

Diatoms are microscopic algae which have the peculiarity of being encased in a shell of organic glass. Diatoms live in almost every aquatic environment and are very important on an ecological point of view because of their role in fixing carbon dioxide. They are also at the base of the aquatic food web. The study of diatoms has many applications, whether it is in the biomonitoring of pollution, bioremediation, aquaculture and biotechnologies. The biodiversity of diatoms is estimated to be high with tens of thousands of species, but many environments remain to be investigated for their diatom assemblages. Indeed, the identification of diatoms requires specific skills and has evolved with time, including now the use of genetic methods in addition to morphological description.

The goal of the project is to study the biodiversity of diatoms from a very special, extreme and potentially endangered environment, the Lake Van area in Eastern Anatolia (Turkey), using a combination of the most recent methods of investigation.

The work conducted in the frame of this project will consist of sampling water from Lake Van and the surrounding lakes. The water characteristics will be measured during each sampling. From these samples, strains of diatoms will be isolated and cultivated in laboratory. They will be then studied by both microscopy and molecular barcoding, which is a method of identification based on genetic tools. This will allow to say whether or not these species are already known, or if they represent new species, possibly endemic to Lake Van.

There are several reasons to undertake this study. Lake Van is an alkaline lake, which means that both salinity and pH are abnormally high. It is known for hosting endemic species of aquatic animals such as fishes and preliminary research suggests that the biodiversity of diatoms there has been strongly underestimated, with possibly several species not yet described. These species could be endemic, or may at least represent species adapted to this extreme alkaline environment. Also, Lake Van is experiencing changes in its shoreline that might impact the biodiversity there, making this issue more urgent to study.

There are several results expected from this study. First of all, an exhaustive description of the diatoms from Lake Van and the surrounding lakes, that will include many new species. It will then be possible to compare this flora with those of other alkaline lakes worldwide from the literature. The DNA sequences obtained in the course of this study will enrich the common online databases and will provide reliable references for the scientific community.