



CHARACTERISTICS OF CAVE DIVING FATALITIES BEFORE AND AFTER 1980

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INTRODUCTION

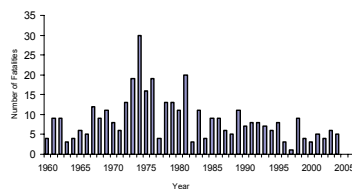
- Cave diving fatalities increased in the 1960s and 70s coincidentally with the growth of cave diving popularity and caused cave diving organizations to introduce preventative interventions including :
 - Raising public awareness
 - Restricting access to caves
 - Enhancement of safety rules
 - Providing training opportunities
- This study compared characteristics of cave diving fatalities before and after 1980 to investigate the possible impact of the interventions.

METHODS

- Fatality case files compiled by John McAniff and DAN
- Subdivided in two samples:
 - "Early"(n=215); from 1960-1979
 - "Late" (n=213); from 1980-2007
- Each case was reviewed for adherence to the institutionalized safety rules and for root causes of the accident.
- Differences between groups were tested using student-t test ($p < 0.05$) and Chi square test.

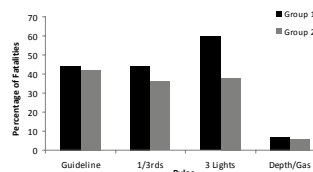
RESULTS

Figure 1. Annual Numbers of Cave Fatalities



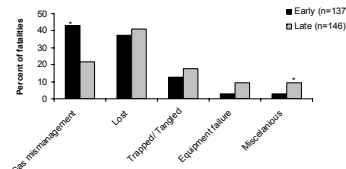
- Annual number of fatalities peaked in 1975 at 30
- This progressively decreased to between five and seven per year in the last five years.

Figure 2. Rules Broken Between Groups



- The guideline rule was broken equally for both groups (24%) while 35% of "Early" fatalities and 23% of "Late" fatalities broke the one-third gas supply rule.

Figure 3. Root Causes



- Running out of gas and getting lost were leading root causes. Late group had significantly less cases running out of air .

Table 1. Age, gender and certification by group.

Group	Time Period	n	Average Age	% of Males	% of Cave Certified Fatalities
1	1960-1979	215	23.2±6.2	95	6
2	1980-2007	213	32.7±10.9	96	31

- Late group was older than Early group (Table 1)
- Most fatalities were male in both group.
- Percentage of certified cave divers increased in late group.

DISCUSSION

- The annual number of cave diving fatalities since 1975 show a downward trend.
- The percentage of non-cave certified diving deaths after 1980 decreased significantly.
- Changes in cave diving fatality characteristics also suggest that besides effects of restricted access and increased public awareness, emphasis on certification, improved training, safety rules, and perhaps greater diver maturity may have helped to reduced cave fatalities during 1960-2007.

Without knowledge of the number of cave divers and their exposure, however, this conclusion is tentative.

ACKNOWLEDGMENTS

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