# VOLCANIC CAVES IN ARGENTINA

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## Abstract

The SE part of the province of Mendoze, Argentina, consists of a basaltic area known as "Payunia", after the name of Payun Matru, its main volcano. A very active volcanism affected this area during Pleistocene, and its surface features retain evidence ot this activity. Such features are also reckoned underground, where several lava caves were located. The most important among them is Cueva Dona Otilia, with 838 m development. The cave environment is featured by a high humidity percentage and by a remarkable organic inflow, which could infer to an eventual biospeleological importance. Further lava caves were also found in two more provinces of Argentina, La Pampa and Neuquén, with an average development of 300 m.

## Foreword

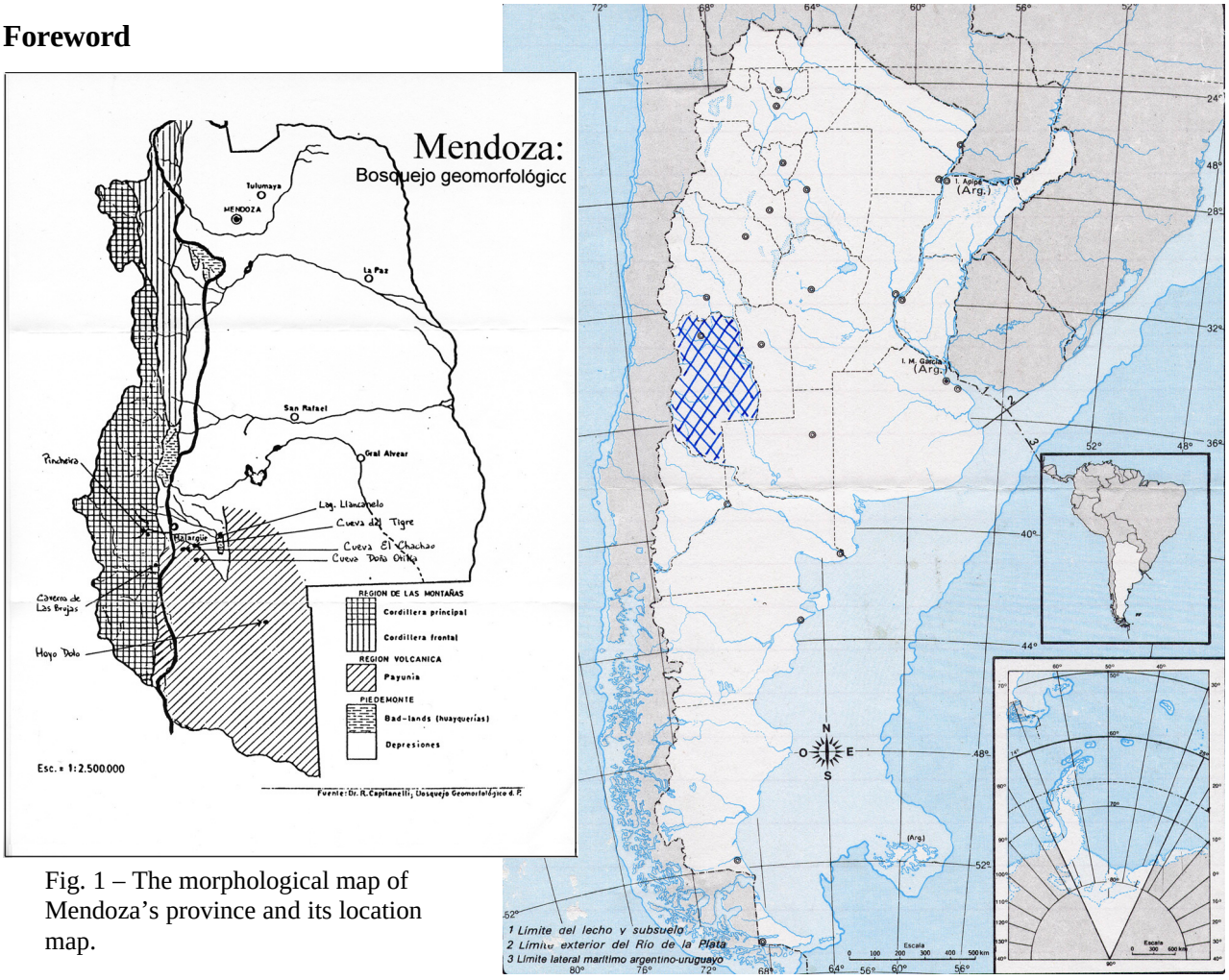


Fig. 1 – The morphological map of Mendoza's province and its location map.

Speleology in Argentina is rather young, though it is rapidly evolving, mainly in the provinces of Mendoza and Neuquén, on the Cordillera of the Andes. In fact Argentina's Andes provide the most favorable grounds for speleogenesis: Jurassic limestone and gypsum, and Pleistocene basalt, though this latter is rather approximately dated.

Malargüe, a department of Mendoza, is placed in the southernmost area of the province, at the boundary with the province of Neuqüen; the western side of Malargüe is occupied by the Cordillera of Andes, whereas its eastern side hosts a broad volcanic area, with several extinct volcanoes that give the landscape a singular aspect. The basaltic sub-region, identified on the morphological map by the transverse sketch (Fig. 1), is known as "*Payunia*", just after the name of the Payun Matro, the main volcanic presence.
The map reports also the towns in the province of Mendoza, and Malargüe among them, and the most important studied caves up to date. Prospective and survey studies are actually in progress, and this communication will be soon outdated, though our foreign colleagues can use it as an approach to Argentina's speleological reality.

## Volcanic caves of Malargüe, Mendoza

The Centro Argentino de Espeleologia (C.A.E.) produced in the Seventies the first researches on Argentina lava caves, and published *Cueva Doña Otilia*'s survey (Fig. 2). Their researches were successively abandoned, and resumed again between 1995 and 1996, by the IN.A.E.
This communication does not concern shelters and holes, because of their negligible size, though they were surveyed and studied as well. "*El Manzano*", among them, was considered in a joint study performed in collaboration with Prof. Paolo Forti (University of Bologna, Italy) in 1997. The study was stimulated by the high concentration of phosphate minerals in the cave.

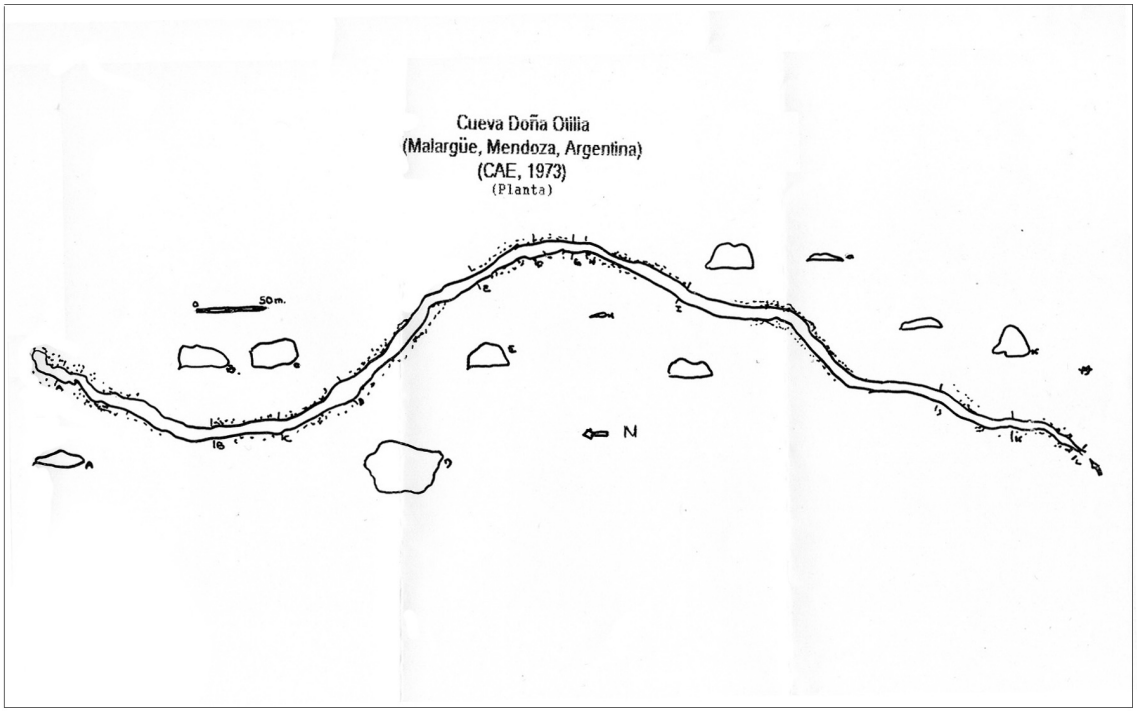


Fig. 2 – The *Cueva Doña Otilia*'s survey

Only the three major basaltic caves of Malargüe department will be considered, and summarily reported here.

### *Hoyo Dolo*

Surveyed by C.A.E. Its total length is 350m, though the original tunnel should have been approximately 2500m long, according to the aerophotogrammetric surveys. This cave did not arouse speleologists' interest, due to the massive presence of collapses.

*Cueva del Tigre*

This cave is located something less than 70 km SE of Malargüe, and was surveyed by the IN.A.E. in 1996. Dr. Eleonora Trajano (U.S.P., Brazil) already biologically surveyed it in 1991; Dr. José Palacios Vargas (UNAM, Mexico) carried out an additional biological study in 1996. Neither research, however, gave positive results, due to the high dryness of the cave. In 1997 the cave was visited by Prof. Paolo Forti (University of Bologna, Italy), who carried here mineralogical researches. This cave is subject to uncontrolled tourist visits, notwithstanding speleological Organizations' complaints and oppositions.

*Cueva Doña Otilia*

This cave too is situated at about 70 km SE of Malagüe. It is the longest known lava cave in this area, and the most picturesque too, thanks to the quantity of roots penetrating through ceiling cracks, and to its gypsum and calcite speleothems, very rare in this kind of caves. The hollow is highly humid and encumbered with abundant organic debris. The presence of depigmented micro-arthropods was recently ascertained, therefore a program of systematic biological researches will be started within brief times.



The following peculiar features can be observed:
Stalactites made by Calcium carbonate, carried as a solution by abundant drainage waters;
Roots penetrating from the overlaying surface, to the aim of drawing water from the sandy bottom; the previously cited fauna was hosted on these roots, and this phenomenon was photographically witnessed;
Roots penetrating through the ceiling and descending along the walls until the floor;
Roots on which the deposition of a translucent gypsum lining is in progress; this phenomenon is singularly attractive, since the roots are becoming the "*live*" core of extremely fragile speleothems.
*Cueva Doña Otilia* lies in a flattish basaltic area, with an almost unidentifiable entrance; notwithstanding this some tourist operators proposed to use this cave for commercial purposes. This could heavily endanger the inner environment for the following reasons:
These operators are already undisturbedly destroying the *Caverna de Las Brujas*, despite it is a natural reserve shielded by law, and notwithstanding unattended speleologists' claims;
*Cueva Doña Otilia* is an extremely vulnerable cave: its speleothems can be shattered into fragments by simple visitors' hand-touch, and its fauna wasn't yet exhaustively studied.

## A further developing research

If we consider the broad extension of basaltic areas in Malargüe, there could be a large presence of volcanic caves: Malargüe's surface is 21,000 square km, almost half of which is represented by *Payunia*. We rely that many lava caves can be discovered in the concerned area during the

investigations in progress, as it already happens with gypsum caves (continuous discovery of further caves in Cordillera Principal).
Argentina's speleologists will submit the attained results to their compatriots, and foreign colleagues, during the I Congreso Nacional Argentino de Espeleologia, to be held in Malargüe in February 2000.

*Translated into English by Giuseppe M. Licitra*