

Sampling, aquaculture techniques and examination methodologies for botryllid ascidians

Begüm Ece Tohumcu begum.tohumcu@gmail.com Turkey METU-INSTITUTE OF MARINE SCIENCES

Fatima Nur Oğul Ünal nur.ogul@ims.metu.edu.tr Turkey METU-INSTITUTE OF MARINE SCIENCES

Mert Koray Ünal mertkorayunal@gmail.com Turkey Zip code: 33130

Esra Öztürk esra.ozturk@ims.metu.edu.tr Turkey METU-INSTITUTE OF MARINE SCIENCES

Arzu Karahan arzukarahan@ims.metu.edu.tr Turkey METU-INSTITUTE OF MARINE SCIENCES

Various sampling and culture studies are carried out for different benthic organisms. Developing and applying methodologies suitable for the targeted group provides a basis for enabling extensive and more detailed studies. Botryllid ascidians, which our study group focused on, are a critical benthic group that should be studied considering their evolutionary and ecological characteristics. They are the closest relatives of higher vertebrates (Craniata), which are capable of whole-body regeneration, and therefore, they can be used in phylogenetic/phylogenomic studies involving ancestral lineage studies of vertebrates; as well as being used as organisms in the study of complex processes, including the evolution of the immune system, developmental biology, and whole-body regeneration. In addition, these filter-feeding organisms in seawater are in a critical position for protecting and sustaining marine ecosystems. They are used as potential water quality indicators because they are sensitive to anthropogenic pollution and eutrophication in their natural spread areas. Moreover, the organism and its symbionts contain bioactive molecules that can be used in biotechnology, pharmacology and medicine. However, studies on botryllid ascidians on our coasts are limited. This study aims to explain the optimised methods for field sampling and aquaculture of botryllid ascidian species. Depending on the following research questions, both live and fixed sampling methods will be described, and the factors to be considered in the cultivation will be detailed with photographs. Designated and explained methods contributed to future studies on botryllid ascidians by being the guidance; hence, it can help to increase the studies focusing on botryllid ascidians and their unique features.