

ABSTRACT

Kemujan Village in Karimun Jawa constitutes a small-island settlement system characterized by mangrove forests, coral reefs, and coastal landscapes that function as the primary ecological buffer sustaining local life. However, the expansion of settlements through increasingly invasive spatial practices has led to the growth of residential areas, reported mangrove degradation, and the decline of coral reef coverage, conditions that pose long-term risks including the deterioration of settlement quality, heightened environmental vulnerability, the weakening of the island's ecological resilience, and the erosion of socio-economic stability within the community. Responding to these challenges, the Kemujan Rural System proposes an ecological-based dwelling framework grounded in the ecological footprint parameter to ensure equilibrium between residential demands and the island's carrying and assimilative capacities. Each housing prototype is conceived as an adaptive ecological unit that compensates for land-use transformation through the restoration of ecological functions, integration of productive green spaces, water infiltration systems, domestic waste treatment, and the utilization of locally sourced materials. In this framework, settlement is repositioned not as an environmental burden, but as an integral component of the island ecosystem resilient, regenerative, and contextually embedded within the ecological identity of Kemujan.

Keywords: *Rural settlement, island ecology, ecological footprint, housing prototype, sustainability, environmental carrying capacity.*