Scientists warn Spanish cave should remain off the tourist map

October 7 2011, by Lin Edwards

Reproduction of cave of Altamira in "Deutsches Museum" Munich. Image: Wikipedia.

(PhysOrg.com) -- The World Heritage listed Altamira Cave at Cantabria in northern Spain, is home to some of the most perfect examples of Paleolithic cave paintings in Europe, but threats posed by tourists and their effects on the fragile ecosystem within the cave led to it being closed to the public in 2002. Now scientists in Spain say that recent proposals to reopen the cave should be dropped to ensure the paintings are preserved.

Professor Cesareo Saiz-Jimenez of the Institute for Natural Resources and Agrobiology, at the Spanish National Research Council (IRNAS-CSIC), and colleagues have warned that reopening the cave could lead to permanent damage to the paintings. Among the best known of the

paintings are those discovered in 1879 of bison, deer and horses, in the Polychromes Hall near the entrance to the cave.

Altamira Cave was closed to tourists in 2002, after Claudia Schabereiter-Gurtner, Saiz-Jimenez, and colleagues first reported that bacteria and fungi were colonizing the paintings and consuming the pigments, which meant they would adversely affect the conservation of the paintings.

In 2010 government authorities proposed the cave be reopened to the public to attract tourists and provide a much-needed boost to the local economy. When the cave was open large numbers of tourists visited (reaching as many as 174,000 in the 1970s). It was closed in 1977 over concerns for the paintings, but reopened in 1982 but annual tourist numbers were restricted to 8,500. The 2010 proposal to reopen the cave was dependent on expert opinion of how many visitors should be allowed in the cave.

In the new study, published in the journal *Science*, Saiz-Jimenez and colleagues modeled the effects of allowing the public back into the cave. They found that the presence of large numbers of people would introduce light, increase the temperature and humidity, raise CO2 levels, increase air turbulence, and in short, create perfect conditions for the bacteria and fungi to multiply and resume their destruction of the paintings. The study also identified other items tourists would bring with them, and which would also encourage bacterial and fungal growth, including dust, flakes of skin, and clothing fibers.

The 14,000 years old Paleolithic rock art examples at Altamira and those in the Lascaux caves in Dordogne, France, are among the best preserved in Europe. The researchers at Altamira Cave concluded that while reopening the cave to tourists might help the local economy in the short term, the importance of the paintings and their preservation should take precedence. They also warned against a repeat at Altamira of the kind of

damage by black mold to the paintings at Lascaux, which was caused by their mismanagement.

More information: Paleolithic Art in Peril: Policy and Science Collide at Altamira Cave, *Science* 7 October 2011: Vol. 334 no. 6052 pp. 42-43. DOI:10.1126/science.1206788

Abstract

In the last decade, considerable attention has been paid to the deterioration of the caves that house the world's most prominent Paleolithic rock art. This is exemplified by the caves of Lascaux (Dordogne, France) (1) and Altamira (Cantabria, Spain), both declared World Heritage Sites. The Altamira Cave has been closed to visitors since 2002. Since 2010, reopening the Altamira Cave has been under consideration. We argue that research indicates the need to preserve the cave by keeping it closed in the near future.