

DISCRIPTION FOR GENERAL PUBLIC (IN ENGLISH)

Diatoms are unicellular algae belonging to the group of eukaryotes. These organisms can live together in various colonies: chains, stars, threads, ribbons and as aggregations, or as a solitary cells. The diatom cell consists of metabolically active protoplast, which is surrounded by a membrane of pectin-saturated hydrated silica – biogenic opal. Directly above the pectin membrane is diatom frustule, which is characterized by ornamentation allowing classification of species. Among the diatoms there are known few heterotrophic forms, but the most common are photosynthetic organisms. Products of photosynthesis and storage substances are lipids (fat), and polysaccharides. Diatoms are divided into two groups: pennates and centrics. Numerous species of pennate diatoms also have a slit called raphe, which gives them the ability to sliding movement. Whereas centric are characterized by an oval or polygonal shape, and often many small chloroplasts. Diatoms are capable of not only existing in any type of water, ranging from fresh water ending to the marine waters, but also on the surface of rocks, soils and other places where there is even a little bit of moisture and light. Diatoms occurring in marine plankton play an important role in the trophic chain, they are the basis of food for zooplankton, benthic animals and juvenile fish. Diatoms reproduce vegetatively and generatively. These organisms are used as natural bioindicators. Due to their presence, or absence, it is possible to specify the conditions in the water body (a river) in relation to environmental parameters. Biological indicators, as opposed to abiotic parameters, provide information on the changes taking place over a long time. Applying the diatomologic analysis to reconstruct paleoenvironmental conditions is possible due to their bioindicative properties. The most important ecological factors which influence the distribution of diatoms in the Ocean World is salt content, mainly NaCl and MgCl₂. Diatoms are one of the richest in terms of the number of species of microalgal groups (the number of species is estimated at about 100, 000), but benthic diatoms which inhabit littoral zone of the World Ocean have been poorly studied in terms of biogeography and taxonomy. Information about their morphology, reproduction, physiology and ecology and genetic data are necessary for their identification at the species level. The development of molecular methods has revolutionized the studies of diatoms. DNA sequencing drastically influenced the study of evolution and phylogeny, systematics of diatoms species and populations.

The aim of the forwarded project is study of epizoic diatoms inhabiting carapace of loggerhead (*C. caretta*) turtles living on the Mediterranean coasts of Turkey and Croatia. From the coast of Turkey where they nest, they are widely spread, to other areas. Loggerhead turtles are known as a carrier of diverse groups of organisms (epibionts), plants and animals. Especially on their carapaces. The principal aims of the project are: 1) understand the role of sea turtles (*Caretta caretta*) in spreading benthic diatoms in the Mediterranean. 2) Diatoms, limited to the occurrence on the surface of marine vertebrates, including loggerhead turtles, have a high degree of specialization. (3) The diatoms overgrowing turtles carapace exhibit biogeography and rather limited geographic range. However, recent research indicates that the same epibiontic diatoms are found on the loggerhead turtles and for example on green turtles (*Chelonia mydas*) from the Mediterranean and the Caribbean Sea respectively. An attempt will be made to determine how turtles migration affects the cosmopolitization of epibiontic diatoms. (4) The epibiontic taxa growing on carapaces of various turtles represent different species, and their taxonomic position reflects the host's history, especially the areas in which they lived during their lifetime.

To the best of our knowledge the proposed research is of pioneering character. This is the first attempt to study diatoms inhabiting the carapace loggerhead turtles from the Mediterranean coasts. The previous knowledge of epizoic diatoms inhabiting marine vertebrates is based mainly on the results of research on marine mammals. The results will be compare to results of studies on diatoms from benthic habitats like sediments, rocks and macroalgae to determine firstly - the species limited to living only on loggerhead turtles and secondly – the species which occur in the environments in which the turtle live. Based on instrumental observations of the sea turtle migrations we also should be able to explain the origin of the populations of the tropical diatoms occurring in the eastern Mediterranean basin. Some taxa that can now be found in the Mediterranean Sea have been thus far known only from the western part of the Indian Ocean and from coral reefs of Indo-Pacific.