ABSTRACT

Bivalvia is one of the groups of invertebrate organisms that are commonly found and live in intertidal zones. Spat (seeds) are small juveniles that settle at the bottom of the water with a shell shape resembling adult mollusks. Spat *collectors* are tools used to gather or capture larval mollusks (spat) from the water for mollusk cultivation purposes. One of the objects that can be used as a bivalve spat collector is wood, acrylic, and concrete plates. The general objective of this research is to analyze the effect of using different spat *collectors* in the process of collecting bivalve spat to support the sustainability of shellfish farming. This research was conducted from April to May 2025, located on the Pusong coast of Lhokseumawe City and the Laboratory of the Agricultural Faculty of Malikussaleh University. This research uses a field experimental method with a Completely Randomized Design with 3 treatments and 3 replications. Observation parameters. The methods used are the identification of bivalve spat, abundance index, diversity index, uniformity index, dominance index, and water quality. The data obtained were also tested using non-parametric comparative parametric tests. The results showed that there were 2 species found, namely *Perna viridis* and *Saccostrea cucullata*. The highest abundance value was found in the concrete spat *collector* with a value of 279.17 ± 51.16 ind/m^2. The highest diversity value was found in the concrete spat *collector* with a diversity index of 0.63 ± 0.050. The highest uniformity value was also found in the concrete spat *collector* with a uniformity index of 0.90 ± 0.075. The highest dominance index was found in the wooden spat *collector* with a dominance index value of 1, followed by the concrete spat *collector* with a dominance index of 0.56 ± 0.045. Based on the results of statistical tests, there is a significant difference in abundance between the concrete and acrylic spat *collectors*, but no significant difference was found between the wooden and concrete spat *collector*s. The values of biodiversity index, evenness index, and dominance index show significant differences between the concrete spat *collector*, wood, and acrylic. Water quality measurements include temperature, pH, salinity, dissolved oxygen (DO), turbidity, and current velocity.

Keywords: Abundance, Bivalve Spat, Lhokseumawe Coast, Spat *Collector*, Water Quality.