

Seagrass coverage and associated fauna at Gaya Island, Sabah, Malaysia: A pilot seagrass transplantation

ABSTRACT

Seagrasses provide a range of marine ecosystem services. These include coastal protection, biodiversity, provision of food for various organisms, breeding and nursery habitats for many marine species, and carbon storage. Increasing anthropogenic pressures have contributed to the decline of seagrass habitats. Transplantation is one of the solutions to increase seagrass coverage and resilience. What is often overlooked, however, is the ability of this tropical ecosystem to attract and support faunal assemblages that may impinge on the success of the transplantation. A pilot study on seagrass transplantation at Gaya Island (Kota Kinabalu, Sabah) was intended for observing its stability and species of fauna that develop association with this vegetation. The study covered the southwest and northeast monsoons. Mixed seagrass species were planted on approximately 50% of 30 m² transplantation areas. Monitoring of the planted seagrass was carried out in five phases (T1-T5) from September 2016 to April 2018. Weekly observations were made by SCUBA diving. Identification of associated fauna was done on the spot and was based on morphological characteristics. During the T1 (September to December 2016) the seagrass coverage was reduced to 41% due to strong waves generated by the northeast monsoon. However, the seagrass coverage increased (66%) during the southwest monsoon (T2-T4) in 2017. In early 2018 (T5), the seagrass coverage again reduced (about 18%) due to strong waves but recovered again at the end of the monitoring period (April 2018). A total of 30 species of fauna that were identified consisted of 9 resident and 21 non-resident species. Physical structure of transplanted seagrass created a microhabitat, and increased the food availability and abundance, which attracted many species of different trophic levels.