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Karakteristik Ukuran Butir dan Komunitas Foraminifera Bentonik pada Sedimen Gisik di Kei Kecil, Maluku Tenggara
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KARAKTERISTIK UKURAN BUTIR DAN KOMUNITAS FORAMINIFERA BENTONIK PADA SEDIMEN GISIK DI KEI KECIL, MALUKU TENGGARA

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INTISARI

Wilayah kepesisiran merupakan lingkungan dinamis yang dipengaruhi proses sedimentasi dan faktor oseanografi, sedangkan ukuran butir dan foraminifera bentonik dapat digunakan untuk merefleksikan kondisi lingkungan pengendapan. Penelitian ini bertujuan menganalisis persebaran ukuran butir untuk merekonstruksi lingkungan pengendapan, mengidentifikasi karakteristik komunitas foraminifera bentonik, serta menganalisis hubungan antara ukuran butir, lingkungan pengendapan, dan komunitas foraminifera bentonik pada sedimen gisik. Penelitian dilakukan pada sedimen gisik di sembilan stasiun Pulau Kei Kecil. Analisis ukuran butir menggunakan metode granulometri dengan parameter *mean*, *sorting*, *skewness*, dan *kurtosi*s yang diolah dengan GRADISTAT dan diklasifikasikan menurut Folk & Ward (1957). Rekonstruksi lingkungan pengendapan menggunakan *Linear Discriminant Analysis* (LDA), *Stewart Diagram*, dan *C-M Passega Diagram*. Analisis komunitas foraminifera bentonik melalui identifikasi morfologi serta perhitungan *Shannon-Wiener Index*, *Fisher alpha Index*, *Simpson Index*, Dominansi, serta *Ammonia-Elphidium Index*. Analisis hubungan antara karakteristik ukuran butir dan komunitas foraminifera bentonik dengan *Canonical Correspondence Analysis* (CCA). Hasil menunjukkan ukuran butir berkisar dari sangat halus hingga sangat kasar dengan lingkungan pengendapan secara umum berupa laut dangkal berenergi tinggi. Nilai *mean* berkisar −0,218–3,017 φ (*very coarse sand–very fine sand*); *sorting* 0,398–1,958 (*well sorted–poorly sorted*); *skewness* −0,320–0,049 (*very coarse skewed–near symmetrical*); dan *kurtosis* 0,859–1,655 (*platykurtic–very leptokurtic*); sedangkan *Shannon-Wiener Index* 1,829–2,615 (*moderate–good*); *Fisher alpha Index* 1,015–2,710 (*lower*); *Simpson Index* 0,827–0,906 (tinggi); Dominansi 0,094–0,173 (rendah); dan *Ammonia-Elphidium Index* 40,00–91,67% (*oxygenated–dysoxic-anoxic*). Sebanyak 51 spesies dan genus foraminifera bentonik dengan spesies dominan meliputi *Peneroplis pertusus*, *Neorotalia calcar*, *Ammonia beccarii*, *Amphistegina radiata*, dan *Calcarina calcar*. Analisis CCA menunjukkan hasil kedua variabel tidak memiliki hubungan yang signifikan karena nilai korelasi menunjukkan *Trace p* sebesar 0,903.

Kata Kunci: Ukuran Butir, Foraminifera Bentonik, GRADISTAT, PAST, Kei Kecil

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GRAIN-SIZE CHARACTERISTICS AND BENTHIC FORAMINIFERAL COMMUNITIES IN BEACH SEDIMENTS OF KEI KECIL, SOUTHEAST MALUKU

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ABSTRACT

Coastal areas are dynamic environments influenced by sedimentation processes and oceanographic factors, while grain size and benthic foraminifera can be used to reflect depositional environmental conditions. This study aims to analyze the distribution of grain size to reconstruct the depositional environment, identify the characteristics of benthic foraminiferal communities, and analyze the relationships among grain size, depositional environment, and benthic foraminiferal communities in beach sediments. The study was conducted on beach sediments collected from nine stations on Kei Kecil Island. Grain-size analysis was performed using the granulometric method based on the parameters of mean, sorting, skewness, and kurtosis, processed using GRADISTAT and classified according to Folk and Ward (1957). Depositional environments were reconstructed using Linear Discriminant Analysis (LDA), the Stewart Diagram, and the C–M Passega Diagram. Benthic foraminiferal communities were analyzed through morphological identification and calculation of the Shannon–Wiener Index, Fisher Alpha Index, Simpson Index, Dominance, and Ammonia–Elphidium Index. The relationship between grain-size characteristics and benthic foraminiferal communities was analyzed using Canonical Correspondence Analysis (CCA). The results show that grain size ranges from very fine to very coarse sand, with the depositional environment generally characterized as a high-energy shallow-marine environment. The mean values range from −0.218 to 3.017 φ (very coarse sand–very fine sand); sorting values range from 0.398 to 1.958 (well sorted–poorly sorted); skewness values range from −0.320 to 0.049 (very coarse skewed–near symmetrical); and kurtosis values range from 0.859 to 1.655 (platykurtic–very leptokurtic). Meanwhile, the Shannon–Wiener Index ranges from 1.829 to 2.615 (moderate–good); the Fisher Alpha Index ranges from 1.015 to 2.710 (lower); the Simpson Index ranges from 0.827 to 0.906 (high); Dominance ranges from 0.094 to 0.173 (low); and the Ammonia–Elphidium Index ranges from 40.00% to 91,67% (oxygenated–dysoxic–anoxic). A total of 51 benthic foraminiferal species and genus were identified, with the dominant species including Peneroplis pertusus, Neorotalia calcar, Ammonia beccarii, Amphistegina radiata, and Calcarina calcar. CCA indicates that the two sets of variables are not significantly related, with a Trace p-value of 0.903.

Keywords: Grain Size, Benthic Foraminifera, GRADISTAT, PAST, Kei Kecil