

(Palaeo)environmental insights from cave ostracods in Greece: the Cave of the Lakes, Kastria, Greece

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Location:

Cave of the Lakes, Amolinitza Mt, Kastria village, Peloponnese, Greece (Fig.1)

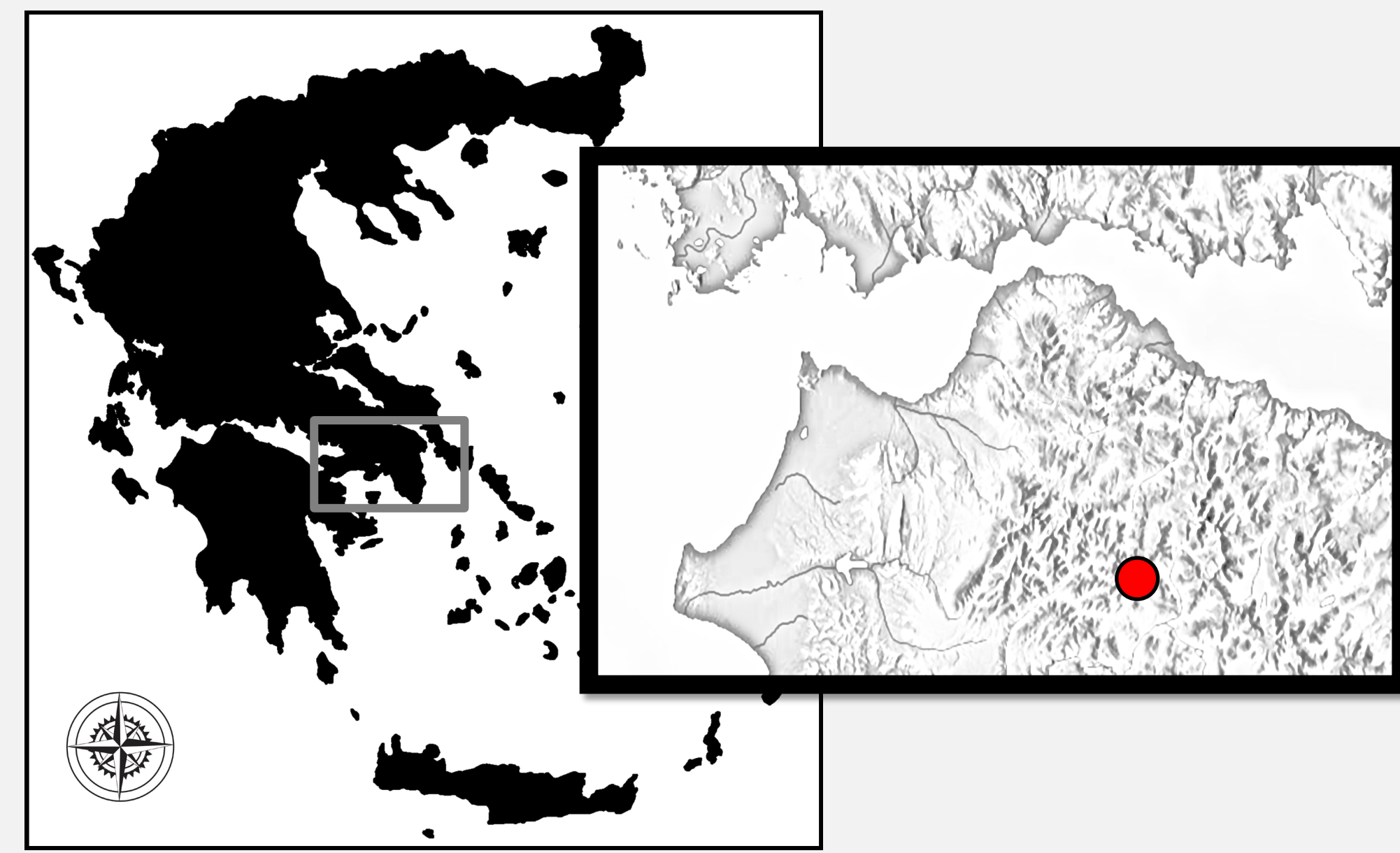


Fig.1: Location map of the study area

Geological background of the cave:

- formed in Cretaceous limestones along a fault
- features **thirteen terraced lakes** (Fig.2)

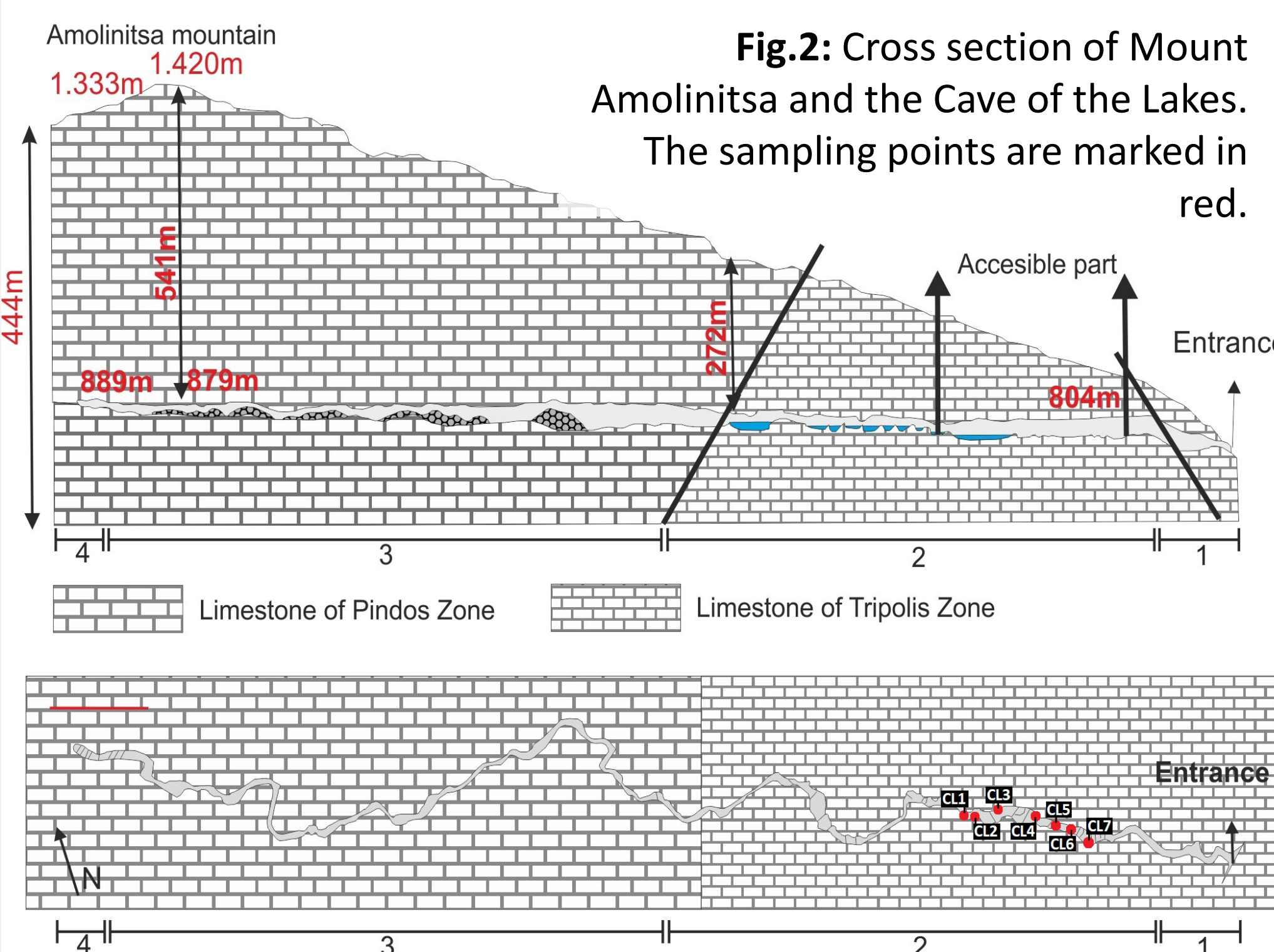


Fig.2: Cross section of Mount Amolinitza and the Cave of the Lakes. The sampling points are marked in red.

Material and Methods:

Micropalaeontological analysis:

- Sampling: October 2022
- 7 samples (CL1-CL7, Fig.2) from dry points (using a bailer) and lakes (using a box corer) (Fig.3) (+ 2 small cores-not studied yet)
- 125-63µm mesh sieves
- Sorting/Identification
- A/J ratio on the family level

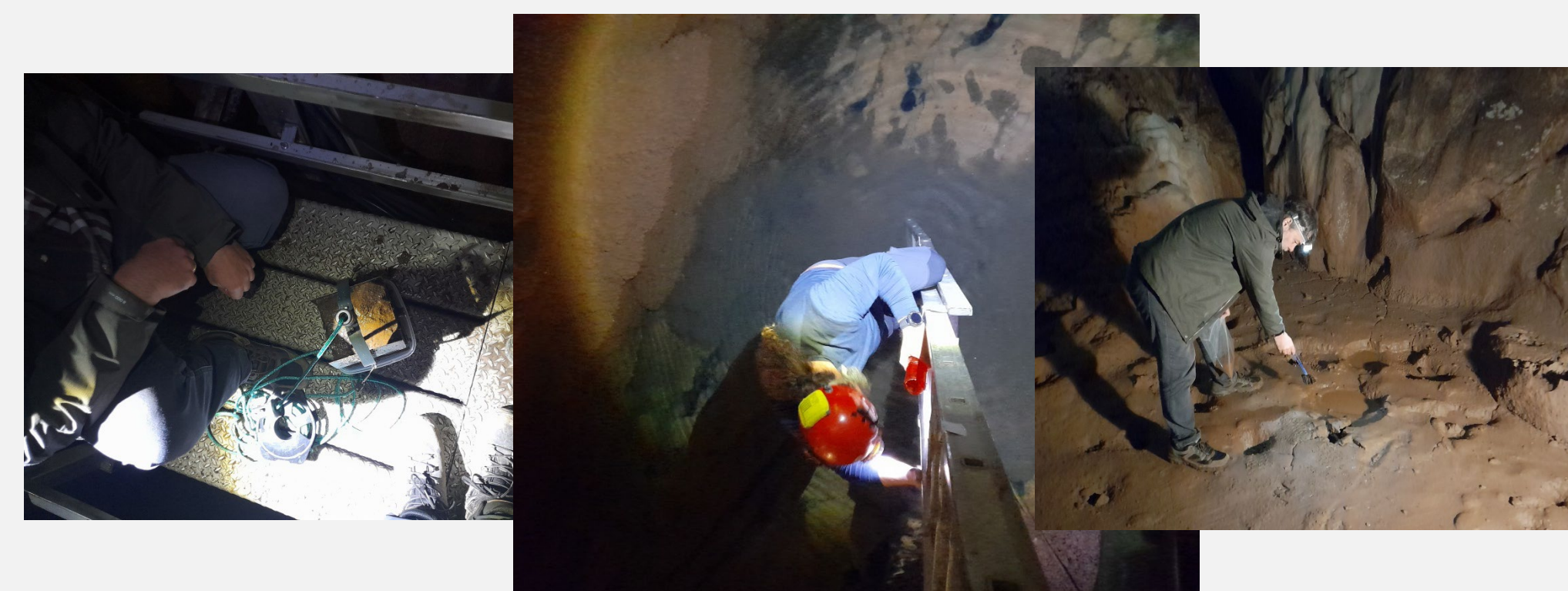
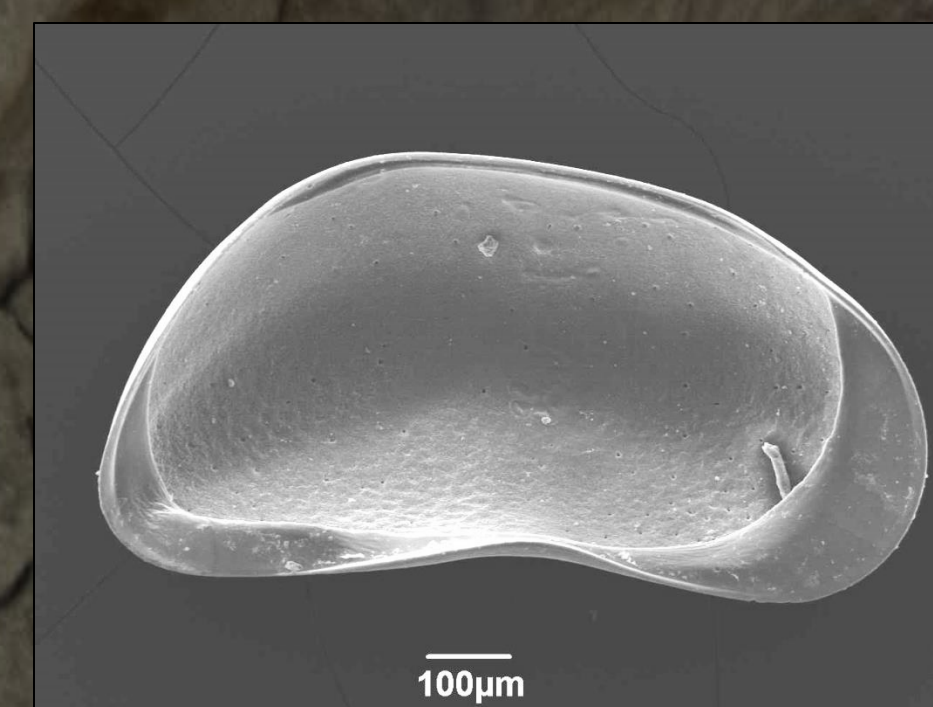


Fig.3 (left to right): box corer used for sampling the lake bottoms, sampling the first lake, sampling dry points of the cave.

Results:

- Ostracods (1687 valves, -no living specimens -3 taxa -**one new? species**)
- +Gastropods, bat bones, **microplastics**

Fuhrmann, R., 2012. Atlas quartärer und rezenter Ostrakoden Mitteldeutschlands. Naturkundliches museum Mauritianum Altenburg, Thüringen.
Meisch, C., 2000. Freshwater Ostracoda of Western and Central Europe. Spektrum Akademischer Verlag
Mischke, S., Lai, Z., Faershtein, G., Porat, N., Röhl, M., Braun, P., Kalbe, J. and Ginat, H., 2021. A late pleistocene wetland setting in the Arid Jurf ed Darawish Region in Central Jordan. *Frontiers in Earth Science*, 9, p.722435.

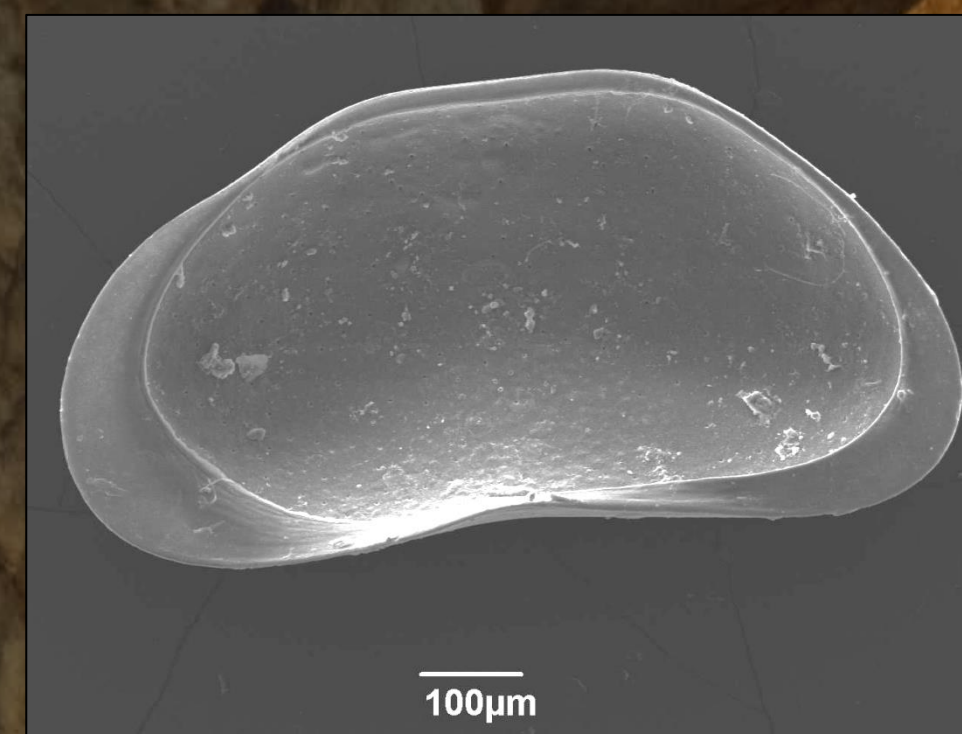


Neglecondona vernalis

Temporary small water bodies, often in river plains (Mischke et al., 2021), meadow puddles and ditches that dry out in summer, restricted to warm periods (Fuhrmann, 2012).

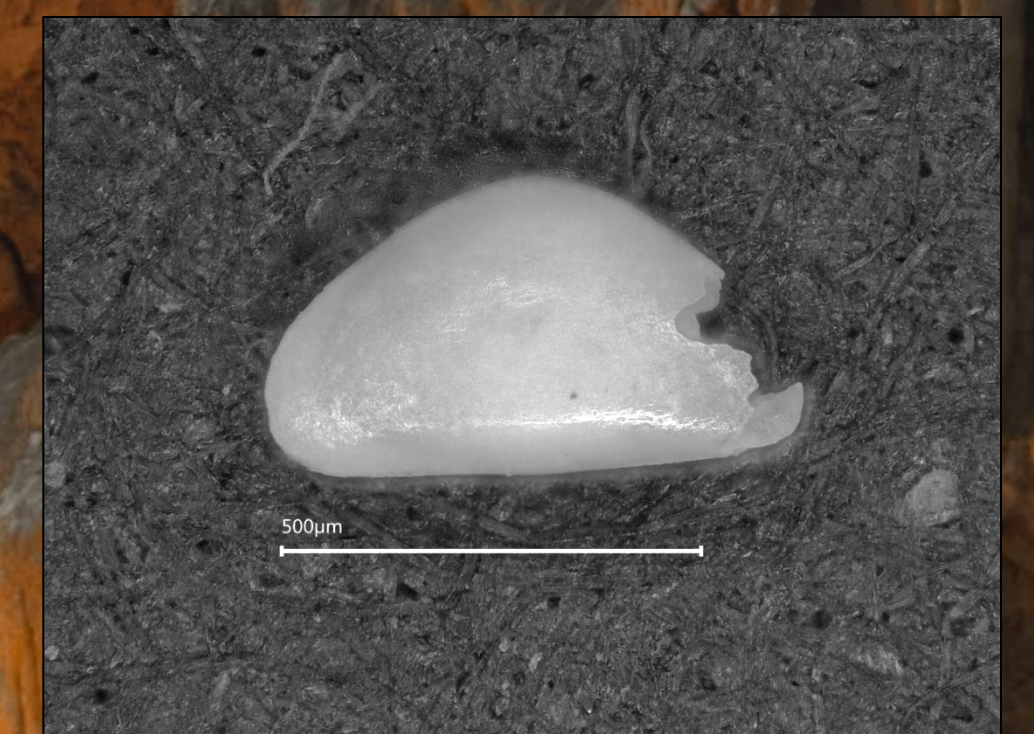
Schellecondona sp.

Hypogean, stygobite (Meisch, 2000)



Trapezicandona sp. nov.?

Exclusively hypogean recent genus
A trapezoidal *Trapezicandona* species with the dorsal margin straight in the middle.



PALAEOENVIRONMENTAL IMPLICATIONS

- *Neglecondona vernalis* dominated the assemblages in all samples except CL7 (variable frequency in each sample (9 to 101 adult valves in samples CL2 and CL4 respectively).
- *Trapezicandona* sp. nov.? & *Schellecondona* sp. were less frequently observed
- A/J ratio (family level): in situ death assemblages with taphonomic removal of juveniles in some samples, low energy environment
- Hypogean, temporary fluvial environment with connection to springs
- Anthropogenic impact (Fig. 4)

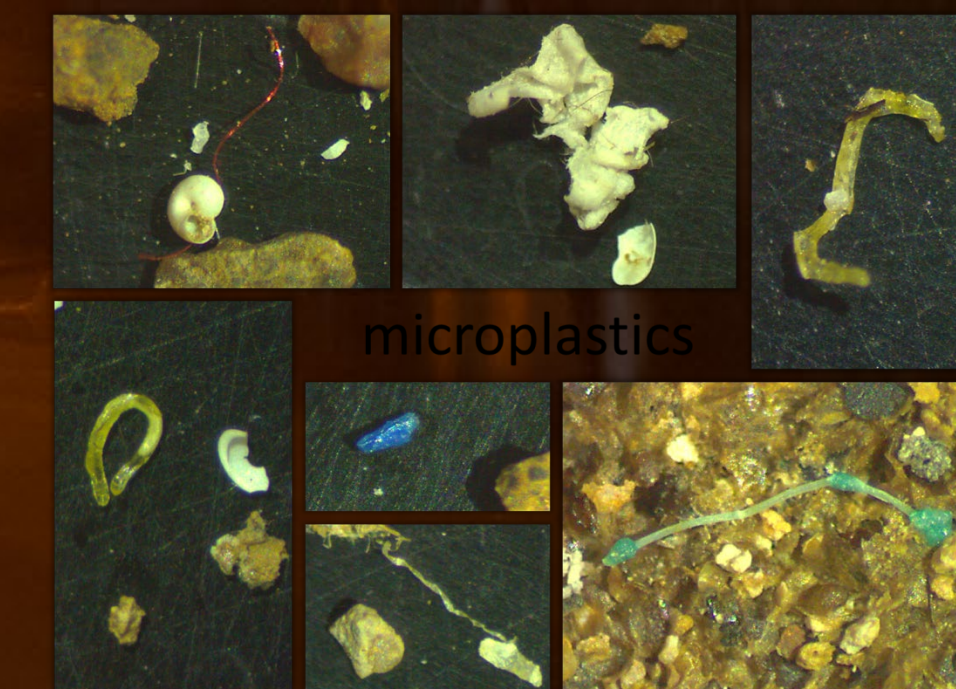


Fig.4: Various types of garbage collected from the surface samples including gums, coins and microplastics

FUTURE RESEARCH

Study of the core samples for palaeoenvironmental/palaeoclimatic evolution of the cave sediments

This project was implemented in the frame of:

PROGRAMME FOR THE PROMOTION OF THE EXCHANGE AND SCIENTIFIC COOPERATION BETWEEN GREECE AND GERMANY, IKYDA 2022:

Cave ostracoda from Greece and Germany: a pilot study for (palaeo)ecological and biogeographical collaboration.

The scope of this project is the faunistic and ecological analyses of the ostracod fauna and its ecological implications in selected caves in the area of two geoparks in Greece and Germany. The research project was initially implemented in the major accessible caves of the two geoparks: in the Cave of the Lakes in Kastria, which is an iconic geosite of the UNESCO Global Geopark of Chelmos-Vouraikos, and in Altenstein Cave, located in the Thuringia Inselsberg-Drei Gleichen UNESCO Global Geopark. The mutual visits between the research groups provided the opportunity to exchange opinions in a wide field that concerns both geoparks and science.

For further information: <http://www.palaeolab.geology.upatras.gr/eom10>