

## **National Park Service Natural Resource Year in Review – 1997**

Section: Doing the Job Safely

Proposed Paper: *Safe Conduct of Bat Surveys in Abandoned Underground Mines*

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With the current national emphasis on abandoned mine reclamation, the National Park Service and other agencies have become increasingly concerned with assessing and preserving critical wildlife habitat that many mines provide. Most often this concern focuses on bats, which are becoming more dependent on abandoned mines for habitat as recreational caving and deforestation diminish their natural habitat. Where significant habitat has been identified, special closures can usually be designed to exclude people and allow free passage of the bats. Where more restrictive closures such as backfilling are mandated, colonies can be excluded and relocated prior to closure.

External and internal surveys are both used to gain information on mine-dwelling bat species. External surveys can be conducted during seasons when bats are active from dusk to dawn. However, internal surveys are the only way to obtain reliable data on hibernating bats, and they yield much more information on roost characteristics and bat behavior during active seasons. Winter underground surveys are most useful, as hibernating bats can be identified, and uneaten insect parts, guano, and urine-stained walls attest to spring, summer, and fall use. Ideally, surveys are conducted in all four seasons of the year before a mine is closed, as various species will use different portions of a mine for varying purposes through the course of a year.

Wildlife biologists conducting underground surveys are subject to the same hazards for which the mines are being closed. Oxygen-deficient air, toxic gases, unstable rock, vertical drop-offs, abandoned explosives, and hazardous waste are some of the hazards typically encountered. Abandoned underground mine specialists are therefore being linked with biologists to conduct underground habitat surveys. These specialists are equipped and experienced to deal with underground mine hazards, and assume responsibility for the training and safety of inexperienced members of underground survey teams.

In 1997, several federal agencies collaborated to establish abandoned mine entry policies and safety training programs for employees who now find abandoned mine entry a routine part of their job. The Geologic Resources Division is considering language for a servicewide policy, and has conducted numerous safety sessions with the general admonition to stay out of abandoned mines unless accompanied by a qualified safety specialist. The USFS has an official policy that requires a qualified mineral examiner to lead abandoned underground mine research groups. With the assistance of NPS and BLM mining specialists, USFS has developed a weeklong mine safety course that has been attended not only by wildlife biologists, but also specialists in cultural resources, hazardous materials, law enforcement, search and rescue, and minerals management. BLM is just developing its policy, and is considering offering a training course through their National Training Center. All three agencies are conferring on official criteria to certify individuals as “qualified” for leading underground surveys. These efforts will ensure that wildlife surveys and other important work in abandoned underground mines will be accomplished with maximum safety for all federal employees.



Safety specialist monitors for alpha radiation, oxygen, carbon monoxide, and methane.  
Canyonlands NP, Utah



Safety specialist “bars down” a loose slab of rock at Lathrop Canyon Mine.  
Canyonlands NP, Utah



Author inspects townsend’s big-eared bat (*Corynorhinus townsendii*)  
Chiricahua National Forest, Arizona



The urine-stained roof and massive guano pile discovered in a winter survey of Quillin Mine indicates a large summer roost of bats. Biologists returned in the summer and identified a maternity colony (mothers and their nursing young) of 4,000 cave myotis (*Myotis velifer*).

Fort Bowie NHS, Arizona



Bat gate installed in portal of Monte Cristo Mine, Rush Historic Mining District.  
Buffalo National River, Arkansas