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The Hole-in-the-Wall Gang  
Ukrainian bats fill an invaluable crevice  
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Bats dart and dive through the skies of northeastern Ukraine each summer, chasing an assortment of insects over the steppes. During the summer months, bats of at least five species are about as common over much of these near-featureless plains as in the more diverse Ukrainian landscapes, where caves and mines provide handy sites for hibernating in winter. But there are virtually no caves and very few underground mines in the steppes. Where, then, are these non-migratory bats spending their winters?

The puzzle of these missing hibernation sites was raised by Russian researcher Petr Strelkov half a century ago. He investigated likely alternatives “especially abandoned, underground monasteries” but found only about 20 bats. He reported no other viable options where many thousands of resident bats could spend their winters. Recent surveys of Strelkov’s monasteries still found barely 200 bats hibernating there.

My colleagues and I discovered a likely solution in 2003. In the limestone-and-clay walls of an abandoned open-pit mine near the village of Zavody, we found a deep crevice in which bats of five species roosted during summer and hibernated in winter. Two of the species “Brandt’s (Myotis brandtii) and Natterer’s myotis (M. nattereri)” had not previously been reported using abandoned mines and monasteries. The crevice was too small for us to enter, but initial estimates put the number of bats at more than 1,000.

Bat hibernation sites in rock crevices are virtually unstudied in eastern Europe. As part of my graduate studies at Ukraine’s Kharkov National University, I set out to find crevices used by bats in other open-pit mines, valley walls and rock cliffs and outcrops. I planned to survey bat populations and document their conservation status and needs. My research was supported in part by a Bat Conservation International Student Research Scholarship funded by the Frank Cross Foundation.

Facing an almost complete absence of data on the characteristics, locations and abundance of suitable crevices, my field team and I searched some 385 square miles (1,000 square kilometers), much of it on foot, for hibernation sites.

We spent 43 days in the field “hiking, climbing and mist-netting in search of crevices that contained hibernating bats or evidence of past use. We explored old open-pit mines, riverbanks, cliffs and valley walls. We analyzed maps and consulted with geologists to identify likely locations, but the geology of the area is often dominated by chalk, marl (limestone and clay) and other unstable materials. Piles of rubble are common.

We found very few large crevices and none that contained more than a few bats or evidence of previous use by significant numbers of bats.

A rare burst of excitement during this period of frustrated exploration came near the town of Losovaya. We examined two big open pits, but found neither bats nor droppings. Then a rainstorm sent us scrambling for cover into an old, abandoned elevator once used to haul

material out of the pit. To our delight, we discovered bats roosting in small crevices of the concrete ceiling. We set our mist nets outside and captured 19 bats of five species. Although catching bats was very pleasant after such a long dry spell, this was not the aim of our project.

In the end, we were left only with the Zavody Open Pit, where the main crevice roost is about eight feet (2.5 meters) high and averages some 2.75 inches (7 centimeters) wide. The main entrance used by bats is near the center of the vertical crevice and measures about 4 by 4.7 inches (10 by 12 centimeters). This primary crevice is at least several meters deep. Bats also use smaller, horizontal crevices in the rock wall.

The open pit was abandoned about 20 years ago. The Seversky Donets River runs nearby with a large, old-growth forest along its bank.

We have netted bats at the Open Pit between March and November for five years, capturing a total of 908 bats of 10 species. Five species are resident to the area, including three myotis species that are rarely reported in Ukraine: Brandt's myotis and Natterer's myotis and the pond myotis (*Myotis dasycneme*), listed as vulnerable by IUCN.

We captured 45 pond myotis, suggesting the Open Pit is an important habitat for this rare species. Only 10 Natterer's myotis had been reported in all of Ukraine during the previous decade; we caught 201 of them.

The other five species are migratory and captured only in early and mid-August. These migrating bats apparently use the open pit as a stopping point in their journey.

We have confirmed that resident species use the Open Pit crevice as a hibernation site, as well as a summer roost. We have also documented autumn swarming at the site. In swarming, bats congregate at a location, usually the entrance to a cave or underground mine, and fly around the area nightly for a time. The reasons for swarming behavior remain unclear; it may involve mating or selection of hibernation sites. Our results suggest that some migratory bats joined resident species in swarming at the Open Pit.

We continue to analyze our data, and additional work is needed to confirm the scarcity of suitable hibernation crevices throughout the region. We suspect we may find suitable crevices in southeastern Ukraine.

After five years of netting and an intense year of searching for bat hibernacula, our main conclusion is that the Zavody Open Pit is a unique place for bats in all Ukraine, a site that is crucial as a summer roost and winter hibernation site for resident bats and as a stopover point for migratory species.

But the crevices in this crumbly rock are threatened by water flow and human disturbance. We are compiling documents calling for the creation of a small bat reserve in the Open Pit. This is a rare and vital sanctuary for the many bats that live "or just pass through" the steppes of Ukraine, and it must be conserved.

ANTON VLASCHENKO is a graduate student at Kharkov National University in Ukraine. Help Bat Conservation International support students such as Anton Vlaschenko conduct important research around the world by donating to the BCI Student Research Scholarship Program. Please contact our Department of Development at [development@batcon.org](mailto:development@batcon.org) or (512) 327-9721.

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