BC Speleological Federation

Best Management Practices (BMP)

CAVE CONSERVATION

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The BCSF is a federation of cave explorers, caving groups and cave scientists dedicated to the exploration, study and conservation of caves. The BCSF BMP series summarizes accepted practices to protect caves, karst and the species living in and around them.

INTRODUCTION: Caves are unique and sensitive environments that often contain rare and protected species as well as important scientific information relevant to our planet's past as well as future. In order to protect these fragile environments and the important resources they contain, the following BMP is recommended.

The BMP listed below should guide decision makers when issuing permits, and permittees/visitors on Crown Land and in BC Parks when they go underground.

SYNOPSIS: There are general practices that should be considered by companies operating above or within caves and mines:

1. **GENERAL RULES:** The general rule is to minimize disturbance around cave entrances and underground. "Take nothing but pictures, leave nothing but (well-placed) footprints, and kill nothing but time" is the best summation of good practices.

2. **WHITE NOSE SYNDROME (WNS)**[1] is a devastating fungal disease that causes up to 100% mortality in bat species and has killed millions of bats in North America. It first appeared in NY State in 2006 and has since spread rapidly westward into 35 states and 7 Canadian provinces. The causal fungus has been reported in three additional states. While not yet in BC, WNS was reported in nearby Washington State in 2016 and continues to spread. The majority of transmission is believed to be bat-to-bat; however, experts strongly advocate a series of practices to ensure the disease is not carried by human visitors into BC or Alberta.

3. **NO DISTURBANCE and SPECIES AT RISK:** Bat maternal roosts and winter hibernation sites (hibernacula) are in some mines and caves. These sites are vital to the survival of bat species. Roosts and sites should not be disturbed, particularly during the winter months when bats need to conserve energy. All BC bat species of which are protected under the BC Wildlife Act, and some are "species at risk" protected under Federal SARA legislation. Contact the BC Conservation Data Centre https://www2.gov.bc.ca/gov/content/environment/plants-animals-

[1] See the BCSF's separate BMP document for WNS that outlines the procedures and methods necessary for cavers, film companies and cave guiding operations to minimize the risk of introducing WNS into the province.

ecosystems/conservation-data-centre/explore-cdc-data/known-locations-of-species-and-ecosystems-at-risk/cdc-imap-theme and the BC Speleological Federation at bcsf@cancaver.ca to determine if your planned location and activities may encounter these major bat colonies or species at risk.

4. **FORESTRY and INDUSTRIAL OPERATIONS:** Some of the most invasive practices affecting cave entrance and karst areas are forest harvesting and road building activities. There are well-established practices and procedures that can identify caves in karst areas via karst reconnaissance surveys, and that dictate entrance and shallow cave buffers. These practices are found in the Karst Management Practices of BC (2002) and in the Karst Inventory Standards and Vulnerability Assessment Procedures for British Columbia (2003). These references should be consulted by professional foresters and forest technicians when planning and laying-out harvest areas, roads, and silvicultural treatments. Parties engaging in industrial or primary forestry activities should also consult a qualified karst assessor to assist in the planning of such activities. An assessor qualified to assess karst for the purposes of a GAR Order for resources (karst) in a forestry context they should have sufficient experience with karst systems, education, and at a minimum have completed KISVAP training and the KMH (2003) training for forestry and operations.

5. **FILM PROJECTS:** Any activity in the entrance zones or within a cave, the proponent should assess the cave environment's ability to recover from the planned activity. Not all caves are equal in terms of their resiliency. Some caves are high energy environments, while others have a very low rate of energy exchange. Caves with very static environments are quite fragile and often do not have the ability to recover from the impact of visitation.

   Film projects can be particularly intrusive and damaging. When choosing an underground film location, it is important to seek out caves and mines with a high rate of energy exchange, such as stream caves or locations that experience seasonal impacts, such as flooding. Places like these are much more capable of recovery and are much less likely to contain significant environmental resources. Key points include:

   - Avoid bat caves and caves containing species at risk.
   - Institute WNS procedures
   - Avoid altering natural water or air flow. Do not reroute streams or alter passages in such a way as to change air or water flow.
   - Temperature is a critical factor. Limit the use of intense lighting and crew size. When selecting areas for filming avoid small spaces with little air or water exchange. Such areas will experience a much greater impact in terms of temperature change.
   - Avoid removing sediments, altering or marking cave passages, or damaging/muddying cave formations. Leave no trace of your work. Many of the sediments and calcite formations deposited within caves have the potential to contain important geological histories that can be lost when such sediments are disturbed. Do not undertake the

alteration of any cave environments without proper consultation from a trained specialist.

- Remove all outside materials from the cave location post project. In order to limit the introduction of outside materials, do not eat, smoke, defecate or urinate within the cave.
- An important factor in cave protection is secrecy. When filming in wild cave locations it is important that location information is not shared beyond those immediately involved in the project. In addition, steps must be taken to avoid creating trails leading to cave entrances, where trails currently do not exist. Production locations should not publicise cave locations to ensure caves are not visited post-production.

6. **RECREATIONAL CAVE and MINE EXPLORATION:**
    - Sustained recreational caving can seriously alter or damage some cave entrances and passages.
    - Participants should adhere to the WNS practices as per BCSF BMP, White Nose Syndrome (WNS)
    - Participants should also adhere to the Conservation and Safety (section 3.5) practices as described in the Cave Guiding Standards at http://www.canadiancaveconservancy.ca/caveguidestd.pdf

7. ADDITIONAL RESOURCES and CONTACTS

Karst Management Practices of BC (2002)

https://www.for.gov.bc.ca/hfp/publications/00189/Karst-Mgmt-Handbook-web.pdf

Karst Inventory Standards and Vulnerability Assessment Procedures for British Columbia (2003).

https://www.for.gov.bc.ca/hfd/pubs/docs/mr/Mr099.pdf

Multi Resource Value Assessment Report North Coast / Central Coast Natural Resource District, Vancouver Island Land Use Plan Area. District Manager Commentary for karst page 19-21:

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/integrated-monitoring/mrva_vilup_mar_28_2019.pdf

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