

SUMMARY OF PITFALL TRAPS RUN BY USGS AND NPS IN JOSHUA TREE NATIONAL PARK

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PITFALL TRAP PROJECT HISTORY

The Pit Fall Trap project in Joshua Tree National Park was initiated and run for the first few years by the U.S. Geological Survey. The USGS was contracted to sample the herpetofauna in JOTR from 1999 to 2001 with the objective being to monitor the biological diversity of reptiles, small mammals, invertebrates and amphibians. Pitfall and funnel trap techniques were used for animal captures.

When the USGS's required number of sampling periods was completed, responsibilities of the arrays were transferred to Joshua Tree National Park. The pitfall arrays were then basically left untouched and unchecked as a result of staffing shortage from the time USGS finished their contracted run in 2001 until the spring of 2004. The arrays were then assessed and restored throughout the spring, summer and fall of 2004 by Joshua Tree National Park Biological Science Technicians.

GENERAL INFORMATION

There are a total of 31 arrays: 19 that run from the Pinto Basin, up through Wilson Canyon, along Topside and past Quail Springs Parking Area. The other 12 are located throughout Covington Flats (**Table 1** and **Map 1**)

Table 1. Coordinates of pitfall traps in Joshua Tree National Park

Array #	UTMs	
	E	N
COV 1	560775	3769926
COV 2	561239	3769351
COV 3	562232	3768627
COV 4	562843	3768324
COV 5	563353	3766874
COV 6	563768	3766803
COV 7	562985	3765490
COV 8	562793	3764410
COV 9	563237	3764022
COV 10	561012	3765234
COV 11	560247	3765740
COV 12	560115	3765774

Array #	UTMs	
	E	N
JOS 1	616058	3747282
JOS 2	616283	3747185
JOS 3	615496	3745382
JOS 4	612977	3745948
JOS 5	612329	3746591
JOS 6	605738	3752681
JOS 7	603068	3753356
JOS 8	601948	3754502
JOS 9	598280	3754623
JOS 10	594144	3756767
JOS 11	590745	3764004
JOS 12	589103	3764137
JOS 13	583819	3763730
JOS 14	581561	3762899
JOS 15	576543	3756804
JOS 16	576263	3754667
JOS 17	575965	3754230
JOS 18	574561	3766565
JOS 19	572390	3768273

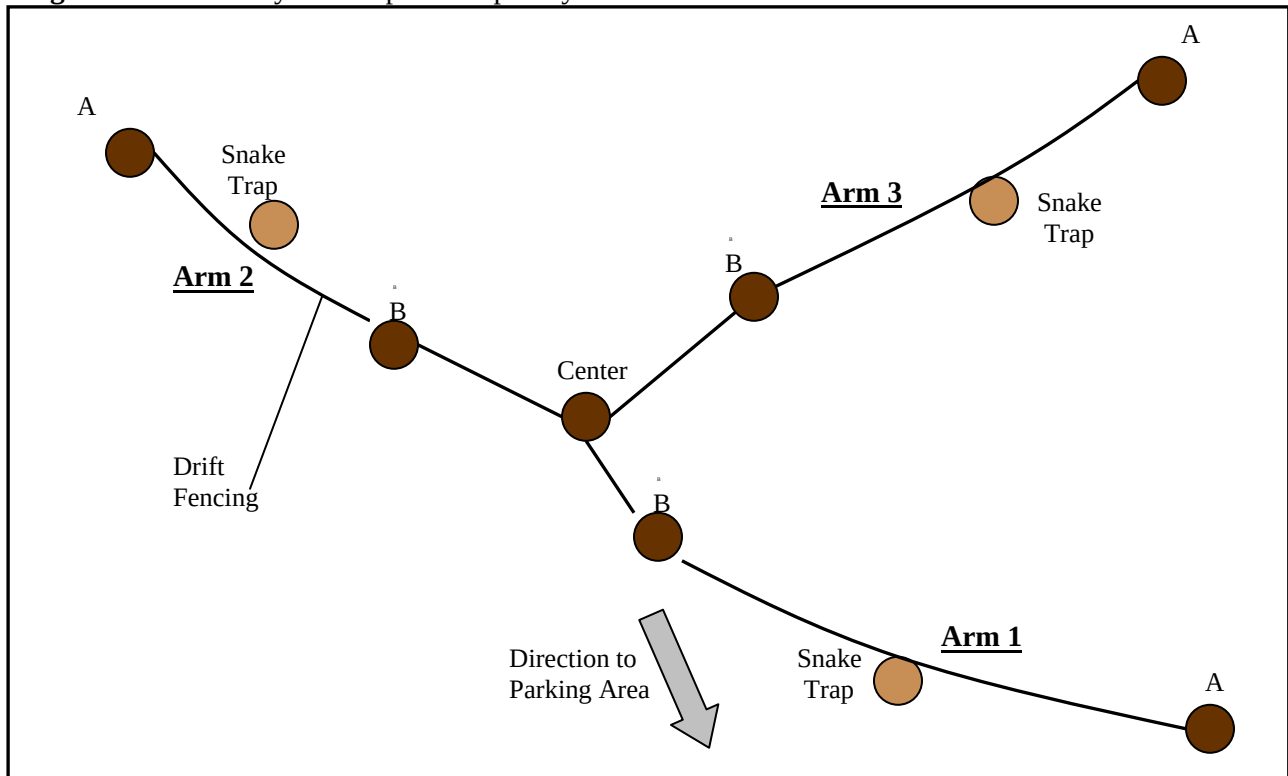
Each array consists of ten buckets that are arranged in three arms which converge at a central bucket. Seven of the buckets are pitfall traps with the other three being funnel traps, these being designed more specifically for the capture and containment of snakes.

Array Identification

These pitfall arrays are labeled according to their location *i.e.* Joshua Tree proper (Topside & Pinto Basin) = JOS; Covington Flats = COV. The arms and buckets within the array are labeled for data analysis purposes, record identification and general processing. Arms are labeled according to which one is approached first when walking from the parking area. The first arm is “1” and then going clock-wise the other arms are “2” and then “3”. Buckets are labeled as follows: the outer most bucket on each arm is “A”, the next bucket is simply labeled as “S” for snake trap, the third bucket is “B” and then the shared central bucket is “C”. Please refer to Diagram I.

Records record each array number, arm and bucket as follows: **COV 12 – 1A** refers to Covington Array 12, the first bucket on the first arm. When noting a capture in any of the snake traps, the record should be labeled as **COV 12 – 1S**.

Diagram I: General layout of a pitfall trap array



RUN DATES FOR JOTR AND USGS

JOTR wildlife staff ran the arrays seven times from March of 2005 to October of 2006 (**Table 2**). The JOTR wildlife biological technicians ran the Covington and Joshua Tree pitfall traps simultaneously. Their runs would consist of having the buckets be open for three consecutive nights, checking them each morning.

USGS staff alternated months between the Covington and Joshua Tree arrays. Between April 1999 and June 2001, they ran the Covington PFTs 13 times, whereas in the same time frame they ran the Joshua Tree PFTs 14 times (**Table 3**).

Table 2. Joshua Tree National Park run dates

NPS							
SiteID	Opening Day	First Day	Closing Day	SiteID	Opening Day	First Day	Closing Day
COV	3/28/2005	3/29/2005	3/31/2005	JOS	3/28/2005	3/29/2005	3/31/2005
COV	4/25/2005	4/26/2005	4/28/2005	JOS	4/25/2005	4/26/2005	4/28/2005
COV	5/23/2005	5/24/2005	5/26/2005	JOS	5/23/2005	5/24/2005	5/26/2005
COV	6/20/2005	6/21/2005	6/23/2005	JOS	6/20/2005	6/21/2005	6/23/2005
COV	5/30/2006	5/31/2006	6/2/2006	JOS	5/30/2006	5/31/2006	6/2/2006
COV	6/26/2006	6/27/2006	6/30/2006	JOS	6/26/2006	6/27/2006	6/30/2006
COV	10/2/2006	10/3/2006	10/5/2006	JOS	10/2/2006	10/3/2006	10/5/2006

Table 3. USGS run dates for pitfall traps in Joshua Tree National Park

USGS									
Site ID	Sample Period	Opening Day	First Day	Closing Day	SiteID	Sample Period	Opening Day	First Day	Closing Day
COV	1	5/4/1999	5/5/1999	5/14/1999	JOS	1	4/14/1999	4/15/1999	4/24/1999
COV	2	7/6/1999	7/7/1999	7/16/1999	JOS	2	6/14/1999	6/15/1999	6/24/1999
COV	3	9/21/1999	9/22/1999	10/1/1999	JOS	3	8/12/1999	8/13/1999	8/22/1999
COV	4	11/15/1999	11/16/1999	11/25/1999	JOS	4	10/26/1999	10/27/1999	11/5/1999
COV	5	1/3/2000	1/4/2000	1/13/2000	JOS	5	12/16/1999	12/17/1999	12/26/1999
COV	6	2/21/2000	2/22/2000	2/28/2000	JOS	6	2/8/2000	2/9/2000	2/18/2000
COV	7	4/16/2000	4/17/2000	4/26/2000	JOS	7	3/30/2000	3/31/2000	4/9/2000
COV	8	6/27/2000	6/28/2000	7/7/2000	JOS	8	5/17/2000	5/18/2000	5/27/2000
COV	9	8/21/2000	8/22/2000	8/31/2000	JOS	9	7/31/2000	8/1/2000	8/10/2000
COV	10	11/7/2000	11/8/2000	11/17/2000	JOS	10	10/23/2000	10/24/2000	11/2/2000
COV	11	5/14/2001	5/15/2001	5/18/2001	JOS	11	12/12/2000	12/13/2000	12/14/2000
COV	12	6/4/2001	6/5/2001	6/8/2001	JOS	12	3/21/2001	3/22/2001	3/31/2001
COV	13	6/25/2001	6/26/2001	6/29/2001	JOS	13	4/30/2001	5/1/2001	5/4/2001
					JOS	14	6/18/2001	6/19/2001	6/22/2001

SPECIES LISTS

Table 4. Small mammal species observed during NPS & USGS sampling periods.

X = species caught in PFT. Grey box = species not observed/caught

Scientific Names	Common Names	NPS	USGS	NPS	USGS
		Covington		Joshua Tree	
<i>Chaetodipus californicus</i>	California pocket mouse	X		X	
<i>Chaetodipus fallax</i>	San Diego pocket mouse	X	X	X	X
<i>Chaetodipus formosus</i>	Desert pocket mouse	X		X	
<i>Chaetodipus penicillatus</i>	Desert pocket mouse	X	X	X	X
<i>Chaetodipus spinatus</i>	Spiny pocket mouse	X		X	
<i>Chaetodipus species</i>	Pocket mouse		X		X
<i>Dipodomys deserti</i>	Desert kangaroo rat			X	
<i>Dipodomys merriami</i>	Merriam's kangaroo rat	X	X	X	X
<i>Dipodomys species</i>	Kangaroo rat		X		
<i>Neotoma albigula</i>	White-throated woodrat	X		X	
<i>Neotoma fuscipes</i>	Dusky-fotted woodrat			X	
<i>Neotoma lepida</i>	Desert woodrat	X		X	
<i>Neotoma spp.</i>	Woodrat			X	
<i>Notiosorex crawfordi</i>	Desert shrew		X		
<i>Onychomys torridus</i>	Southern grasshopper mouse	X	X	X	X
<i>Perognathus longimembris</i>	Little pocket mouse	X	X	X	X
<i>Peromyscus boylii</i>	Brush mouse	X		X	
<i>Peromyscus californicus</i>	California mouse	X		X	
<i>Peromyscus crinitus</i>	Canyon mouse	X	X	X	
<i>Peromyscus eremicus</i>	Cactus mouse	X	X	X	X
<i>Peromyscus maniculatus</i>	Deer mouse	X	X	X	X
<i>Peromyscus truei</i>	Piñon mouse	X	X	X	X
<i>Peromyscus species</i>	Deer mouse		X		X
<i>Reithrodontomys megalotis</i>	Western harvest mouse			X	
<i>Thomomys bottae</i>	Botta's pocket gopher	X	X	X	X
<i>Spermophilus tereticaudus</i>	Round-tailed ground squirrel			X	
<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel	X		X	
<i>Sylvilagus audubonii</i>	Desert cottontail				X

Table 5. Reptile species observed during NPS & USGS pitfall trap sampling periods.**X = species caught in PFT. Grey box = species not observed/caught**

Scientific Names	Common Names	NPS	USGS	NPS	USGS
		Covington		Joshua Tree	
<i>Callisaurus draconoides</i>	Zebra-tailed Lizard			X	X
<i>Cnemidophorus tigris</i>	Western Whiptail	X	X	X	X
<i>Coleonyx variegatus</i>	Western Banded Gecko	X		X	X
<i>Crotaphytus bicinctores</i>	Great Basin Collared Lizard			X	
<i>Dipsosaurus dorsalis</i>	Desert Iguana			X	X
<i>Eumeces gilberti</i>	Gilbert Skink	X	X	X	X
<i>Gambelia wislizenii</i>	Long-nosed Leopard Lizard	X		X	X
<i>Phrynosoma coronatum</i>	Coast Horned Lizard	X	X	X	X
<i>Phrynosoma platyrhinos</i>	Desert Horned Lizard	X		X	X
<i>Sauromalus obesus</i>	Chuckwalla			X	X
<i>Sceloporus magister</i>	Desert Spiny Lizard	X	X	X	X
<i>Sceloporus occidentalis</i>	Western Fence Lizard	X	X	X	X
<i>Urosaurus graciosus</i>	Long-tailed Brush Lizard				X
<i>Uta stansburiana</i>	Side-Blotched Lizard	X	X	X	X
<i>Xantusia vigilis</i>	Desert Night Lizard	X	X	X	X
<i>Arizona elegans</i>	Glossy Snake				X
<i>Chionactis occipitalis</i>	Western Shovel-nosed Snake				X
<i>Crotalus cerastes</i>	Sidewinder			X	X
<i>Crotalus mitchellii</i>	Speckled Rattlesnake		X	X	X
<i>Crotalus viridis</i>	Southern Pacific Rattlesnake	X	X	X	X
<i>Leptotyphlops humilis</i>	Western Blind Snake			X	X
<i>Masticophis flagellum</i>	Coachwhip/Red Racer	X	X	X	X
<i>Masticophis lateralis</i>	Striped Racer	X	X	X	
<i>Phyllorhynchus decurtatus</i>	Spotted Leaf-nosed Snake				X
<i>Pituophis catenifer</i>	Pacific Gophersnake			X	
<i>Pituophis melanoleucas</i>	San Diego Gopher Snake		X		X
<i>Rhinocheilus lecontei</i>	Long-nosed Snake		X		X
<i>Salvadora hexalepis</i>	Coast Patch-Nosed Snake		X		X
<i>Tantilla hobartsmithi</i>	Southwestern Black-headed Snake		X		