



# United States Department of the Interior

NATIONAL PARK SERVICE  
Jewel Cave National Monument  
RR 1, Box 60AA  
Custer, South Dakota 57730

IN REPLY REFER TO:

N1615

February 6, 2007

Memorandum

To: JECA Central Files

From: Rene Ohms, Cave Management Assistant

Subject: Jewel Cave Winter Bat Survey

On February 5, 2007, the annual hibernating bat count was conducted at Jewel Cave. Mike Wiles, Rene Ohms, Brad Phillips, and Joel Tigner participated in the count.

We conducted the survey following a protocol that has been used at Jewel Cave since 1992. Two search routes were surveyed: one extending from the Milk River gate to the cave entrance (Heavenly Route); the second extending from the Dungeon Room to Surveyor's Hall (Dungeon Route). Attached are copies of the maps used, with the specific search areas indicated.

We began the count at 9:15 a.m. and split into two groups. Each search group proceeded to the end of their assigned route, then counted back toward the entrance. The Dungeon Route group (Joel and Rene) finished at 10:40 a.m., and the Heavenly Route group (Brad and Mike) finished at 11:10 a.m.

*Corynorhinus* and *Myotis* were found, as well as 6 *Eptesicus fuscus* (big brown bats). When possible, the *Myotis* were identified to species. Three of the big browns were in section #6 (the Dungeon Room), and were clustered with other species. This is the second year in a row that big brown bats have been seen in the Dungeon Room. Each bat was counted, although numbers roosting in large clusters were estimated. Many bats may have been overlooked, particularly those that roost in small cracks, such as *M. ciliolabrum*. Temperature and relative humidity readings were taken in each numbered search area.

A total of 1,351 bats were counted. There were 798 bats along the Dungeon Route (COTO=463; MYOT=330; EPFU=5) and 553 bats along the Heavenly Route (COTO=287; MYOT=265; EPFU=1). Overall, 31 fewer bats were counted this year than last year. The number of *Corynorhinus* was the lowest in five years, but was still well within the historic range, and the number of *Myotis* was the highest ever recorded in Jewel. The greatest number of bats in a search area was 380 *Corynorhinus* and two *M. ciliolabrum*, in section #2 (the Trap Door Room area). The largest cluster (83 *Corynorhinus*) was also in section #2, between the Trap Door Room and the Catacombs.

The temperature recorded just outside the cave entrance was 42.5oF, and the cave was inhaling.

cc: Todd Suess, JECA  
JECA Interpretation  
Joel Tigner

Mike Wiles, JECA  
Brad Phillips, USFS

## SUMMARY OF BAT COUNT RECORDS FOR JEWEL CAVE, 1950s TO PRESENT

<u>Year</u>	<u><i>C. townsendii</i></u>	<u><i>Myotis sp.</i></u>	<u><i>E. fuscus</i></u>	<u><i>P. subflavus</i></u>	<u>Total</u>
pre-1959					3500-4000 - reference in letter (anecdotal)
12/29/59-3/18/60	1137	unknown			1137 1137 COTO banded*
12/22-12/30/60	544	unknown			544 544 COTO banded*
12/28-12/29/61	291				291 291 COTO banded*
					(Total of 1,972 banded, 1959-61)
1967/68	600	unknown			604 (including at least 4 <i>M. ciliolabrum</i> and an unknown # of <i>M. volans</i> )
1969/70	1000	280			1280
1986/87	728	545			1273
1988/89	614	492			1106
1989/90	831	445			1276

New methodology established in 1992:

1992/93	1187	181			1368
1993/94	791	389			1180
1994/95	895	356			1251
1995/96	721	432			1153
1996/97	730	398**			1128
1997/98	593	479			1072
1998/99	901	454			1355
1999/00	853	466	2?		1321
2000/01	708	435			1143
2001/02	721	445	2		1168
2002/03	1135	470			1605
2003/04	886	457	2		1345
2004/05	1060	493	1?	1?	1555
2005/06	928	443	11		1382
2006/07	750	595	6		1351

\* Banding records are held by National Biological Service, Patuxent Wildlife Research Center at the National Museum of Natural History in Washington DC. (They have the original banding cards).

\*\* Deep Canyon was not counted in 1996/97.

## DUNGEON ROUTE COUNT, 2007

Survey Area	Temp	RH-%	Genus/Count	# in clusters	bats/cluster	avg/cluster	singles
Area #1:	34	84%	COTO = 52 MYOT = 0				
Area #2:	37	75%	COTO = 380 MYOT = 2		2-83		2=MYOCIL
Area #3:	39	68%	COTO = 25 MYOT = 2	21 in 4	2-8	5.25	4 2 (1 possibly <i>M. evotis</i> *)
Area #4:	41	72%	COTO = 4 MYOT = 0				4
Area #5:	42	73%	COTO = 1 MYOT = 0				1
Area #6: See notes below	44	90%	COTO = 0 MYOT = 325 EPFU = 3				
Area #7:	38	79%	COTO = 0 MYOT = 0				
Lantern Room:	38	57%	COTO = 1 MYOT = 1 EPFU = 2				1 1=MYOCIL
<b>TOTAL for Dungeon Route</b>			<b>COTO = 463 MYOT = 330 EPFU = 5</b>		<b>2-83</b>		

# in clusters = total number of bats in clusters and total number of clusters (i.e., 41 in 5 means 41 bats in five clusters)  
bats/cluster = size range of clusters  
avg/cluster = average number of bats per cluster  
singles = number of bats roosting singly

MYOCIL = *M. ciliolabrum*

\*The possible *M. evotis* was in a crack. Only part of its side was visible, and one very long ear.

Notes on Area #6:

No *ciliolabrum*; all *Myotis* in Dungeon Room were *lucifugus*, *volans*, or *septentrionalis*. One bat high in dome just above the set of 3 stairs going up may have been *M. thysanodes*, based on size and coloration. *E. fuscus* were in the Dungeon Room, and were clustered with other species.

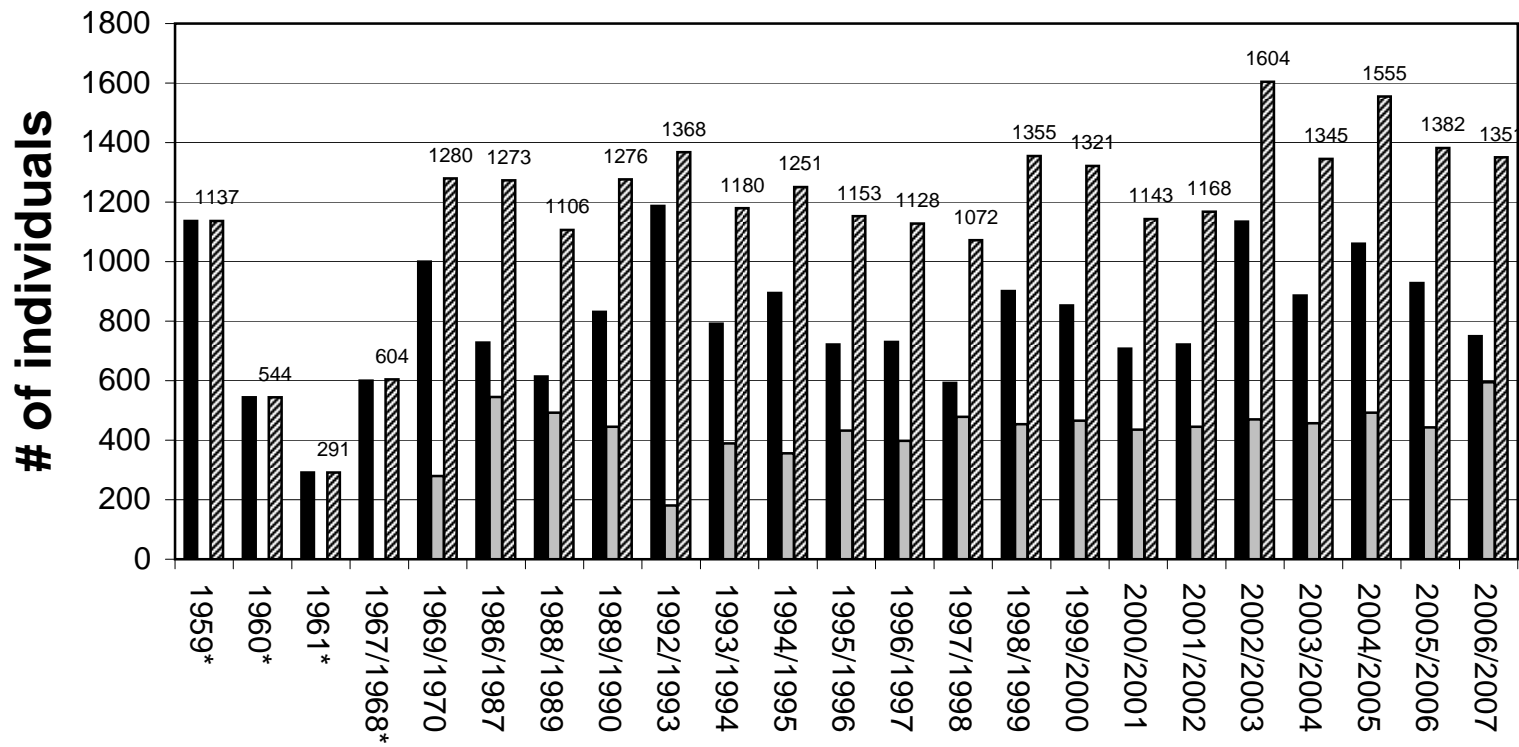
HEAVENLY ROUTE COUNT, 2007

Survey Area	Temp	RH-%	Genus/Count	# in clusters	bats/cluster	avg/cluster	singles
Area #8:	35	84%	COTO = 20 MYOT = 0	16 in 2	6-10	8	4
Area #9:	36	85%	COTO = 26 MYOT = 1	20 in 4	2-12	5	6 1
Area #10:	-	-	COTO = 5 MYOT = 0				5
Area #11:	<i>Combined with Area #s 12 &amp; 13</i>						
Area #12:	<i>Combined with Area #s 11 &amp; 13</i>						
Area #13:	38	72%	COTO = 150 MYOT = 2	118 in 18	3-25	6.5	32 2
**Numbers are for Areas 11-13 combined**							
Area #14:	37	71%	COTO = 64 MYOT = 1	42 in 5	2-18		22 1
Area #15:	39	69%	COTO = 13 MYOT = 0	2 in 1	2	2	11
Area #16:	42	63%	COTO = 4 MYOT = 2				4 2
Area #17:	45	74%	COTO = 0 MYOT = 7	6 in 1	6	6	0 1
Area #18:	41	75%	COTO = 0 MYOT = 225	178 in 35	2-21	5.1	47
Area #19:	41	69%	COTO = 4 MYOT = 11 EPFU = 1				4 11(8=MYOCIL) 1
Area #20:	41	70%	COTO = 1 MYOT = 5				1 5
Area #21:	43	70%	COTO = 0 MYOT = 1				1
Area #22:	44	89	COTO = 0 MYOT = 8	2 in 1	2	2	6
Area #23:	43	74%	COTO = 0 MYOT = 2				2 (1=MYOSEP)
<b>TOTAL for Heavenly Route</b>			<b>COTO = 287</b>	<b>198 in 30</b>	<b>2-25</b>	<b>6.6</b>	<b>89</b>
			<b>MYOT = 265</b>	<b>186 in 37</b>	<b>2-21</b>	<b>5</b>	<b>79</b>
			<b>EPFU = 1</b>				<b>1</b>

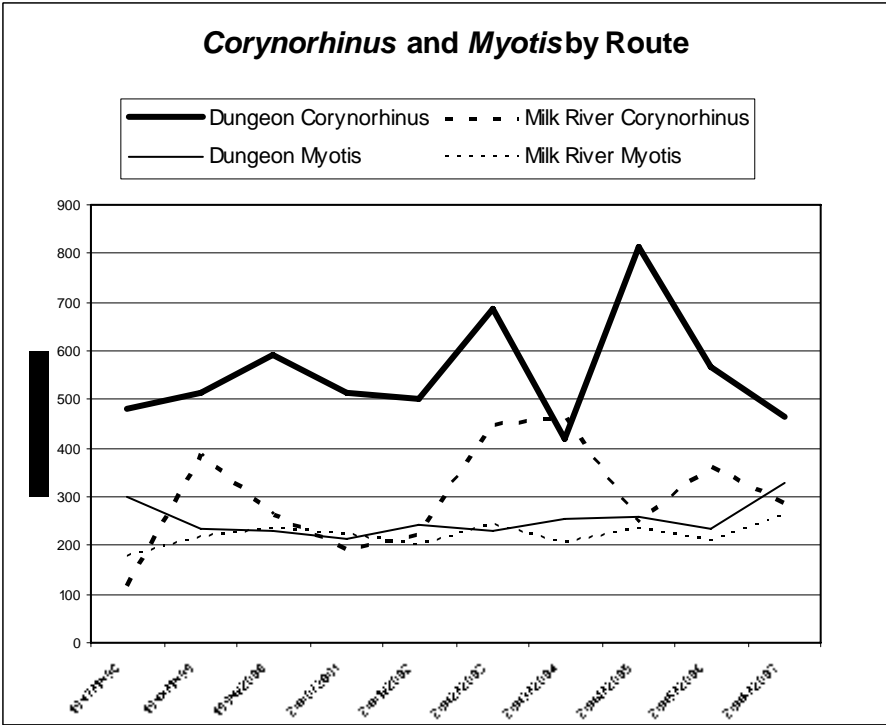
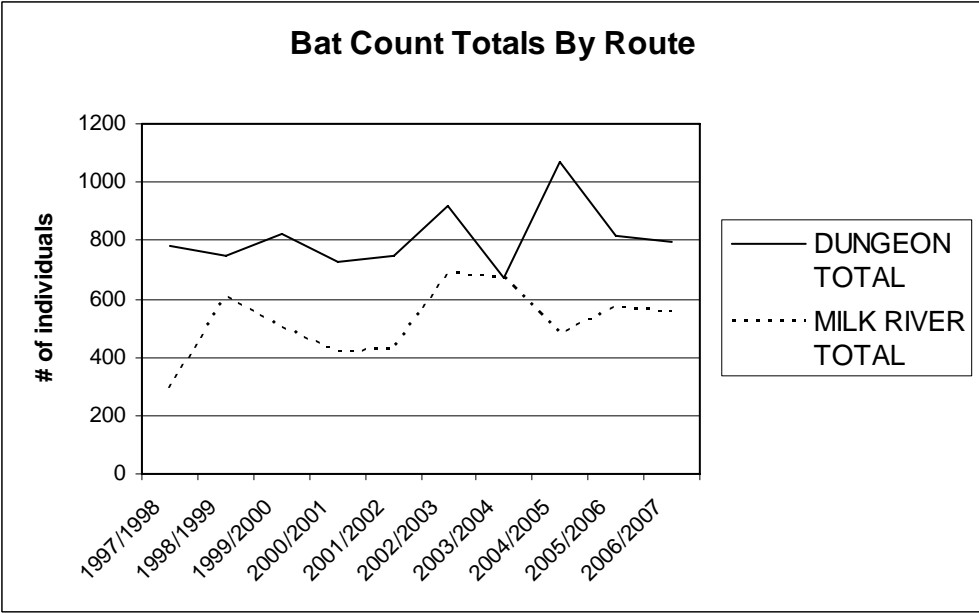
MYOCIL = *M. ciliolabrum*  
 MYOSEP = *M. septentrionalis*

# Jewel Cave Bat Count Results (1959 to 2007)

C. townsendii
  Myotis spp.
  All



\*Myotis numbers unknown 1959-1968



Dungeon Room

#6

# Dungeon Route

Updated October 2002

6↓ = # of stairs up or down (as you go in)

#5

#4

Chert Room

Rock steps  
3↑

#3

Fat Man's  
Misc

#1

Catacombs

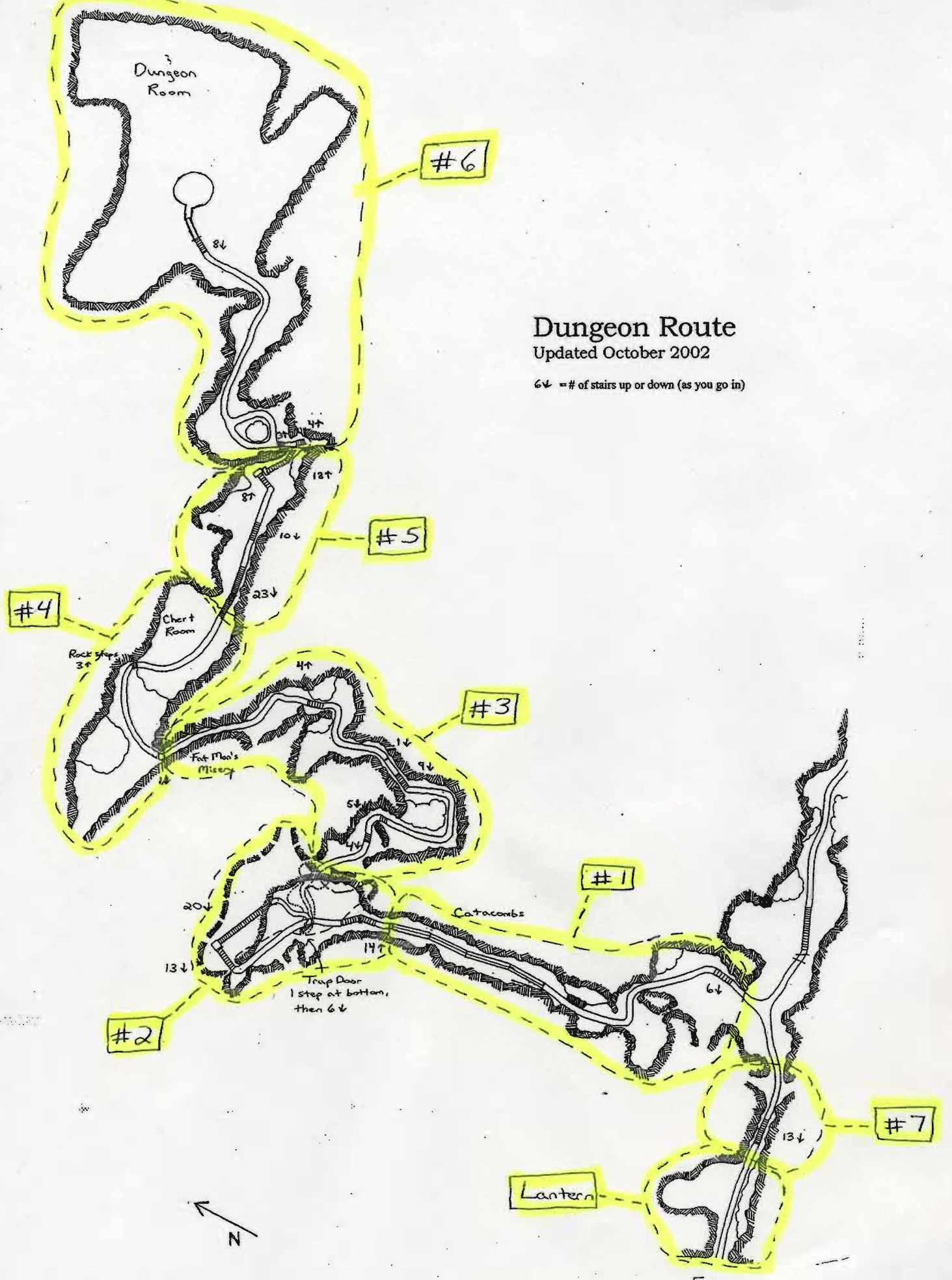
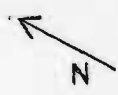
#2

Trap Door  
1 step at bottom,  
then 6↓

#7

Lantern

Entrance





# Heavenly Route

Updated October 2002

↕ = # of stairs up or down (as you go in)

