



Preatic Project: Cave diving at the service of Science and Environmental Protection EuroSpeleo Protection Label FSE 2020

The non-profit project **Phreatic** was born in 2014 with the aim of boosting the concept of *citizen science*, fostering the interaction between cave divers and researchers on the field. In essence, creating a network of cave divers capable of cooperating with science experts and deliver reliable results working in extreme environments. Generally, scientific research is not conducted in such areas due to the complexities and possible dangers posed by the environment. The perfect scenario for this experiment was the coastal cave systems of the Gulf of Orosei, Sardinia (Italy) where, yearly, dozens of volunteer cave divers from all over the planet carried out campaigns dedicated to exploration, sediment/water sampling, cave mapping, geo referencing of paleontological remains, documentation and video production.

During the past six years, the dedication of about 50 volunteers specialized in cave diving and surveying, dry caving, photo/video rendering and 3D modelling has already supported the work of scientists of the Italian Institute of Environmental Protection and Research (ISPRA). Two investigative paths have been studied: the first - never tested in temperate cave environments before - is the research on *benthic foraminifera*, microscopic shells that are environmental and ecological indicators in transitional habitats; the second is related to the documentation and analysis finalised to the conservation of Mediterranean Monk Seal bones (*Monachus monachus* included in IUCN red list of threatened species) found in Bel Torrente cave and dated back to 5000-6500 years ago. Other important activities in the seasonal campaigns of the Project are the mapping of the springs with modern technologies (MNemo and Suex Sinapsi DPV systems) and production of underwater cave 3D photogrammetry, as a new means to represent such environments and make them accessible to the general public.

Over the years, Phreatic volunteers co-authored scientific publications, held presentations and organised photo exhibitions for cavers, general public, schools and Universities across Europe, UK and USA. The project gained also the attention of Italian Mainstream newspapers and social media. The stimulating outcomes led to the idea of expanding the model and the approach of Phreatic Project Sardinia to other areas of the Mediterranean basin, where coastal caves present a similar scenario. Unfortunately, they also present similar threats in terms of anthropic impact and tourism, which makes them ideal candidates to become marine protected areas. Phreatic long-term engagement is, indeed, to strengthen the synergy between scientists and cave divers in order to give its contribution to the reaching of UN sustainable development goals with a focus on the ones related to biodiversity in the life below water and actions against climate change and pollution.

In the next years Phreatic will continue primarily its work in Sardinia, supporting new different researches and scientific partners, such as "Dive for antibiotics" Project (Strathclyde University, UK) and the Italian geologists of University of Chieti. From the beginning Phreatic is partnering with Global Underwater Explorers (gue.com) organisation and Project Baseline initiative (projectbaseline.org), with the sponsorship of local administration Comune di Dorgali and Italian Speleological Society (SSI).

Next session of the Project will include Scurion lights, kindly donated by ESPL 2020 sponsor.

Website: phreatic.org Facebook page: [Phreatic](https://www.facebook.com/Phreatic)

