



AN underwater image of the ROV collecting a *Dendrophyllia* coral colony with the mechanical arm at 144.8m depth, a specimen of *Dendrophyllia* coral collected during the research cruise, and the ROV returning to the vessel with coral samples are pictured here

The Cyclamen Project

European effort to record the cold-water corals of Cyprus

An exciting new effort recently led to the first survey in Cyprus of cold-water coral communities in the coastal area of Protaras and Cape Greco.

Funded by the TOTAL Foundation, the 'Cyclamen Project: Cold-water corals of Cyprus: Environmental settings and ecological features,' commenced in December of 2014 and performed the survey in the coastal area of Protaras and Cape Greco during the first week of June.

During the few days of the research cruise, the scientists produced a detailed map of the sea bottom

According to a recent announcement on the project, its inception came after local scientists received reports from fishermen and naturalists of deep-water corals brought up to the surface tangled in fishing long-lines.

Scientists in Cyprus then initiated a network with colleagues in Spain, experts in this particular and beautiful group of corals.

Together with Dr Covadonga Orejas from the Spanish Institute of Oceanography, the Cyclamen Project was conceived and supported by TOTAL Foundation and the participation of other European experts with access to competitive funds.

With the approval and support from the Cyprus authorities and the participation of a multinational team, Dr Orejas coordinated the three day operations on board the Greek research vessel Aegaeo. The research activities were accomplished in an intense 24-hour schedule.

For example, while immersions of a remotely operated vehicle (ROV) and collection of samples were made during daytime, processing of data and mapping of the seafloor was done during the night. Observations of the biological communities and the environment at such depths were carefully recorded in logbooks, systematic video transects while water and plankton samples were collected between ROV dives.

Through a Remote Observation Vehicle (ROV), Max Rover, the multinational and interdisciplinary team of scientist, collected around 15hrs of underwater video of coral communities during the three-day survey.

These corals thrive at depths between



THE research team and collaborators after a successful ROV dive

120 and 150m. The ROV also brought to the surface live coral specimens to be studied in Cyprus and in Monaco.

"Comparative experiments on coral responses to temperature fluctuations are an important tool in forecasting how these unique organisms will fare in the forthcoming warming of the Mediterranean Sea", said Dr Carlos Jimenez, a coral expert from the Cyprus Institute participating in Cyclamen.

The experiments in Monaco will be conducted by the marine biologist Louis Hadjioannou from the NGO Enalia Physis Environmental Research Centre, another participating research organisation.

Cyprus' waters are already warmer and more saline than the Central and Western Mediterranean and the current increase in temperature will undoubtedly affect corals.

"We need to find out in which way the corals will react to the changes in order to assist the authorities in the conservation and management of these unique deep coral habitats", expressed Dr Jimenez. Genetic studies of the corals will also be conducted.

During the few days of the research cruise, the scientists in Cyclamen produced a detailed map of the sea bottom to study the benthic features. Data on the composition of the water column,



A sample from the *Dendrophyllia* coral colony ready to be prepared for inspection onboard the research vessel

including the planktonic communities of microorganisms, which are the base of the marine food chain, were also collected. The amount and diversity of data will keep the scientists busy for the next months.

The aim is to produce an environmental characterisation of the area, as well as a study of the spatial distribution of deep coral communities.

Sadly, footprint of man's activities is tangible in those deep coral communities. The most frequent companion to the corals was rubbish, litter of many kinds and perhaps provenance. Corals and other organisms were occasionally tangled on relic fishing gear, plastic bags, car tires and other unidentified debris. Fish, crabs, starfish and sand worms could be seen among numerous plastic objects and glass bottles.

"It is through research projects like Cyclamen that impacts of litter on the deep-water habitats are studied and hopefully, prevented", said Antonis Petrou from the local NGO Enalia Physis Environmental Research Centre.

The project is led by the Spanish Institute of Oceanography based in Mallorca, and counts on the participation of institutions in Cyprus: The Cyprus Institute of Research, Technology and Innovation and NGO Enalia Physis Environmental Research Centre; in France: Aix-Marseille University - Mediterranean Institute for Biodiversity & Ecology; in Greece: The Hellenic Centre for Marine Research; in Monaco: Centre Scientifique de Monaco; in the United Kingdom: National Oceanography Centre, and also in Spain: University of Barcelona.

This is a pioneer project for Cyprus and, through its associated scientific outreach programme, it aims to disseminate information about these ecosystems, still mostly unknown, to the general public.

Locals and tourists can visit cold water corals collected by the project at the Ocean Aquarium Park, Protaras and visit the project website of the project [<http://cyclamen.cyi.ac.cy/>] for information and photos of the work onboard the AEGAEOS, at the sea bottom, and of other activities of the research team.