Caves and public use in the Southern Espinhaço Mountain Range, Brazil

Vitor Moura & Luciana Alt

Brazilian Karst Institute

Introduction and objectives

Caves are fragile, complex and low resilience environments however caves provide unique scientific, educational and recreational opportunities for visitors. These uses, without proper management, can severely impact or even destroy the attributes that provide such opportunities. Many of these resources are not renewable, and in these cases the damage is irreversible. There are some caves with established public use, still incipient in the southern portion of the Espinhaço Mountain Range. Among the main observed uses, we highlight the sporadic visitation of rare beauty speleological sites (Figure 1), the religious use (Figure 2) and the practice of adventure sports (climbing, rappelling and others). None of the identified caves are actually prepared to receive such activities, as it has no speleological management plan developed in any cave in the area. This instrument allows the development of appropriate planning, control and monitoring of public use activities. These caves are therefore vulnerable to the impacts arising from uncontrolled visitation as speleothem breakage, graffiti, trash disposal, fauna alterations, sediment perturbation, etc. (Figures 3 and 4).

The central objective of this work is to identify and analyze the current status of public use in the caves of the area. This identification involves a great responsibility, since the mere disclosure of a list of caves, or photographs showing the great beauty of the underground environment, can stimulate the use of caves that are not prepared for such activities.

Methodology and results

The identification of caves with public use established in the Southern Espinhaço Mountain Range was conducted through literature review, consultation with CECAV (Brazilian Caves Research and Protection Federal Agency) database, interviews with

Figure 1 – Entrance of Salitre cave, in quartzite rock. Site of numerous opportunities for public use and environmental interpretation.

Figure 2 – Entrance of Capela Velha cave with a rock cross on the floor. Photo: Luciana Alt and Vitor Moura.

Figure 3 – Gentio cave, in marble, showing graffiti in the foreground and sediments with traces of intense trampling. Photo: Luciana Alt and Vitor

Figure 4 – Lapa Santa cave passage showing garbage disposal. Photo: Luciana Alt and Vitor

researchers and extensive consultation on the internet websites. The study included 13 municipalities in the area and identified 33 caves with public use or which were promoted as tourist attractions. In the field it was found that 14 of these caves had higher propensity to public use and received greater pressure by this activities. The Figure 5 shows the main caves identified during the work and its location in relation to protected areas in the Southern Espinhaço Mountain Range. The environmental analysis divided the analyzed caves into four groups of attributes: (I) caves whose main attraction is prehistoric archaeological sites, (II) caves with religious use, (III) caves whose main attraction are historical archaeological sites and (IV) caves with recreational use. In some caves these attributes are overlapped, representing a challenge for speleological management activities.

Conclusions and recommendations

This work identify that the population poorly absorbs scientific and environmental values linked to speleological heritage. This can be explained by the lack of specific educational activities in the area. Much of the public use activities identified in the Southern Espinhaço are sporadic visits for recreational purposes. The public in general misunderstands the dense and complex layers of environmental information commonly stored in caves. As example, the public did not apply proper value in one archaeological site associated with a cave because this information is not included as part of their life, education and nowadays culture.

It was noted that some caves are being promoted, irresponsibly, as tourist attractions. The historical-cultural heritage housed by these caves is very fragile and extremely relevant, being vulnerable to vandalism. Until they are properly prepared to receive visitors these caves should not be promoted, under penalty of losing, irreversibly, his heritage.

This work sets an important step, and despite the limitations in time and sampling, the results reached depth in analysis and can effectively contribute to the future planning of the public use of the caves in the area. From the acquired knowledge, it is recommended that effective actions must be carried for protection and enhancement of speleological heritage of the area. The main actions required are: increase knowledge regarding the speleological heritage, creation of more protected areas including caves with public-use demand, promote educational programs and perform cave management plans. Some of these actions are in progress, such as the Salitre Cave management plan, in Diamantina, but there is still a long way to go.

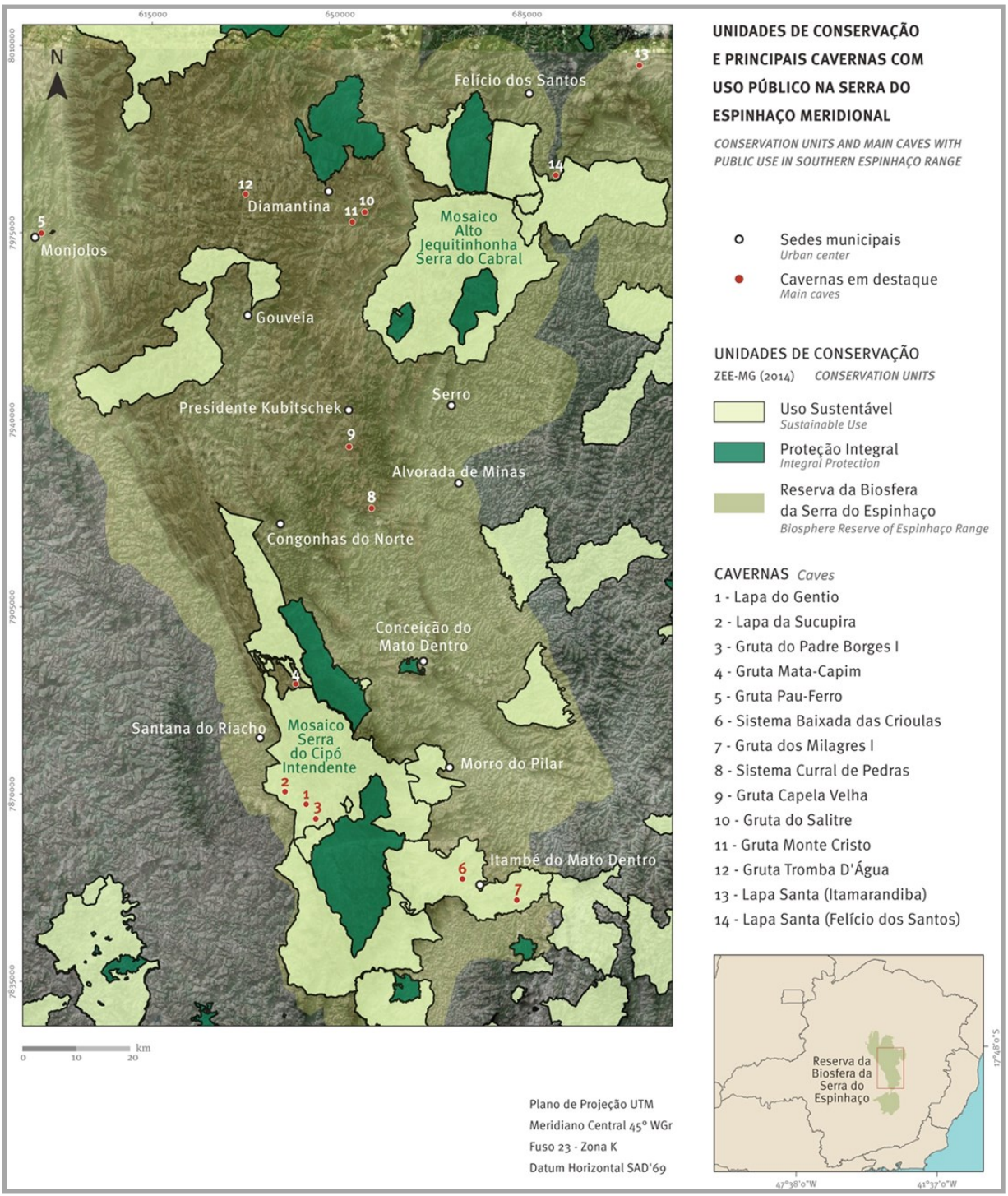

Figure 5—Map showing the main caves with public use and protected areas (conservation units) limits in the Southern Espinhaço Mountain Range area

References

. CENTRO NACIONAL DE PESQUISAS E CONSERVAÇÃO DE CAVERNAS – CECAV. Relatório de Vistoria/

Inspection Report - CECAV: Plano de Ação Emergencial da Gruta do Salitre/ Emergencial Action Plan Salitre Cave, Diamantina – MG, Agosto 2011. Brasília: CECAV, 2011. 2p.

HORN, A. H., BILAL, E., BAGGIO, H., TRINDADE, W., RODET, A. The Salitre Cave karst in the quartzite rocks of Diamantina, Minas Gerais, Brazil. Romanian Journal of Mineral Deposits 85, v. 2, p. 16-22, 2012.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. As Grutas em Minas Gerais/ Caves in Minas Gerais. 1 ed. Belo Horizonte: Oficinas Gráficas da Estatística,1939.278p.