

## ABSTRACT

This study investigates the diversity, species composition, and ecological indices of reef fish within the coral reef ecosystem of Weh Island, Sabang, utilizing the Baited Remote Underwater Video (BRUV) technique. This non-invasive method was selected for its efficacy in recording fish assemblages at depths that are often challenging for conventional diver-based surveys. Data were systematically collected across four distinct stations to account for potential temporal variations. The research documented a total. Analysis of species abundance revealed clear spatial dominance patterns: Station 1 was predominantly characterized by *Abudefduf vaigiensis* (54.86%), *Neoglyphidodon nigroris* (11.79%), and *Pomacentrus cuneatus* (10.25%), while Station 2 was dominated by *Diagramma perspicillatus* (31.30%) and *Parupeneus trifasciatus* (16.18%). The calculated ecological indices indicated a community with low to moderate species diversity ( $H' = 1.04\text{--}2.48$ ) and moderate to high evenness ( $E = 0.48\text{--}0.81$ ). The dominance index ( $C$ ) was generally low ( $0.13\text{--}0.41$ ), suggesting no significant species monopolization of resources; however, a notable exception. All measured water quality parameters (mean temperature:  $29.33^{\circ}\text{C}$ ; salinity: 30.66 ‰; pH: 8.32) were found to be within optimal ranges for supporting coral reef fish life. These findings provide a critical baseline dataset that is essential for developing informed and effective management strategies for the conservation of coral reef ecosystems and the sustainability of marine biodiversity on Weh Island.

**Keywords:** Biodiversity, BRUV, diversity, ecological index, reef fish.