	None
Pakoon Springs (46)	09/13/2011	100	Adult	NR	None
Burro Spring - North (50)	09/14/2011	10	Adult	NR	None
Burro Spring - North (50)	09/15/2011	10	Adult	NR	None
Road 113 (55)	09/14/2011	10	Adult	Both	None
Tassi Spring (62)	09/14/2011	125	Adult	NR	None
Burro Spring - South (72)	09/15/2011	10	Adult	NR	None
Seven Springs (73)	09/15/2011	15	Adult	NR	None
Road 1027 (93)	09/16/2011	10	Adult	NR	None
Road 1027 (99)	09/16/2011	10	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	20	Adult	NR	None

A. The sounds of one covey were assumed to be 10 birds. Counted coveys ranged from about 8-15.

#### Chukar (*Alectoris chukar*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Pass (8)	09/12/2011	5	Adult	NR	A

A. Heard calling in the distance.

### Pelecaniformes, Ardeidae

#### Black-crowned Night-Heron (*Nycticorax nycticorax*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	2	Adult	NR	A

A. Two adults roosting high in a cottonwood tree

### Accipitriformes, Cathartidae

#### Turkey Vulture (*Cathartes aura*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	2	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Lime Kiln Pass (8)	09/16/2011	2	Adult	NR	None
Road 1027 (100)	09/16/2011	2	Adult	NR	None

## Accipitriformes, Accipitridae

### Cooper's Hawk (*Accipiter cooperii*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Pass (8)	09/16/2011	1	Adult	NR	None

### Red-tailed Hawk (*Buteo jamaicensis*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	1	Juvenile	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Juvenile	NR	None
Burro Spring - North (50)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/14/2011	2	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None
Mesquite Stock Pond (4)	09/16/2011	1	Adult	NR	None
Road 1027 (93)	09/16/2011	1	Adult	NR	None

### Golden Eagle (*Aquila chrysaetos*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Pass (8)	09/16/2011	2	Adult	NR	A

A. Flying together and landed on a ledge together

## Falconiformes, Falconinae

### American Kestrel (*Falco sparverius*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	Male	None
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Road 111 (86)	09/15/2011	1	Adult	NR	None
Road 1027 (93)	09/16/2011	1	Adult	NR	None
Road 1027 (99)	09/16/2011	1	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	NR	None

### Peregrine Falcon (*Falco peregrinus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

### Prairie Falcon (*Falco mexicanus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/13/2011	1	Adult	NR	None
Tassi Spring (62)	09/14/2011	1	Adult	NR	None
Lime Kiln Pass (8)	09/16/2011	1	Adult	NR	A

A. Identification uncertain (either Prairie or Peregrine), but probably Prairie

## Charadriiformes, Charadriidae

### Killdeer (*Charadrius vociferus*)

Location	Date	Count	Age	Gender	Notes
Road 111 (39)	09/13/2011	1	Adult	NR	A

A. Flushed off roadway



## Columbiformes, Columbidae

### Mourning Dove (*Zenaida macroura*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Stock Pond (5)	09/12/2011	4	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	3	Adult	NR	None
Pakoon Springs (46)	09/13/2011	10	Adult	NR	None
Tassi Spring (62)	09/14/2011	10	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	2	Adult	NR	None

## Cuculiformes, Cuculidae

### Greater Roadrunner (*Geococcyx californianus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Road 242 (10)	09/16/2011	2	Adult	NR	None

## Strigiformes, Tytonidae

### Barn Owl (*Tyto alba*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	NR	NR	A

A. Outside the boundaries of Parashant.

## Strigiformes, Strigidae

### Western Screech-Owl (*Megascops kennicottii*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	A
Tassi Spring (62)	09/14/2011	2	Adult	NR	B

A. Roosting in old ranch house.

B. Calling from cottonwood trees behind ranch house and from near the cattle tank.

### Great Horned Owl (*Bubo virginianus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	NR	NR	A
Tassi Spring (62)	09/14/2011	2	Adult	NR	B

A. Outside the boundaries of Parashant.

B. One owl roosting on cliff a few hundred yards upstream from the ranch, the other in cottonwood trees just below the ranch house.

## Caprimulgiformes, Caprimulgidae

### Common Poorwill (*Phalaenoptilus nuttallii*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	A

A. One bird calling in the night.

## Apodiformes, Apodidae

### White-throated Swift (*Aeronautes saxatalis*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Billy Goat Camp (01)	11/25/2002	NR	Adult	NR	A

A. Outside the boundaries of Parashant.

## Apodiformes, Trochilidae

### Black-chinned Hummingbird (*Archilochus alexandri*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

### Anna's Hummingbird (*Calypte anna*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	Female	None

### Costa's Hummingbird (*Calypte costae*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A

A. Outside the boundaries of Parashant.

### Broad-tailed Hummingbird (*Selasphorus platycercus*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	Female	None
Tassi Spring (62)	09/15/2011	5	Adult	NR	None
Road 113 (70)	09/15/2011	1	Adult	Female	None

## Piciformes, Picidae

### Red-naped Sapsucker (*Sphyrapicus nuchalis*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	NA	NA	NA	A
Tassi Spring (62)	09/14/2011	NA	NA	NA	A
Seven Springs (73)	09/15/2011	NA	NA	NR	A
Lime Kiln Road (108)	09/16/2011	NA	NA	NA	B

A. Sap wells on trees.

B. Sap wells on oak trees

### Ladder-backed Woodpecker (*Picoides scalaris*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	Female	None
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	Both	None
Tassi Spring (62)	09/14/2011	2	Adult	Both	None

Northern Flicker (*Colaptes auratus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Road 1027 (92)	09/16/2011	1	Adult	NR	None

Passeriformes, Tyrannidae

Olive-sided Flycatcher (*Contopus cooperi*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None

Western Wood-Pewee (*Contopus sordidulus*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	4	Adult	NR	None
Middle Spring (27)	09/13/2011	5	Adult	NR	None
Pakoon Springs (46)	09/13/2011	5	Adult	NR	None
Tassi Spring (62)	09/14/2011	1	Adult	NR	None

Willow Flycatcher (*Empidonax traillii*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

Gray Flycatcher (*Empidonax wrightii*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Road 242 (9)	09/12/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

Cordilleran Flycatcher (*Empidonax occidentalis*)

Location	Date	Count	Age	Gender	Notes
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NR	None

Say's Phoebe (*Sayornis saya*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Pakoon Stock Pond (42)	03/25/2001	1	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None
Road 1027 (93)	09/16/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

Ash-throated Flycatcher (*Myiarchus cinerascens*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A

A. Outside the boundaries of Parashant.

## Passeriformes, Laniidae

### Loggerhead Shrike (*Lanius ludovicianus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	NR	None
Mesquite Stock Pond (4)	09/12/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None
Road 111 (37)	09/13/2011	1	Adult	NR	None
Road 111 (38)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/13/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None
Pigeon Point (116)	09/15/2011	2	Adult	NR	None
Road 1027 (92)	09/16/2011	1	Adult	NR	None
Road 1027 (99)	09/16/2011	1	Adult	NR	None

## Passeriformes, Vireonidae

### Bell's Vireo (*Vireo bellii*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

### Gray Vireo (*Vireo vicinior*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A

A. Outside the boundaries of Parashant.

### Plumbeous Vireo (*Vireo plumbeus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

### Cassin's Vireo (*Vireo cassinii*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	1	Adult	NR	None

### Warbling Vireo (*Vireo gilvus*)

Location	Date	Count	Age	Gender	Notes
Road 242 (9)	09/12/2011	2	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	5	Adult	NR	None

## Passeriformes, Corvidae

### Pinyon Jay (*Gymnorhinus cyanocephalus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Road 101 Cattle Tank (16)	09/12/2011	15	Adult	NR	B
Jacobs Ranch (23)	09/13/2011	20	Adult	NR	C

A. Outside the boundaries of Parashant.

B. Estimated count (one flock)

C. Estimated count (one large flock)



Western Scrub-Jay (*Aphelocoma californica*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Billy Goat Camp (01)	03/25/2001	5	Adult	NR	A
Lime Kiln Stock Pond (5)	09/12/2011	3	Adult	NR	None
Lime Kiln Pass (8)	09/12/2011	2	Adult	NR	None
Road 242 (10)	09/12/2011	2	Adult	NR	None
Sandstone Outcrops (12)	09/12/2011	5	Adult	NR	None
Four Corners (14)	09/12/2011	3	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	3	Adult	NR	None
Middle Spring (27)	09/13/2011	5	Adult	NR	None
Lime Kiln Stock Pond (5)	09/16/2011	2	Adult	NR	None
Road 242 (10)	09/16/2011	2	Adult	NR	None
Four Corners (14)	09/16/2011	1	Adult	NR	None
Lime Kiln Cement Trough (110)	09/16/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

Common Raven (*Corvus corax*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Billy Goat Camp (01)	03/25/2001	1	Adult	NR	A
Pakoon Stock Pond (42)	03/25/2001	4	Adult	NR	None
Road 242 (10)	09/12/2011	1	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	3	Adult	NR	None
Tassi Spring (62)	09/14/2011	7	Adult	NR	None
Road 113 (70)	09/15/2011	1	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None
Pigeon Point (116)	09/15/2011	1	Adult	NR	None
Lime Kiln Pass (8)	09/16/2011	1	Adult	NR	B
Road 1027 (92)	09/16/2011	1	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	4	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Harassing a pair of Golden Eagles

Passeriformes, Alaudidae

Horned Lark (*Eremophila alpestris*)

Location	Date	Count	Age	Gender	Notes
Road 101 Cattle Tank (16)	09/12/2011	3	Adult	NR	None

Passeriformes, Hirundinidae

Violet-green Swallow (*Tachycineta thalassina*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	5	Adult	NR	None
Burro Spring - North (50)	09/14/2011	4	Adult	NR	None

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	4	Adult	NR	None

Cliff Swallow (*Petrochelidon pyrrhonota*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None

**Passeriformes, Paridae**

Juniper Titmouse (*Baeolophus ridgwayi*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Middle Spring (27)	09/13/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

**Passeriformes, Remizidae**

Verdin (*Auriparus flaviceps*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	11/25/2002	NR	Adult	NR	A
Pakoon Springs (46)	09/14/2011	1	Adult	NR	B

A. Outside the boundaries of Parashant.

B. Also saw 1 old nest

**Passeriformes, Aegithalidae**

Bushtit (*Psaltriparus minimus*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	15	Adult	NR	None

**Passeriformes, Troglodytidae**

Cactus Wren (*Campylorhynchus brunneicapillus*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	03/25/2001	3	Adult	NR	A
Pakoon Stock Pond (42)	03/25/2001	3	Adult	NR	None
Billy Goat Camp (01)	11/25/2002	NR	Adult	NR	A
Road 101 at Cattle Guard (15)	09/12/2011	NA	NA	NA	B
Road 101 Cattle Tank (16)	09/12/2011	4	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	5	Adult	NR	None
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	2	Adult	NR	None
Road 113 (55)	09/14/2011	5	Adult	NR	C
Tassi Spring (62)	09/14/2011	5	Adult	NR	None
Mesquite Stock Pond (4)	09/16/2011	2	Adult	NR	None
Road 1027 (92)	09/16/2011	5	Adult	NR	None
Road 1027 (99)	09/16/2011	1	Adult	NR	None
Road 1027 (100)	09/16/2011	1	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Nest in buckhorn cholla.

C. One group flying among several buckhorn cholla.

Rock Wren (*Salpinctes obsoletus*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Pass (8)	09/12/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NR	None

Canyon Wren (*Catherpes mexicanus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/14/2011	2	Adult	NR	None
Lime Kiln Road (106)	09/16/2011	1	Adult	NR	None

Bewick's Wren (*Thryomanes bewickii*)

Location	Date	Count	Age	Gender	Notes
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/13/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	3	Adult	NR	None
Pigeon Point (116)	09/15/2011	1	Adult	NR	None

House Wren (*Troglodytes aedon*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

Marsh Wren (*Cistothorus palustris*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/13/2011	3	Adult	NR	None

**Passeriformes, Polioptilidae**

Blue-gray Gnatcatcher (*Polioptila caerulea*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None
Middle Spring (27)	09/13/2011	3	Adult	NR	None
Road 1027 (92)	09/16/2011	1	Adult	NR	None

Black-tailed Gnatcatcher (*Polioptila melanura*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Pakoon Stock Pond (42)	03/25/2001	1	Adult	Male	B
Pakoon Stock Pond (42)	09/13/2011	2	Adult	Both	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Singing

**Passeriformes, Regulidae**

Ruby-crowned Kinglet (*Regulus calendula*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	03/25/2001	2	Adult	NR	A
Billy Goat Camp (01)	11/25/2002	NR	Adult	NR	A
Middle Spring (27)	09/13/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

## Passeriformes, Mimidae

### Northern Mockingbird (*Mimus polyglottos*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	2	Adult	NR	None

### Bendire's Thrasher (*Toxostoma bendirei*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	2	Adult	NR	A

A. Heavily streaked breast; foraging along fencelines.

### Crissal Thrasher (*Toxostoma crissale*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Billy Goat Camp (01)	03/25/2001	1	Adult	NR	A
Billy Goat Camp (01)	11/25/2002	5	Adult	NR	A, B

A. Outside the boundaries of Parashant.

B. Seems to be a healthy population here (this was before the fire).

## Passeriformes, Ptilonotidae

### Phainopepla (*Phainopepla nitens*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	Male	A
Pakoon Stock Pond (42)	09/13/2011	NA	Adult	NA	B
Pakoon Springs (46)	09/14/2011	NA	NA	NA	B
Burro Spring - North (50)	09/14/2011	NA	NA	NA	B
Tassi Spring (62)	09/14/2011	NA	NA	NA	B

A. Male was engaged in aerial display wherein he launched from a perch, flew in a big circle, and returned to the perch.

B. Scat piles on upper branches of mesquite trees

## Passeriformes, Parulidae

### Orange-crowned Warbler (*Oreothlypis celata*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	None

### Nashville Warbler (*Oreothlypis ruficapilla*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	3	Adult	NR	None

### MacGillivray's Warbler (*Geothlypis tolmiei*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	1	Adult	Male	None

### Common Yellowthroat (*Geothlypis trichas*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Lime Kiln Road (108)	09/16/2011	1	Adult	NR	None



Yellow Warbler (*Setophaga petechia*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Burro Spring - North (50)	09/15/2011	1	Adult	Male	None
Tassi Spring (62)	09/15/2011	5	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None

Yellow-rumped Warbler (*Setophaga coronata*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

Townsend's Warbler (*Setophaga townsendi*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/13/2011	1	Adult	Male	None

Wilson's Warbler (*Cardellina pusilla*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	2	Adult	Female	None
Middle Spring (27)	09/13/2011	8	Adult	NR	None
Pakoon Springs (46)	09/14/2011	4	Adult	NR	None
Tassi Spring (62)	09/15/2011	2	Adult	NR	None

Yellow-breasted Chat (*Icteria virens*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	2	Adult	NR	None

Passeriformes, Emberizidae

Green-tailed Towhee (*Pipilo chlorurus*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	3	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None

Spotted Towhee (*Pipilo maculatus*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	None

Chipping Sparrow (*Spizella passerina*)

Location	Date	Count	Age	Gender	Notes
Sandstone Outcrops (12)	09/12/2011	8	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None

Brewer's Sparrow (*Spizella breweri*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	10	Adult	NR	A
Pakoon Springs (46)	09/14/2011	15	Adult	NR	B
Tassi Spring (62)	09/14/2011	200	Adult	NR	None
Burro Spring - South (72)	09/15/2011	2	Adult	NR	None
Seven Springs (73)	09/15/2011	5	Adult	NR	None
Road 1027 (93)	09/16/2011	5	Adult	NR	None
Pigeon Point (116)	09/15/2011	15	Adult	NR	None

A. Main area

B. Southern area

Vesper Sparrow (*Pooecetes gramineus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Road 1007 (79)	09/15/2011	2	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	NR	None

Lark Sparrow (*Chondestes grammacus*)

Location	Date	Count	Age	Gender	Notes
Sandstone Outcrops (12)	09/12/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	3	Adult	NR	A
Tassi Spring (62)	09/14/2011	10	Adult	NR	None
Pigeon Point (116)	09/15/2011	10	Adult	NR	None

A. Southern area

Black-throated Sparrow (*Amphispiza bilineata*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	5	NR	NR	A
Pakoon Stock Pond (42)	03/25/2001	5	Adult	NR	None
Tassi Spring (62)	09/14/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

Sage Sparrow (*Amphispiza belli*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	2	Adult	NR	None

Savannah Sparrow (*Passerculus sandwichensis*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	2	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	3	Adult	NR	None

Song Sparrow (*Melospiza melodia*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

Lincoln's Sparrow (*Melospiza lincolni*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	3	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None

White-crowned Sparrow (*Zonotrichia leucophrys*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	5	Adult	Both	None
Jacobs Ranch (23)	09/13/2011	3	Adult	NR	None
Middle Spring (27)	09/13/2011	5	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	3	Adult	NR	None
Pakoon Springs (46)	09/14/2011	5	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None

Passeriformes, Cardinalidae

Summer Tanager (*Piranga rubra*)

Location	Date	Count	Age	Gender	Notes
Seven Springs (73)	09/15/2011	1	Adult	NR	A

A. Culmen dark; bill too long for WETA

Western Tanager (*Piranga ludoviciana*)

Location	Date	Count	Age	Gender	Notes
Four Corners (14)	09/12/2011	1	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	2	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	4	Adult	NR	None
Middle Spring (27)	09/13/2011	5	Adult	NR	None
Pakoon Springs (46)	09/13/2011	3	Adult	NR	None
Tassi Spring (62)	09/14/2011	5	Adult	NR	None

Black-headed Grosbeak (*Pheucticus melanocephalus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A
Road 101 Cattle Tank (16)	09/12/2011	2	Adult	NR	None
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

Lazuli Bunting (*Passerina amoena*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	Female	None
Pakoon Springs (46)	09/14/2011	2	Adult	Female	A
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	Female	None

A. Southern area

Passeriformes, Icteridae

Western Meadowlark (*Sturnella neglecta*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	NR	NR	A

A. Outside the boundaries of Parashant.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	8	Adult	Both	None
Cottonwood Valley Stock Pond (101)	09/16/2011	2	Adult	NR	None

Bullock's Oriole (*Icterus bullockii*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	3	Adult	NR	None

Scott's Oriole (*Icterus parisorum*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	1	Adult	NR	None

**Passeriformes, Fringillidae**

House Finch (*Carpodacus mexicanus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	5	NR	NR	A
Billy Goat Camp (01)	03/25/2001	1	Adult	NR	A
Pakoon Stock Pond (42)	03/25/2001	5	Adult	Both	None
Lime Kiln Pass (8)	09/12/2011	3	Adult	Both	None
Road 101 Cattle Tank (16)	09/12/2011	5	Adult	Both	None
Jacobs Ranch (23)	09/13/2011	5	Adult	NR	None
Middle Spring (27)	09/13/2011	5	Adult	NR	None
Mesquite Stock Pond (4)	09/16/2011	1	Adult	Female	None

A. Outside the boundaries of Parashant.

Lesser Goldfinch (*Spinus psaltria*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Pakoon Springs (46)	09/14/2011	10	Adult	NR	None



## APPENDIX B – MAMMALS

Note: NR = Not Recorded

### Rodentia, Sciuridae

#### White-tailed Antelope Squirrel (*Ammospermophilus leucurus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	3	Adult	Female	A
Billy Goat Camp (01)	03/25/2001	2	Adult	NR	A
Mesquite Stock Pond (4)	09/12/2011	3	Adult	NR	None
Lime Kiln Stock Pond (5)	09/12/2011	1	Adult	NR	None
Road 242 (9)	09/12/2011	1	Adult	NR	None
Road 242 (10)	09/12/2011	2	Adult	NR	None
Four Corners (14)	09/12/2011	1	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	4	Adult	NR	None
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Grave Site (34)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	5	Adult	NR	None
Tassi Spring (62)	09/15/2011	3	Adult	NR	None
Road 113 (70)	09/15/2011	1	Adult	NR	None
Burro Spring - South (72)	09/15/2011	2	Adult	NR	None
Seven Springs (73)	09/15/2011	10	Adult	NR	None
Road 242 (10)	09/16/2011	2	Adult	NR	None
Road 1027 (92)	09/16/2011	1	Adult	NR	None
Road 1027 (96)	09/16/2011	1	Subadult	NR	None
Road 1027 (99)	09/16/2011	1	Adult	NR	None
Road 1027 (99)	09/16/2011	1	Adult	NR	None
Road 1027 (100)	09/16/2011	1	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	NR	None
Lime Kiln Mine (105)	09/16/2011	1	Adult	NR	None
Lime Kiln Road (108)	09/16/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

#### Rock Squirrel (*Spermophilus variegatus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	3	Adult	Female	A, B
Billy Goat Camp (01)	03/25/2001	1	Adult	NR	A
Billy Goat Camp (01)	01/09/2008	1	Adult	NR	A
Billy Goat Camp (01)	01/09/2008	NR	NR	NR	None
Lime Kiln Stock Pond (5)	09/12/2011	5	Adult	NR	None
Lime Kiln Road (109)	09/12/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Lime Kiln Cement Trough (110)	09/16/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

B. One female lactating.

#### Cliff Chipmunk (*Tamias dorsalis*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Road (109)	09/16/2011	1	Adult	NR	A

A. Ran across road; showed dark dorsal pattern typical of this species.

Uinta Chipmunk (*Tamias umbrinus*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	2	Adult	NR	A

A. Animals were together in a catclaw tree

**Rodentia, Heteromyidae**

Merriams' Kangaroo Rat (*Dipodomys merriami*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	NA	Adult	NA	A
Burro Spring - North (50)	09/14/2011	NA	NA	NA	B
Pakoon Springs (46)	09/14/2011	NA	NA	NA	B
Tassi Spring (62)	09/15/2011	NA	NA	NA	C
Road 1007 (79)	09/15/2011	NA	NA	NA	C
Road 1027 (92)	09/15/2011	NA	NA	NA	A
Road 1027 (99)	09/16/2011	NA	NA	NA	C
Cottonwood Valley Stock Pond (101)	09/16/2011	NA	NA	NA	A

A. Many burrows.

B. Tracks and burrows.

C. Burrows

Desert Kangaroo Rat (*Dipodomys deserti*)

Location	Date	Count	Age	Gender	Notes
Road 113 (70)	09/15/2011	NA	NA	NA	A
Road 113 (71)	09/15/2011	NA	NA	NA	A

A. Colony (several burrows with tracks) above road on bench with wind-blown sand.

**Rodentia, Geomyidae**

Valley Pocket Gopher (*Thomomys bottae*)

Location	Date	Count	Age	Gender	Notes
Middle Spring (27)	09/13/2011	5	Adult	NR	A
Pakoon Springs (46)	09/14/2011	NA	NA	NA	B
Tassi Spring (62)	09/15/2011	NA	NA	NA	A
Cottonwood Valley Stock Pond (101)	09/16/2011	NA	NA	NA	C

A. Mounds.

B. Several sets of mounds.

C. Few burrow mounds.

**Rodentia, Cricetidae**

Desert Woodrat (*Neotoma lepida*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	Adult	NR	A
Pakoon Stock Pond (42)	09/13/2011	NA	NA	NA	Sign
Tassi Spring (62)	09/15/2011	NA	NA	NA	Sign
Road 1007 (79)	09/15/2011	NA	NA	NA	Sign

A. Outside the boundaries of Parashant.

Cactus Deermouse (*Peromyscus eremicus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	Adult	Female	A
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

Piñon Deermouse (*Peromyscus truei*)

Location	Date	Count	Age	Gender	Notes
Sandstone Outcrops (12)	09/12/2011	3	Juvenile	NR	A

A. Large, gray mice (juvenile pelage) with big ears and short tail. Out running on the ground during mid-afternoon.

**Lagomorpha, Leporidae**

Black-tailed jackrabbit (*Lepus californicus*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	03/25/2001	1	Adult	NR	A
Well Head (18)	09/12/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

Desert cottontail (*Sylvilagus audubonii*)

Location	Date	Count	Age	Gender	Notes
Road 111 (41)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	2	Adult	NR	None
Burro Spring - North (50)	09/14/2011	2	Adult	NR	None
Tassi Spring (62)	09/15/2011	2	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None
Seven Springs (73)	09/15/2011	3	Adult	NR	None

**Chiroptera, Vespertilionidae**

Unidentified Myotis (*Myotis spp.*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	5	Adult	NR	A

A. Flying low and fluttering under the trees

Pallid bat (*Antrozous pallidus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	2	Adult	NR	A

A. Flying under and among cottonwood trees in late evening.

Unidentified Mid-sized bat (*Myotis spp.*)

Location	Date	Count	Age	Gender	Notes
Road 1027 (92)	09/15/2011	5	Adult	NR	A

A. Flight fast, low, and swooping over camp with noisy wings. Sounded like birds, looked like bats

Unidentified Bats

Location	Date	Count	Age	Gender	Notes
Lime Kiln Mine (105)	09/16/2011	NA	NA	NA	A

A. None present inside mine. Guano pile 2-ft wide, 1-inch deep. Appeared that bats had been using a small spot on the ceiling as a summer roost or maternity colony.

## Chiroptera, Molossidae

### Mexican Free-tailed Bat (*Tadarida brasiliensis*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	3	Adult	NR	A
Road 1027 (92)	09/15/2011	1	Adult	NR	A
Cottonwood Valley Stock Pond (101)	09/16/2011	1	Adult	NA	B

- A. Flying high, fast, and straight during late evening  
 B. Dead, hanging upside-down on cattail stem a few inches above the water

## Carnivora, Felidae

### Bobcat (*Lynx rufus*)

Location	Date	Count	Age	Gender	Notes
Road 1027 (97)	09/16/2011	1	Adult	NA	A

- A. Tracks in mud in road

## Carnivora, Canidae

### Coyote (*Canis latrans*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	Adult	Female	A
Billy Goat Camp (01)	01/09/2008	NR	NR	NR	A, B
Well Head (18)	09/12/2011	3	Adult	NR	C
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	B
Pakoon Stock Pond (42)	09/13/2011	NA	Adult	NA	B
Burro Spring - North (50)	09/14/2011	NA	NA	NA	B
Tassi Spring (62)	09/15/2011	NA	NA	NA	B
Road 1027 (92)	09/15/2011	5	Adult	NR	D

- A. Outside the boundaries of Parashant.  
 B. Scat only.  
 C. Singing in the darkness.  
 D. Singing at night and in the morning.

## Perissodactyla, Equidae

### Feral Horse (*Equus caballus*) or Feral Burro (*Equus asinus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Stock Pond (42)	03/25/2001	3	Adult	Both	A
Jacobs Ranch (23)	09/13/2011	NA	Adult	NA	A
Nay Ranch (34)	09/13/2011	4	Adult	NR	B
Pakoon Springs (46)	09/14/2011	NA	Adult	NA	A
Burro Spring - North (50)	09/14/2011	NA	NA	NA	A
Tassi Spring (62)	09/15/2011	NA	NA	NA	A

- A. Sign (tracks, scat, or both) only; no animals seen  
 B. Probably belong to the ranch, but out on the roadway and in the desert

## Artiodactyla, Bovidae

### Domestic or Feral Cow (*Bos taurus*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	01/09/2008	NR	NR	NR	A
Jacobs Ranch (23)	09/13/2011	2	Adult	NR	B
Tassi Spring (62)	09/15/2011	10	Adult	NR	None
Seven Springs (73)	09/15/2011	5	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Tracks at edge of pond; probably 2 animals

### Bighorn Sheep (*Ovis canadensis*)

Location	Date	Count	Age	Gender	Notes
Billy Goat Camp (01)	01/09/2008	NR	NR	NR	A, B
Middle Spring (27)	09/13/2011	NA	Adult	NA	C

A. Outside the boundaries of Parashant.

B. Scat only.

C. Many large piles of scat and many tracks.

## Artiodactyla, Cervidae

### Mule Deer (*Odocoileus hemionus*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	NR	Adult	NR	A
Jacobs Ranch (23)	09/13/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	1	Adult	NA	B
Cottonwood Valley Stock Pond (101)	09/16/2011	NA	NA	NA	C

A. Outside the boundaries of Parashant.

B. Tracks in mud

C. Scat

## APPENDIX C – AMPHIBIANS

Note: NR = Not Recorded

### American Bullfrog (*Lithobates catesbeianus*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	100	Adult	NR	None

### Red-spotted Toad (*Anaxyrus punctatus*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Lime Kiln Cement Trough (110)	09/16/2011	5	Juvenile	NR	A

A. Two of these tadpoles had fully developed front and back legs and appeared nearly ready to emerge. These could be Pacific Chorus Frogs

### Relict Leopard Frog (*Lithobates onca*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	10	Adult	NR	None

## APPENDIX D – REPTILES

Note: NR = Not Recorded

### Sauria, Phrynosomatidae

#### Common Side-blotched Lizard (*Uta stansburiana*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	10	Adult	Both	A, B
Pakoon Stock Pond (42)	03/25/2001	5	Adult	Both	None
Lime Kiln Pass (8)	09/12/2011	1	Juvenile	NR	None
Road 242 (9)	09/12/2011	1	Juvenile	NR	None
Sandstone Outcrops (12)	09/12/2011	1	Adult	NR	None
Middle Spring (27)	09/13/2011	2	Adult	NR	None
Nay Ranch (34)	09/13/2011	1	Adult	NR	None
Pakoon Stock Pond (42)	09/13/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Burro Spring - North (50)	09/15/2011	1	Juvenile	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Road 1007 (79)	09/15/2011	20	Adult	NR	None
Road 1027 (93)	09/16/2011	5	Adult	NR	None
Road 1027 (100)	09/16/2011	1	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Recorded count was "lots."

#### Desert Horned Lizard (*Phrynosoma platyrhinos*)

Location	Date	Count	Age	Gender	Notes
Road 1213 (57)	09/14/2011	1	Adult	NR	None
Road 1027 (94)	09/16/2011	1	Adult	NR	A

A. Medium-large size.

#### Yellow-backed Spiny Lizard (*Sceloporus uniformis*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	5	Adult	Both	A, B
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Road 1027 (93)	09/16/2011	2	Adult	NR	None
Road 1027 (96)	09/16/2011	2	Adult	NR	None
Road 1027 (97)	09/16/2011	5	Adult	NR	None
Road 1027 (99)	09/16/2011	2	Adult	NR	None

A. Outside the boundaries of Parashant.

B. Several very large males.

#### Zebra-tailed Lizard (*Callisaurus draconoides*)

Location	Date	Count	Age	Gender	Notes
Road 1215 (66)	09/15/2011	1	Adult	NR	None

#### Ornate Tree Lizard (*Urosaurus ornatus*), Squamata, Phrynosomatidae

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	2	Adult	NR	A

A. Outside the boundaries of Parashant.

## Sauria, Iguanidae

### Common Chuckwalla (*Sauromalus ater*)

Location	Date	Count	Age	Gender	Notes
Lava Falls Trailhead (02)	05/18/1998	5	Adult	NR	A, B
Pakoon Springs (46)	09/14/2011	NA	Adult	NA	C
Road 1007 (79)	09/15/2011	NA	Adult	NA	D

- A. Outside the boundaries of Parashant.
- B. A several chuckwallas were basking on rocky outcrops along the start of the trail.
- C. 2, adult-size scat on rocky outcrop
- D. Adult-size scat on rocky outcrop

## Sauria, Crotophytidae

### Great Basin Collared Lizard (*Crotaphytus bicinctores*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	1	Adult	NR	A
Lava Falls Trailhead (02)	05/18/1998	3	Adult	NR	A
Road 1213 (65)	09/15/2011	2	Adult	NR	B

- A. Outside the boundaries of Parashant.
- B. Both about 2/3 grown; basking on rocks.

### Leopard Lizard (*Gambelia wislizenii*)

Location	Date	Count	Age	Gender	Notes
Road 111 (76)	09/15/2011	1	Adult	NR	A

- A. About 2/3 grown; basking on rock.

## Sauria, Teiidae

### Western Whiptail (*Aspidoscelis tigris*)

Location	Date	Count	Age	Gender	Notes
Toroweap Campground (03)	05/17/1998	3	Adult	NR	A
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Burro Spring - North (50)	09/15/2011	1	Adult	NR	B
Tassi Spring (62)	09/15/2011	1	Adult	NR	None

- A. Outside the boundaries of Parashant.
- B. Lateral lines are dots; rusty rump and tail, large

## Serpentes, Colubridae

### Gopher Snake (*Pituophis catenifer*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Road (107)	09/16/2011	1	Adult	Female	A

- A. About 4'; hissed a lot but did not bite

## Serpentes, Viperidae

### Mojave Rattlesnake (*Crotalus scutulatus*)

Location	Date	Count	Age	Gender	Notes
Road 111 (38)	09/13/2011	1	Adult	NR	A

- A. About 3'; overcast, breeze, 77 deg



## Testudines, Testudinidae

### Desert Tortoise (*Gopherus agassizii*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	NA	NA	NA	A

A. Possible burrow, no visible scat or tracks

# APPENDIX E

## ODONATES (DRAGONFLIES AND DAMSELFLIES)

Note: NR = Not Recorded

### Anisoptera (Dragonflies), Aeshnidae

#### Common Green Darner (*Anax junius*)

Location	Date	Count	Age	Gender	Notes
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	Female	A
Jacobs Ranch (23)	09/13/2011	5	Adult	Both	B
Burro Spring - North (50)	09/14/2011	1	Adult	Female	None
Pakoon Springs (46)	09/14/2011	5	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	10	Adult	Both	None
Lime Kiln Road (108)	09/16/2011	3	Adult	NR	None
Lime Kiln Stock Pond (5)	09/16/2011	1	Adult	Male	None

A. Ovopositing on vegetation.

B. Several exuviae on emergent vegetation.

#### Blue-eyed Darner (*Rhionaeschna multicolor*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	3	Adult	Both	A
Pakoon Springs (46)	09/14/2011	10	Adult	NR	None
Mesquite Stock Pond (4)	09/16/2011	5	Adult	Male	None
Mesquite Stock Pond (4)	09/16/2011	1	Adult	Female	None

A. Mating and flying in tandem

### Anisoptera (Dragonflies), Libellulidae

#### Western Pondhawk (*Erythemis collocata*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	10	Adult	Both	None
Cottonwood Valley Stock Pond (101)	09/16/2011	15	Adult	Both	None

#### Comanche Skimmer (*Libellula comanche*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None

#### Flame Skimmer (*Libellula saturata*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Stock Pond (5)	09/12/2011	1	Adult	NR	None
Road 101 Cattle Tank (16)	09/12/2011	2	Adult	Male	None
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	Male	None
Seven Springs (73)	09/15/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	1	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	10	Adult	Both	A
Lime Kiln Road (108)	09/16/2011	1	Adult	NR	None

A. Ovopositing single

Blue Dasher (*Pachydiplax longipennis*)

Location	Date	Count	Age	Gender	Notes
Cottonwood Valley Stock Pond (101)	09/16/2011	15	Adult	Both	None

Glider (*Pantala spp.*)

Location	Date	Count	Age	Gender	Notes
Road 101 Cattle Tank (16)	09/12/2011	1	Adult	NR	None

Mexican Amberwing (*Perithemis intensa*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	Male	None
Cottonwood Valley Stock Pond (101)	09/16/2011	15	Adult	Male	None

Striped Meadowhawk (*Sympetrum pallipes*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	Adult	Male	None
Pakoon Springs (46)	09/14/2011	1	Adult	Male	None
Burro Spring - South (72)	09/15/2011	3	Adult	Male	None
Tassi Spring (62)	09/15/2011	5	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	15	Adult	Both	A

A. Flying and ovopositing in tandem.

Variegated Meadowhawk (*Sympetrum corruptum*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Stock Pond (5)	09/12/2011	3	Adult	NR	None
Mesquite Stock Pond (4)	09/12/2011	5	Adult	NR	A
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Burro Spring - North (50)	09/15/2011	10	Adult	NR	None
Burro Spring - South (72)	09/15/2011	1	Adult	NR	None

A. Flying and ovopositing in tandem.

Black Saddlebags (*Tramea lacerata*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	5	Adult	NR	None
Cottonwood Valley Stock Pond (101)	09/16/2011	10	Adult	Both	A

A. Male and female flying in tandem

Zygoptera (Damselflies), Calopterygidae

American Rubyspot (*Hetaerina americana*)

Location	Date	Count	Age	Gender	Notes
Tassi Spring (62)	09/15/2011	3	Adult	NR	None

Zygoptera (Damselflies), Coenagrionidae

Aztec Dancer (*Argia nahuana*)

Location	Date	Count	Age	Gender	Notes
Burro Spring - South (72)	09/15/2011	1	Adult	Male	None

Blue-ringed Dancer (*Argia sedula*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None

Vivid Dancer (*Argia vivida*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Tassi Spring (62)	09/15/2011	5	Adult	NR	None

Tule Bluet (*Enallagma carunculatum*)

Location	Date	Count	Age	Gender	Notes
Pakoon Springs (46)	09/14/2011	1	Adult	NR	None
Pakoon Springs (46)	09/14/2011	1	Adult	Male	None
Cottonwood Valley Stock Pond (101)	09/16/2011	10	Adult	Both	A

A. Flying and ovopositing in tandem.

Familiar Bluet (*Enallagma civile*)

Location	Date	Count	Age	Gender	Notes
Mesquite Stock Pond (4)	09/12/2011	100	Adult	Both	None
Pakoon Springs (46)	09/14/2011	25	Adult	Both	A
Cottonwood Valley Stock Pond (101)	09/16/2011	100	Adult	Both	B
Mesquite Stock Pond (4)	09/16/2011	25	Adult	Male	None

A. Mating and flying tandem.

B. Flying and ovopositing in tandem.

Bluet, unidentified (*Enallagma spp.*)

Location	Date	Count	Age	Gender	Notes
Jacobs Ranch (23)	09/13/2011	1	NR	NR	A
Road 101 Cattle Tank (16)	09/12/2011	1	NR	Female	B

A. Brown female or teneral

B. Brown

Western Forktail (*Ischnura perparva*)

Location	Date	Count	Age	Gender	Notes
Cottonwood Valley Stock Pond (101)	09/16/2011	20	Adult	Both	A

A. Pairs mating and females ovopositing single

Zygoptera (Damselflies), Lestidae

Great Spreadwing (*Archilestes grandis*)

Location	Date	Count	Age	Gender	Notes
Lime Kiln Road (108)	09/16/2011	1	Adult	Female	None

## APPENDIX F — Site Descriptions

### **Billy Goat Camp (Site 001)** (Whitney Pass, 1.0 miles W of PARA boundary)

Mojave Desert Scrub dominated by mixed shrubs including blackbrush and buckhorn cholla; near the Pinyon-Juniper Woodland zone.

### **Lava Falls Trailhead (Site 002)** (Grand Canyon National Park; 3.4 miles W of PARA)

Black lava rock outcrops above shrubs at the edge of the Grand Canyon

### **Toroweap Campground (Site 003)** (Grand Canyon National Park; 4.8 miles W of PARA)

Pinyon-Juniper zone with sandstone cliffs and slickrock, Sonoran scrub oak (*Quercus turbinella*), cactus, and lots of annual flowers

### **Mesquite Stock Pond (Site 004)**

09/12/2011, Arrival: 1215 hrs, Depart: 1230 hrs

Land Form: Bajada, north facing

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), catclaw acacia (*Acacia greggii*), southern cattail (*Typha domingensis*), joshua tree (*Yucca brevifolia*), buckhorn cholla (*Cylindropuntia acanthocarpa*), sacred thorn-apple (*Datura wrightii*).

### **Lime Kiln Stock Pond (Site 005)**

09/12/2011, Arrival: 1240 hrs, Depart: 1300 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland; old burn area with a few trees left in the bottom of the canyon

Dominant Vegetation: scattered singleleaf pinyon (*Pinus monophylla*), scattered utah juniper (*Juniperus osteosperma*), catclaw acacia (*Acacia greggii*), broom snakeweed (*Gutierrezia sarothrae*), red brome (*Bromus rubens*)

### **Lime Kiln Pass (Site 008)**

09/12/2011, Arrival: 1331 hrs, Depart: 1354 hrs

Land Form: Mountains

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*), pointleaf manzanita (*Arctostaphylos pungens*), utah agave (*Agave utahensis*), banana yucca (*Yucca baccata*), mormon tea (*Ephedra viridis*), prickly russian thistle (*Salsola tragus*), blackbrush (*Coleogyne ramosissima*), stansbury cliffrose (*Purshia stansburiana*)

### **Road 242 (Site 009)**

09/12/2011, Arrival: 1411 hrs, Depart: 1415 hrs

Land Form: Mountains

Habitat Type: Pinyon-Juniper Woodland; burn area

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*), pointleaf manzanita (*Arctostaphylos pungens*), utah agave (*Agave utahensis*), banana yucca (*Yucca baccata*), mormon tea (*Ephedra viridis*), prickly russian thistle (*Salsola tragus*), blackbrush (*Coleogyne ramosissima*), stansbury cliffrose (*Purshia stansburiana*), skunkbush sumac (*Rhus trilobata*) in gullies.

**Road 242 (Site 010)**

09/12/2011, Arrival: 1424 hrs, Depart: 1443 hrs

Land Form: Wash bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), Sonoran scrub oak (*Quercus turbinella*), banana yucca (*Yucca baccata*), Indian ricegrass (*Achnatherum hymenoides*), stansbury cliffrose (*Purshia stansburiana*), desert almond (*Prunus fasciculata*), skunkbush sumac (*Rhus trilobata*), apache plume (*Fallugia paradoxa*)

**Sandstone Outcrops (Site 012)**

09/12/2011, Arrival: 1451 hrs, Depart: 1510 hrs

Land Form: Low Flats

Habitat Type: Pinyon-Juniper Woodland at Mojave Desert Scrub

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*) on hillsides; wash species (e.g., burrobrush [*Hymenoclea salsola*]) in wash.

**Four Corners (Site 014)**

09/12/2011, Arrival: 1543 hrs, Depart: 1616 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland at Mojave Desert Scrub

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), buckhorn cholla (*Cylindropuntia acanthocarpa*), Sonoran scrub oak (*Quercus turbinella*), apache plume (*Fallugia paradoxa*), skunkbush sumac (*Rhus trilobata*), big sagebrush (*Artemisia tridentata*), broom snakeweed (*Gutierrezia sarothrae*), rubber rabbitbrush (*Ericameria nauseosa*), crispleaf buckwheat (*Eriogonum corymbosum*).

**Road 101 at Cattle Guard (Site 015)**

09/12/2011, Arrival: 1624 hrs, Depart: 1624 hrs

Land Form: High Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: buckhorn cholla (*Cylindropuntia acanthocarpa*), joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*)

**Road 101 Cattle Tank (Site 016)**

09/12/2011, Arrival: 1628 hrs, Depart: 1912 hrs

Land Form: Valley Bottom

Habitat Type: Pinyon-Juniper Woodland at Mojave Desert Scrub

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*), buckhorn cholla (*Cylindropuntia acanthocarpa*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), broom snakeweed (*Gutierrezia sarothrae*), cactus apple (*Opuntia engelmannii*). Weeds: prickly russian thistle (*Salsola tragus*).

**Well Head (Site 018)**

09/12/2011, Arrival: 1925 hrs, Depart: 1925 hrs

Land Form: High Flats

Habitat Type: Mojave Desert Scrub (burned Pinyon-Juniper Woodland)

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*).

**Jacobs Ranch (Site 023)**

09/13/2011, Arrival: 640 hrs, Depart: 1100 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub (abandoned ranch house with wet stock pond)

Dominant Vegetation: siberian elm (*Ulmus pumila*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), broom snakeweed (*Gutierrezia sarothrae*), baccharis (*Baccharis spp.*), banana yucca (*Yucca baccata*), stansbury cliffrose (*Purshia stansburiana*), cactus apple (*Opuntia engelmannii*), southern cattail (*Typha domingensis*). Weeds: prickly russian thistle (*Salsola tragus*), himalayan blackberry (*Rubus armeniacus*), saltcedar (*Tamarix ramosissima*), horehound (*Marrubium vulgare*).

**Middle Spring (Site 027)**

09/13/2011, Arrival: 1128 hrs, Depart: 1406 hrs

Land Form: Hillside

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: Wetland species around spring and outflow; desert species in surrounding area. Fremont cottonwood (*Populus fremontii*), netleaf hackberry (*Celtis laevigata*), honey mesquite (*Prosopis glandulosa*), catclaw acacia (*Acacia greggii*), baccharis (*Baccharis spp.*), rush (*Juncus spp.*), southern cattail (*Typha domingensis*), sacred thorn-apple (*Datura wrightii*), yerba mansa (*Anemopsis californica*), fourwing saltbush (*Atriplex canescens*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), cactus apple (*Opuntia engelmannii*), crispleaf buckwheat (*Eriogonum corymbosum*).

**Nay Ranch (Site 034)**

09/13/2011, Arrival: 1424 hrs, Depart: 1431 hrs

Land Form: Rocky Hillside

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: Sonoran scrub oak (*Quercus turbinella*), broom snakeweed (*Gutierrezia sarothrae*), joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*).

**Road 111 (Site 037)**

09/13/2011, Arrival: 1440 hrs, Depart: 1448 hrs

Land Form: Low Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), buckhorn cholla (*Cylindropuntia acanthocarpa*), stansbury cliffrose (*Purshia stansburiana*)

**Road 111 (Site 038)**

09/13/2011, Arrival: 1450 hrs, Depart: 1506 hrs

Land Form: Low Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), buckhorn cholla (*Cylindropuntia acanthocarpa*), banana yucca (*Yucca baccata*), broom snakeweed (*Gutierrezia sarothrae*)

**Road 111 (Site 039)**

09/13/2011, Arrival: 1510 hrs, Depart: 1510 hrs

Land Form: Rolling Hills

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), buckhorn cholla (*Cylindropuntia acanthocarpa*), banana yucca (*Yucca baccata*), broom snakeweed (*Gutierrezia sarothrae*)

**Road 111 (Site 041)**

09/13/2011, Arrival: 1523 hrs, Depart: 1523 hrs

Land Form: Canyon Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), joshua tree (*Yucca brevifolia*), honey mesquite (*Prosopis glandulosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), california barrel cactus (*Ferocactus cylindraceus*).

**Pakoon Stock Pond (Site 042)**

09/13/2011, Arrival: 1546 hrs, Depart: 1654 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub. Corral and stockpond with recent rainwater.

Dominant Vegetation: joshua tree (*Yucca brevifolia*), catclaw acacia (*Acacia greggii*), mesquite mistletoe (*Phoradendron californicum*), buckhorn cholla (*Cylindropuntia acanthocarpa*), silver cholla (*Cylindropuntia echinocarpa*), woolly fruit bur ragweed (*Ambrosia eriocentra*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), beavertail pricklypear (*Opuntia basilaris*), burrobrush (*Hymenoclea salsola*), red brome (*Bromus rubens*), engelmann's hedgehog cactus (*Echinocereus engelmannii*), california barrel cactus (*Ferocactus cylindraceus*).

**Pakoon Springs (Site 046)**

09/13/2011, Arrival: 1715 hrs, Depart: 1841 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub; riparian with free water

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), fremont cottonwood (*Populus fremontii*), willow (*Salix spp.*), southern cattail (*Typha domingensis*), honey mesquite (*Prosopis glandulosa*), screwbean mesquite (*Prosopis pubescens*), catclaw acacia (*Acacia greggii*), mesquite mistletoe (*Phoradendron californicum*), fourwing saltbush (*Atriplex canescens*), quailbush (*Atriplex lentiformis*), yerba mansa (*Anemopsis californica*), mojave seablite (*Suaeda moquinii*), saltgrass (*Distichlis spicata*), common fishhook cactus (*Mammillaria tetrancistra*). Weeds: giant sunflowers, prickly russian thistle (*Salsola tragus*).

**Burro Spring - North (Site 050)**

09/14/2011, Arrival: 1414 hrs, Depart: 1435 hrs

Land Form: Wash bottom; spring with free water

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: honey mesquite (*Prosopis glandulosa*), creosote bush (*Larrea tridentata*), mesquite mistletoe (*Phoradendron californicum*).



**Road 113 (Site 055)**

09/14/2011, Arrival: 1501 hrs, Depart: 1505 hrs

Land Form: Wash bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*).

**Road 1213 (Site 057)**

09/14/2011, Arrival: 1519 hrs, Depart: 1519 hrs

Land Form: Wash bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*).

**Tassi Spring (Site 062)**

09/14/2011, Arrival: 1551 hrs, Depart: 1900 hrs

Land Form: Canyon Bottom; historic ranch site with springs.

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: fremont cottonwood (*Populus fremontii*), willow (*Salix spp.*), desert willow (*Chilopsis linearis*), catclaw acacia (*Acacia greggii*), honey mesquite (*Prosopis glandulosa*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), white ratany (*Krameria grayi*), california barrel cactus (*Ferocactus cylindraceus*), johnson's fishhook cactus (*Echinomastus johnsonii*), silver cholla (*Cylindropuntia echinocarpa*), canyon grape (*Vitis arizonica*), yerba mansa (*Anemopsis californica*), baccharis (*Baccharis spp.*), saltgrass (*Distichlis spicata*), southern cattail (*Typha domingensis*), mesquite mistletoe (*Phoradendron californicum*), cardinalflower (*Lobelia cardinalis*).

**Road 1213 (Site 065)**

05/15/2011, Arrival: 1140 hrs, Depart: 1227 hrs

Land Form: Canyon Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*).

**Road 1215 (Site 066)**

05/15/2011, Arrival: 1328 hrs, Depart: 1328 hrs

Land Form: Wash bottom; sand and rocks in wash

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: desert willow (*Chilopsis linearis*), creosote bush (*Larrea tridentata*).

**Road 113 (Site 070)**

05/15/2011, Arrival: 1349 hrs, Depart: 1403 hrs

Land Form: Wash bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), schismus (*Schismus spp.*).

**Road 113 (Site 071)**

05/15/2011, Arrival: 1406 hrs, Depart: 1406 hrs

Land Form: Wash bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), white ratany (*Krameria grayi*).

**Burro Spring - South (Site 072)**

09/15/2011, Arrival: 1409 hrs, Depart: 1500 hrs

Land Form: Wash bottom; spring with free water at edge of wash

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: honey mesquite (*Prosopis glandulosa*), willow (*Salix spp.*), southern cattail (*Typha domingensis*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*).

**Seven Springs (Site 073)**

05/15/2011, Arrival: 1523 hrs, Depart: 1607 hrs

Land Form: Canyon Bottom; spring with free water.

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: honey mesquite (*Prosopis glandulosa*), fremont cottonwood (*Populus fremontii*), catclaw acacia (*Acacia greggii*), willow (*Salix spp.*), sedge meadow grazed to stubble by cows.

**Road 111 (Site 076)**

05/15/2011, Arrival: 1708 hrs, Depart: 1708 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*).

**Road 1007 (Site 079)**

05/15/2011, Arrival: 1724 hrs, Depart: 1800 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), california barrel cactus (*Ferocactus cylindraceus*).

**Road 111 (Site 086)**

09/15/2011, Arrival: 1840 hrs, Depart: 1840 hrs

Land Form: High Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), blackbrush (*Coleogyne ramosissima*), buckhorn cholla (*Cylindropuntia acanthocarpa*), creosote bush (*Larrea tridentata*).

**Road 1027 (Site 092)**

05/15/2011, Arrival: 855 hrs, Depart: 905 hrs

Land Form: High Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), red brome (*Bromus rubens*), broom snakeweed (*Gutierrezia sarothrae*), turpentinebroom (*Thamnosma montana*), banana yucca (*Yucca baccata*), Mojave cottonthorn (*Tetradymia stenolepis*), Nevada jointfir (*Ephedra nevadensis*), desert globemallow (*Sphaeralcea ambigua*), whitestem paperflower (*Psilostrophe cooperi*), littleleaf ratany (*Krameria erecta*).

**Road 1027 (Site 093)**

05/16/2011, Arrival: 912 hrs, Depart: 914 hrs

Land Form: Canyon Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Road 1027 (Site 094)**

05/16/2011, Arrival: 930 hrs, Depart: 930 hrs

Land Form: High Flats

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Road 1027 (Site 096)**

05/16/2011, Arrival: 935 hrs, Depart: 950 hrs

Land Form: High Ridge

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Road 1027 (Site 097)**

05/16/2011, Arrival: 957 hrs, Depart: 1000 hrs

Land Form: Canyon Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Road 1027 (Site 099)**

09/16/2011, Arrival: 1011 hrs, Depart: 1028 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Road 1027 (Site 100)**

09/16/2011, Arrival: 1038 hrs, Depart: 1041 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: joshua tree (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), buckhorn cholla (*Cylindropuntia acanthocarpa*), burrobrush (*Hymenoclea salsola*), catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*).

**Cottonwood Valley Stock Pond (Site 101)**

09/16/2011, Arrival: 1058 hrs, Depart: 1243 hrs

Land Form: Broad valley with soft soils disturbed by cattle.

Habitat Type: Mojave Desert Scrub (formerly Pinyon-Juniper Woodland evidenced by old carcass of pinyon and juniper trees)

Dominant Vegetation: joshua tree (*Yucca brevifolia*), buckhorn cholla (*Cylindropuntia acanthocarpa*), prickly russian thistle (*Salsola tragus*), fourwing saltbush (*Atriplex canescens*), broom snakeweed (*Gutierrezia sarothrae*), peach thorn (*Lycium cooperi*), red brome (*Bromus rubens*), desert willow (*Chilopsis linearis*). Southern cattail (*Typha domingensis*), bulrush (*Scirpus spp.*), pigweed (*Amaranthus spp.*) at pond. No creosote bush (*Larrea tridentata*) in this area.

**Lime Kiln Mine (Site 105)**

09/16/2011, Arrival: 1402 hrs, Depart: 1408 hrs

Land Form: Rocky Hillside

Habitat Type: Mojave Desert Scrub (burn area formerly Pinyon-Juniper Woodland)

Dominant Vegetation: creosote bush (*Larrea tridentata*), fourwing saltbush (*Atriplex canescens*), broom snakeweed (*Gutierrezia sarothrae*), utah agave (*Agave utahensis*), buckhorn cholla (*Cylindropuntia acanthocarpa*), red brome (*Bromus rubens*).

**Lime Kiln Road (Site 106)**

09/16/2011, Arrival: 1543 hrs, Depart: 1543 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*).

**Lime Kiln Road (Site 107)**

09/16/2011, Arrival: 1554 hrs, Depart: 1554 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*).

**Lime Kiln Road (Site 108)**

09/16/2011, Arrival: 1556 hrs, Depart: 1623 hrs

Land Form: Canyon Bottom with creek

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*), desert baccharis (*Baccharis sergiloides*).

**Lime Kiln Road (Site 109)**

09/12/2011, Arrival: 1310 hrs, Depart: 1310 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*).

**Lime Kiln Cement Trough (Site 110)**

09/16/2011, Arrival: 1630 hrs, Depart: 1642 hrs

Land Form: Canyon Bottom

Habitat Type: Pinyon-Juniper Woodland

Dominant Vegetation: singleleaf pinyon (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), Sonoran scrub oak (*Quercus turbinella*), desert baccharis (*Baccharis sergiloides*), sacred thorn-apple (*Datura wrightii*), broom snakeweed (*Gutierrezia sarothrae*).

**Pigeon Point (Site 116)**

05/15/2011, Arrival: 1140 hrs, Depart: 1227 hrs

Land Form: Valley Bottom

Habitat Type: Mojave Desert Scrub

Dominant Vegetation: saltcedar (*Tamarix ramosissima*), arrowweed (*Pluchea sericea*).

## Appendix G

### GPS Coordinates for Observation Site (NAD83)

Site	Location Name	Zone	UTM Easting	UTM Northing	Elevation (ft)
001	Billy Goat Camp	11	762697.15	4046277.70	4,805
002	Lava Falls Trailhead	12	312579.26	4009633.92	4,268
003	Toroweap Campground	12	314858.42	4010922.06	4,596
004	Mesquite Stock Pond	11	765645.51	4066575.65	2,725
005	Lime Kiln Stock Pond	11	767036.93	4063174.36	3,418
008	Lime Kiln Pass	11	767164.28	4058881.05	4,844
009	Road 242	12	231821.64	4057969.04	4,429
010	Road 242	12	233484.17	4057098.08	3,994
012	Sandstone Outcrops	12	234323.53	4056906.77	3,875
014	Four Corners	12	235038.21	4055407.19	3,698
015	Road 101 at Cattle Guard	12	233529.42	4053758.00	3,925
016	Road 101 Cattle Tank	12	233497.95	4053568.77	3,860
018	Well Head	12	233108.15	4053998.52	4,048
023	Jacobs Ranch	11	766703.95	4048180.70	3,857
027	Middle Spring	11	764450.10	4047403.90	4,348
034	Nay Ranch	11	763477.75	4045991.49	4,402
037	Road 111	11	765398.11	4044756.99	3,903
038	Road 111	11	766321.70	4043894.67	3,662
039	Road 111	11	767757.72	4042401.67	3,366
041	Road 111	12	232915.78	4040206.83	2,925
042	Pakoon Stock Pond	12	233526.26	4039014.58	2,800
046	Pakoon Springs	12	234836.21	4034120.93	2,293
050	Burro Spring - North	12	233314.18	4029918.14	1,932
055	Road 113	12	231034.90	4024094.75	1,625
057	Road 1213	11	769233.90	4018495.95	1,355
062	Tassi Spring	12	234262.76	4016401.12	1,532
065	Road 1213	12	231877.22	4018001.85	1,559
066	Road 1215	11	769097.80	4016932.40	1,275
070	Road 113	11	769296.99	4017976.03	1,308
071	Road 113	11	769116.52	4018866.20	1,355
072	Burro Spring - South	11	769110.44	4019497.19	1,382
073	Seven Springs	12	231508.30	4021078.76	1,465
076	Road 111	12	233704.67	4030047.54	1,936
079	Road 1007	12	235908.83	4030744.12	2,286
086	Road 111	12	241980.09	4042595.46	2,998
092	Road 1027	12	242522.40	4044658.78	3,165
093	Road 1027	12	240167.48	4044758.65	3,124
094	Road 1027	12	239879.01	4045922.93	3,310
096	Road 1027	12	239980.87	4046256.46	3,372
097	Road 1027	12	240185.00	4046761.69	3,156
099	Road 1027	12	239195.62	4048496.61	3,111
100	Road 1027	12	238015.95	4051796.63	3,360

101	Cottonwood Valley Stock Pond	12	237323.58	4053190.52	3,415
105	Lime Kiln Mine	12	233754.85	4057545.30	4,020
106	Lime Kiln Road	11	766544.69	4059607.64	4,457
107	Lime Kiln Road	11	766501.67	4060219.46	4,283
108	Lime Kiln Road	11	766542.85	4060611.09	4,165
109	Lime Kiln Road	11	767009.06	4061220.73	3,927
110	Lime Kiln Cement Trough	11	767162.27	4061732.03	3,819
116	Pigeon Point	11	707251.19	4064517.48	1,679