

New Holistic Biodiversity Tool for Cave Conservation

Caves and underground habitats are biodiversity hotspots in terms of endemism. However, they have received little conservation attention, leaving them vulnerable to exploitation and disturbance. To best maintain and protect current biodiversity, it is essential to develop priorities for conservation and management. Using bats as umbrella species to evaluate the diversity and conservation needs of caves may provide an index to protect total cave biodiversity.

Researchers from the Landscape Ecology Group of the Xishuangnanna Tropical Botanical Garden, Chinese Academy of Sciences recently brought forward the ‘Bat Cave Vulnerability Index’ (BCVI), which is a new approach in using bats as surrogate taxa in prioritizing caves. The new holistic approach has been published in *Ecological Indicators*.

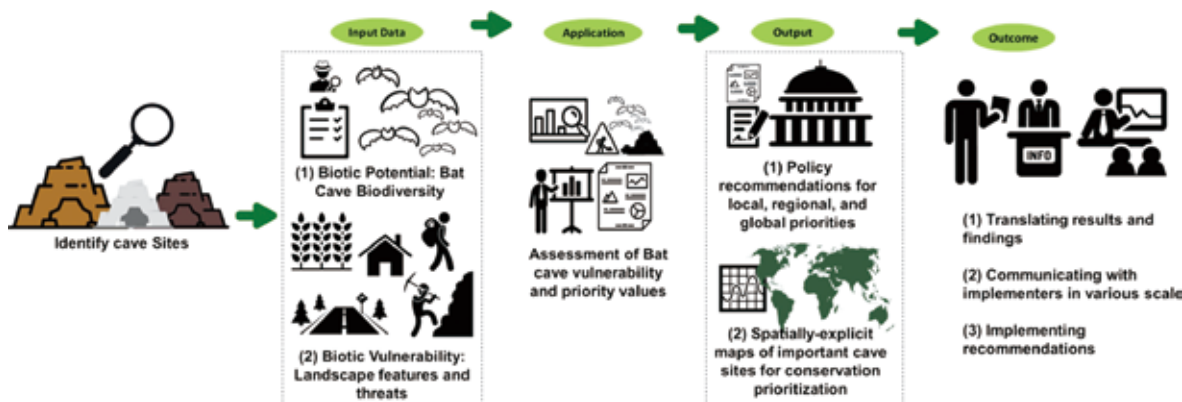
According to their paper, the Biotic Vulnerability is represented by the cave’s landscape features and the presence of human-induced disturbances and threats within and outside the cave. It integrates biodiversity information and habitat condition as fundamental elements in making

conservation, management and policy-making initiatives both at regional and global scales.

Using the Biotic Potential index, caves with high species richness did not directly result to the highest priority but the inclusion of endemism, conservation status, and rarity altered the priority setting of those areas with relatively medium diversity sites

“An interesting feature of this tool we developed is its easy-to-use equation, which we intentionally made for rapid local assessments, while simultaneously providing something standardized, comparable and useful in assigning value and threat”, said Alice Hughes, correspondence author of the study and Principal Investigator at the Garden’s Center for Integrative Conservation.

By highlighting bats as umbrella species in caves, the researchers synergistically incorporate significant elements of species diversity with habitat features to produce an inclusive habitat conservation strategy, which provides a mechanism to frame conservation decisions and effectively protect cave diversity into the future.



The schematic diagram of the application of the Bat Cave Vulnerability Index in prioritizing bat caves for conservation. The process starts with the identification of cave areas to assess cave priorities. The input data necessary for the holistic process includes the bat cave diversity and threats present in caves that represent the cave biological potential (BP) and vulnerability (BV) respectively. The application of BCVI concept will follow to identify the cave priority settings, which will be transformed into spatial maps of important areas and policy recommendations, which may be adapted and implemented in a regional, national, or global scales.