LONG-TERM CHANGES OF HIBERNATING BATS IN HUDA LUI PAPARA CAVE (APUSENI MOUNTAINS, ROMANIA)

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The Huda lui Papara Cave is an ascending, limestone cave with a length of about 2km. We have monitored the winter colonies for 11 years and have identified nine bat species, of which three were dominant every winter: *Miniopterus schreibersii, Pipistrellus pipistrellus* and *Myotis myotis/blythii.* The first two colonize a common and well defined segment of the cave, leading to competition for space, which in turn makes the numerical ratio between them change from one winter to another. The total number of hibernating bats had a constant growth tendency during the monitoring, from 7,500 in 1998 to 84,400 in 2008. This could be determined by one or more of the following causes: a natural numerical growth of the bat populations in the investigated geographical area, by eliminating the use of insecticides in agriculture; from the destruction of several steel structures (by powerful floods), which had facilitated winter tourism in the cave; by the intensification of tourist activity in other caves from the area, which determined the bats to seek safer shelters; a "snowball effect". The cave has a 37m high entrance, making it possible for the external temperature fluctuations to reach even the maximum colonization area, which is why, in some winters, we have found hundreds or even thousands of dead individuals on the ground (exclusively *M.myotis/blythii* and *Nyctalus noctula*). The shape, size, place and total number of individuals in the colony changes several times during one winter. Therefore, we can assume a high mortality rate in the bats leaving the cave, because there are no other caves or winter shelters in the vicinity. The maximum number of individuals, for the species which form winter colonies in this cave were: *M.schreibersii* – 61,300 on 10.11.2006, *P.pipistrellus* – 33,000 on 03.03.2005, *M.myotis/blytii* – 6,800 on 03.03.2005, *N.noctula* – 1,030 on 02.02.2008 and *Rhinolophus ferrumequinum* – 1,050 on 20.12.2002. This is why this sanctuary is the largest hibernacula in Europe.