

ABSTRACT

Putri Zamilatun Sayyidah. 24020120130095. **Soil Eukaryotic Exploration in KHDTK Wanadipa Undip Area Using The *Environmental DNA* Method.** Ecology and Biosystematics Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University.

Soil eukaryotes have an important role in litter decomposition, soil structure formation and nutrient cycling. However, soil eukaryotes remain largely *Unidentified* and cannot be isolated from complex environmental matrices, so in-depth studies are needed regarding knowledge about the role and dynamics of soil eukaryotic communities. This research aims to determine soil eukaryotic diversity, especially the diversity of soil arthropod species, and also the relationship between the environmental conditions of each vegetation and soil eukaryotic diversity at KHDTK Wanadipa Undip. The research was carried out in three different vegetation, namely trees, bushes and grass. Soil samples were taken and extracted then sequenced using the genetic marker COI (Cytochrome c oxidase subunit I) using the Next Generation Sequencing (NGS) approach with an Illumina machine. The sequencing results were analyzed using the QIIME2 program and R Studio. In this study, 46.716 DNA sequences (reads) were obtained corresponding to 750 Amplicon Sequence Variants (ASV) which are included in soil eukaryotes and 1.823 reads (65 ASV) which are included in the arthropod group. The sequencing results identified 7 levels of taxa, namely 15 Phylum, 33 Classes, 72 Orders, 103 Families, 127 Genus, 125 species. The soil eukaryotic diversity index in all vegetation shows (H') > 3 indicating a stable ecosystem in all three vegetation, namely trees, bushes and grass. Arthropod species found include *Ceratonia undulosa*, *Elachista magidina*, *Meinota simplex*, *Solenysa protrudens*, *Procladius* sp. Soil eukaryotic diversity is influenced by soil physical and chemical factors, namely soil pH, air temperature, air humidity and soil moisture at the sampling location..

Kata kunci: COI markers, eDNA, Soil eukaryotes, Arthropods, Diversity