

History of Arco Tunnel and Bats 1953 -2017

A Lava Tube Cave on Craters of the Moon National Monument and Preserve

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March 10, 2017

Introduction

Arco Tunnel is the longest known cave on Craters of the Moon National Monument with over 5,800 feet of passages. It is used by bats year-round and is one of 5 caves known to be used by bats for hibernation. Other caves (yet to be surveyed or even to be discovered) may harbor greater numbers of bats in the winter but for now, Arco Tunnel is the largest hibernacula known. The high count occurred in February of this year when 33 bats were found hibernating. Bats were first documented to hibernate in Arco Tunnel in 1986 (Genter) but regular hibernacula surveys were not begun until 1998.

General History of Arco Tunnel and (non-hibernating) Records of Bats

- 1953 - Cave “discovered”. First documentation of the cave. In: *Cave Area Exploration Trip*. Zink R. C. May, 1953. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel
- 1958 – First cave map. Sanchez et al. 1958. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel (It would still be many years before all of the caves passages would be discovered.

- 1960 – First documentation of bat use. Sanchez et al. 1959-1960. Series of 3 reports. First documented exploration and survey of geology, mineralogy, biology, climate and water. First record of bat/s: “*While in the cave on June 8, 1960 a myotis bat was seen in flight*”. On August 14, 1960 “*while in the tunnel several myotis bats were seen*”. Reports contain temperature and humidity readings. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel.
- 1961- Eleven month (Dec- Oct.) study of temperature and humidity in Arco Tunnel. *Temperature and Humidity in Arco Tunnel*. Ocshner. 1961. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel.
- 1961 - NPS first controlled access by installing a wire gate (about 100 ft. in) and requiring entry permits (Apel, 1999 in Environment Assessment for Arco Tunnel Gate, Resource Management Office, in file cabinet, Compliance/NEPA drawer). Keys and permits were available at the Visitor Center. Getting a permit consisted of just asking for one, so while this limited public access and allowed NPS to track people, the cave was not *closed*.
- 1979 – First record of a bat in Arco Tunnel in the CRMO wildlife observation database. Andrews, August 7, 1979. 1 little brown bat. CRMO Wildlife Observation Database
- 1980 - The crawlway and passages to the Senate Room and Culvert first appear on a map produced by Scott C. Jex for The Gem Caver. Volume XIII, Number 3, p. 27. This adds over 700 ft. of passages to the cave and makes it the first map to show all the major passages. Only the end points for a few short passages were left unmapped and these all appear as dead ends on subsequent maps adding only tens of feet.

- 1980 – First assessment of bat use. Thornton. 1980. In: The Gem Caver. Volume XIII, Number 3, p. 27. *“Bats...have been observed in the entrance area and only an occasional bat is found beyond the first crawlway. Visits to the cave during the past several years at various seasons indicate that the cave is neither a hibernation nor a nursery roost for bats”* - CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel
- 1983 – The original gate which has been vandalized and is in such disrepair that it is “only symbolic” (Scott C. Jex for The Gem Caver. Volume XIII, Number 3, p. 27) is replaced with a new gate. The gate location is moved to “The Crawlway” or “Belly Crawl” about 500 into the cave (Apel, 1999. in Environment Assessment for Arco Tunnel Gate, Resource Management Office, in file cabinet, Compliance/NEPA drawer)
- 1984 – First “complete” cave map. Scott C. Jex. Map dead-ends previously unmapped short sections of several crawls.
- 1994 – First professionally surveyed map of all known passages. This is the map we still use today. Created by Idaho Cave Survey
- 1996 - When bats were found hibernating within the cave (Wolz and Crombie) a closure went into effect between 10/5 and 5/1 (recommended by Inter-agency Bat Conservation Committee). The keys and permits were removed from the front desk (Snitzler-Neeck, 1996 in CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel). Information about Arco Tunnel wasn't volunteered but a small number of permits continue to be issued.

- 1997 - Nieland J., June 2, 1997. "30 some myotis bats roosting in the entry way" - CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel
- 1999 – Biological and Climatological Data. Elliot et. al. July 15, 1999. Found a "Corynorhinus skeleton" – CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel. Map with locations.
- 1999 - The old (now the second) gate was removed and a new gate was installed about 30 ft. from the entrance. The seasonal closure was moved to 9/15 to 5/15 based on the "Habitat Conservation Assessment and Conservation Strategy for the Townsend's Big-eared Bat" The 1999 Environmental Assessment of the new gate estimated that permits for Arco Tunnel averaged 100 persons a year with most permits issued in the summer (Apel, 1999. in Environment Assessment for Arco Tunnel Gate, Resource Management Office, in file cabinet, Compliance/NEPA drawer).
- 2002 - Additional language to Arco Tunnel closure is first found in the Superintendents Compendium to allow only one permit to be issued at a time with a maximum of 12 persons per group (Morris, 2002. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel).
- 2009 - Armstrong, August 28, 2009. Found 2 unknown dead bats during a permitted graffiti inventory trip. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel. Report and map.
- 2010 - Munts. July 8, 2010. Five dead bats. CRMO Resource Mgt. office, cave files, file: 040 Arco Tunnel. Map with locations.

- 2011 All caves within the boundary of Craters of the Moon National Monument and Preserve are closed to recreational caving with the exception of: Indian Tunnel, Beauty, Boy Scout and Dew Drop caves in the “Caves Area” and Buffalo Cave along the Broken Top Trail which remain open to unrestricted recreational caving. Entry to caves is by research permit only. All cave research permits stipulate protocols to prevent the spread of White Nose Syndrome to park caves (Neighbor, 2011. Resource Mgt. office, cave files, file: 040 Arco Tunnel).

Arco Tunnel Records of Hibernating Bats, Compiled from CRMO Records/Maps and Literature Review

SPECIES	DATE														
	1985 ¹	1987 ²	1993 ³	1996 ^{4a}	1998 ⁵	2002 ⁶	2003 ⁶	2007 ⁶	2010 ⁷	2011 ⁸	2013 ⁹	2014 ¹⁰	2015 ¹¹	2016 ¹²	2017 ¹³
<i>Corynorhinus townsendii</i> (Townsend's big eared bat)	0	1 ^{2a}		8 ^{4b}	1	20	6	8			11	11	24	20	13
<i>Myotis lucifugus</i> (Little brown myotis)										5	1				
<i>Myotis evotis</i> (Long eared myotis)								8		2	X ^{9a}				
<i>Myotis ciliolabrum</i> (Western small footed myotis)	3	3 ^{2b}						3		5		2			3
<i>Eptesicus fuscus</i> (Big Brown Bat)			2												
<i>Myotis yumanensis</i> (Yuma myotis)											7 ^{9a}				
<i>Myotis californicus</i> (California myotis)															
<i>Myotis Volans</i> (Long-legged Myotis)											X ^{9a}				
<i>Myotis</i> sp.				X		2	10	11		2	12	22	18	10	3
Unknown bat sp.				18							2	3		2	
TOTAL	3	4	2	18	1	22	16	30		14	33	38	42	32	19

Footnotes on hibernating records

¹ From “Wintering Bats of the Upper Snake River Plain Occurrence in Lava-tube Caves”, David L. Genter, 1986. Great Basin Naturalist, Vol. 46, No 2. (This report contains cave temperature and humidity data as well). Observations were made between December 12, 1984 and January 27, 1985.

^{2a} R. Hoffman. April 4, 1987. “*Arco Tunnel, Hibernating?*”. CRMO Wildlife Observation Database.

^{2b} R. Hoffman. Dec. 12, 1987. “*Hibernating in Arco Tunnel*”. CRMO Wildlife Observation Database.

³ Unknown observer. March 13, 1993. 2 big brown bats “Hibernating (in) Senate Room Culvert in Arco Tunnel” - CRMO Wildlife Observation Database, Incidental observation – (the “survey” field of the record is marked “no”).

^{4a} J. Wolz and Crombie T. Feb 5. 1996 – Wildlife observation form February 1996. Found in Craters of the Moon National Monument and Preserve (CRMO) Resource Management files. Description: “*just inside gate, (this would be the gate location from 1983-1999 at the “Belly Crawl” about 500 ft. within the cave) 18 approx ½ inch long mostly tan, some dark reddish brown, no tags visible, scattered groups*”. Species believed to be one of the *Myotis* and Townsend’s (Paula Perletti – bat advisor, in a letter to CRMO staff by Vicki Snitzler-Neeck, Feb. 6, 1996).

^{4b} J. Apel *et. al.* Environmental Assessment for Arco Tunnel Gate. July 1999. page 6. “*During the winter of 1995/96 recreational covers affiliated with the Gem State Grotto of the National Speleological Society (NSS) reported eight Townsend’s big-eared bats (Corynorhinus townsendii) hibernating within Arco Tunnel*”.

⁵ Apel and Call. March 5. 1998, incomplete survey, only the section from the entrance to just beyond the gate was surveyed (this would be the old gate location). A single Townsend's big-eared bat (*Plecotus townsendii*) was observed just beyond the gate (further survey postponed due to battery problems with lights and difficulty of walking in X-country ski boots).

⁶ Munts *et. al.* Jan. 16, 2002, Jan. 22, 2003 and Jan. 24, 2007. From cave survey maps found in files. CRMO Resource Management files, file: Bat Counts. All 2007 bats were photographed and identified by Martha C. Wackenhut at Idaho State University based on pelage. (Personal communication from Mike Munts to Todd Stefanic April 9, 2013).

⁷ Munts. 2010. Survey attempted but entrance was snowed in. Personal communication to Todd Stefanic Jan., 2012.

⁸ Munts & Lonsinger 2011. From an undated survey map in files. Survey occurred in Late January of 2011. All bats were photographed and identified by Martha C. Wackenhut at Idaho State University based on pelage. (Personal communication from Mike Munts to Todd Stefanic April 9, 2013).

⁹ Stefanic et al. Feb 26, 2013. All bats were photographed. Species identification by Bill Doering from these photos. Temperature data was also collected. CRMO Resource Management Cave Files, file: #40 Arco Tunnel. Also in CRMO Wildlife Observation Database and UCBN Hibernacula Bat Survey Database. Photos on CRMO R drive.

^{9a} *Myotis Volans* and *M. evotis* recorded acoustically on April 20 in hibernation exit survey. *Myotis yumanensis* was not picked up acoustically in this same effort, (Bat Hibernacula Surveys in Craters of the Moon National Monument and Preserve 2012-2013 Status Report. Stefanic and Rodhouse August 2013).

¹⁰ Stefanic et al. Feb 3, 2014. All bats were photographed. Species identification help from Becky Abel - IDFG Wildlife Biologist. Temperature and humidity data was also collected. CRMO Resource Management cave files, file: #40 Arco Tunnel. Also in UCBN Hibernacula Bat Survey Database. Photos on CRMO R drive.

¹¹ Stefanic et al. Jan 20, 2015. All bats were photographed. Species identification help from Becky Abel - IDFG Wildlife Biologist. Temperature and humidity data was also collected. CRMO Resource Management cave files, file: #40 Arco Tunnel. Also in UCBN Hibernacula Bat Survey Database. Photos on CRMO R drive.

¹² Bat Hibernacula Surveys in Craters of the Moon National Monument and Preserve 2016 Status Report, Slocum and Rodhouse November 2016.

¹³ Bat Hibernacula Surveys in Craters of the Moon National Monument and Preserve 2017 Report, Slocum and Rodhouse 2017.