

## **A preliminary observational study on coastal outfalls from selected coastal water of Port Dickson**

### **ABSTRACT**

Research background: The coast of Port Dickson (PD), a popular tourist destination, is known for its recreational purposes. However, even some of the tourist beaches have coastal outfalls. These outfalls, known to discharge both treated and untreated water due to their cost-effectiveness as a sewage disposal method, could potentially disrupt the delicate balance of the marine ecosystem, making this research all the more crucial. Purpose: The objective of this study was to observe and discuss outfalls as potential pollution sources for the coastal environment and ecosystem in four different coastal areas at Pantai Cermin, Tanjung Biru, Teluk Kemang, and Pantai Purnama, in PD. Methodology: All photos were taken on November 5th, 2023, using a smartphone (Huawei Mate 20 Pro) in four different coastal areas of PD. The smartphone was lowered into the opening of the outfall, and photos were taken from different angles. Findings: In total, 14 outfalls were recorded in the four selected coasts. None of the outfalls emitted strong odours except for the outfall near a mangrove area in Pantai Tanjung Biru. Another outfall at the same site was releasing black water directly into the beach. Drainage in Pantai Cermin leading to an outfall was filled with a dark green liquid, which could signify eutrophication. Most of the outfalls were found to have plastic debris within or nearby. Fouling organisms were found attached within and on the structure's exterior part. They could benefit from the outfall as it provides motion of water, acts as a substrate or habitat, and nutrients are discharged from it. However, the weekly number of visitors to the beach remains unaffected. Significance: Even though this is a preliminary observational study, the present findings provided a significant gap in knowledge towards what was observed and its potential negative impacts on the environment at the coastal waters of PD. In the future, water, sediment, and biological samples should be collected near the selected outfalls to immediately assess pollutants such as plastic, metals, and pathogens. Fouling organisms could be used to assess the same pollutants to determine the potential effect of outfall on the coastal areas of PD. Continuous monitoring should be done to understand the impact of the coastal outfall on the environment.