

## **ABSTRACT**

*Nabila Mona Maharani. 24020122120046. **Freshwater Fish Diversity in the Upper Padang Bulia River, Bali Province, Using an Environmental DNA Approach Based on Oxford Nanopore Technology.** Ecology and Biosystematics Laboratory, Biology Study Program, Department of Biology, Faculty of Science and Mathematics, Diponegoro University. Supervised by Fuad Muhammad and Ni Kadek Dita Cahyani.*

*Freshwater fish diversity is an important component in maintaining the stability of aquatic ecosystems, therefore conservation efforts are necessary. One of the approaches that can be applied is environmental DNA (eDNA) based on Oxford Nanopore Technology. Studies on freshwater fish eDNA in Bali are still limited. This study aimed to analyze biodiversity levels and identify freshwater fish species in the upstream of the Padang Bulia River, Buleleng Regency, Bali Province. eDNA samples were extracted using the Zymo Quick-DNA™ Fecal/Soil Microbe Miniprep Kit. The obtained DNA templates were amplified and sequenced using the Oxford Nanopore Technology platform. Sequencing data were analyzed bioinformatically, then visualized and further analyzed using RStudio. The results of this study showed that a total of 15 freshwater fish species belonging to 12 genera, 4 families, and 3 orders were successfully detected from three samples, including 4 native Indonesian fish species and 11 non-native species, of which 2 species were potentially introduced species. The Shannon-Wiener index showed relatively similar patterns of freshwater fish diversity among samples, with  $H'$  values of 5.603 for DBP012713, 5.662 for DBP012714, and 5.298 for DBP012715, indicating that the detected fish communities had relatively high taxonomic richness and an even distribution of eDNA reads. The Simpson index (1-D) values, which were close to 1, were 0.970 for DBP012713, 0.990 for DBP012714, and 0.974 for DBP012715, indicating relatively high diversity without strong dominance by particular species.*

**Keywords:** *eDNA, diversity, freshwater fish, Padang Bulia River*