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**The Fish and Prawn Diversity of Sungai Pasu, Miri, Sarawak****Nurridan, A. H**

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**ABSTRACT**

Sungai Pasu is one of the adjoining rivers to Kuala Baram and plays a significant economic role in terms of fisheries. This study was carried out to investigate the fish and prawn species diversity in Sungai Pasu using local fishing boats and cast nets in wet season and dry season. The wet season in this study was in March 2019, November 2019 and March 2020, while the dry season was in April to August 2019. Fish and prawn diversity indices were calculated using Shannon-Weiner and Pielou Evenness. A total of 37 species from 24 families were recorded. The dominant fish species recorded was *Kurtus indicus* (31.19 %), whereas the dominant prawn species was *Fenneropenaeus merguensis* (10.64 %). The highest number of species was recorded in March 2020 (20) while August 2019 recorded the lowest species (8). For Shannon-Weiner ( $H'$ ) and Pielou Evenness ( $J$ ) index, in March 2019 showed the highest index with 2.54 and 0.86 and August 2019 showed the lowest index with 1.28, 0.62 respectively.

**Keywords:** Sungai Pasu, diversity, cast net, wet season, dry season

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### **INTRODUCTION**

Estuaries are dynamic habitats characterised by substantial variations in environmental conditions because they are the meeting location of freshwater from rivers and saltwater from the sea (James *et al.*, 2007). Estuaries, which are made up of mangroves, mudflats, and the lower reaches and mouths of rivers, have a high level of aquatic biodiversity and serve as fish and shellfish nursery, feeding, sheltering, and spawning grounds. Due to industrial, housing land, and dam developments, estuaries are subject to both direct and indirect human impacts. Over time, human activities had resulted in a decline in fish diversity (Jalal *et al.*, 2012). Therefore, documentation on biodiversity is crucial to facilitate sustainable management in order to ensure the species longevity. Biodiversity is the quantity, variety and distribution across biological scales. Biodiversity affects the capacity of living systems to respond to changes in the environment. It underpins ecosystem function and provides ecosystem goods and services that support human beings (Costanza *et al.*, 1996; Butchart *et al.*, 2005; Kar *et al.*, 2006). Biodiversity can be determined by taking into account the concept of species richness and diversity indices. Species richness will show the listing of species in a certain area studied and diversity indices will portray the significance of diversity involved. All these indices relate to each other for better understanding of species diversity in the area studied.

In order to conserve aquatic biodiversity, the link between specific locations and the critical life-cycle of the important species must be obtained. Thus, refugia was introduced as a new fishery management approach which focuses on protecting the critical stages in the life cycle of the selected

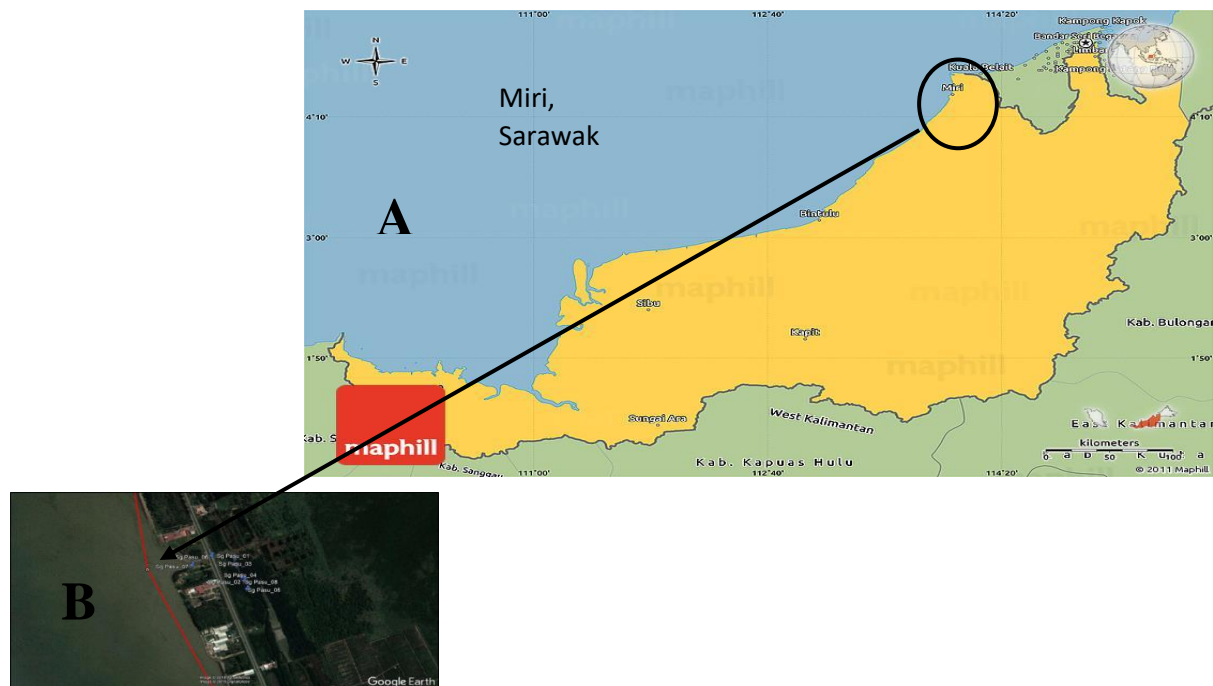
marine species. It was initiated by SEAFDEC-UNEP-GEF in the South East region and is participated by six-member countries namely Malaysia, Cambodia, Thailand, Vietnam, Indonesia and the Philippines (Siow *et al.*, 2020). The fisheries refugia concept adopted by Malaysia followed closely the SEAFDEC-UNEP-GEF definition, which state that the fisheries refugia are “spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their life cycle, for their sustainable use” (UNEP, 2005).

Hence, this paper correlates the importance of the proposed refugia site for tiger prawn, *Penaeus monodon* in Kuala Baram, Miri, Sarawak. The tiger prawn resources in the said area have been earmarked as the last frontier in Malaysia based on past and current research findings (Hadil and Faazaz, 1998; Hadil and Albert, 2001; Hadil, 2004; Hadil, 2007; Hadil, 2014). No study has been done in Sungai Pasu regarding fish and prawn diversity. For this reason, the present study was carried out to determine the diversity of fish and prawn species in Sungai Pasu, Miri. The findings of this study will provide a baseline data for a sustainable management plan for estuarine in the future.

## MATERIALS AND METHODS

### Study Site

The Kuala Baram’s refugia are located near a mangrove forest with an adjoining river mouth which is Sungai Pasu. The study area is part of Sungai Pasu as shown in Figure 1.



**Figure 1:** Map A shows sampling location in Miri, Sarawak and B: shows geographical sampling location in Sungai Pasu, Miri, Sarawak. (Source: Maphill and Google Earth Map)