FISH FAUNA FROM CONSERVATION AREA IN OIL PALM PLANTATION ON PEAT

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ABSTRACT

Peat swamps are known to be important habitats for fish fauna that have narrow niches and restricted range. As peatland is being utilised for agriculture, biodiversity conservation has an essential role as one of the criteria for sustainable agriculture. In an oil palm production landscape which is located at Tinbarap Estate in Miri, Sarawak, a total of 210.63 ha of peat swamp forest was set aside for conservation by Sarawak Oil Palms Berhad (SOPB), known as Tinbarap Conservation Area (TCA). This study documents the fish fauna of Sungai Kulak which flows through the conservation area. Samplings were conducted in April 2016 and November 2016 whereby a total of 106 fish representing 13 species and 7 families of were recorded. In terms of the number of family caught, 78.30% were from family Cyprinidae, 8.49% were from family Siluridae, 4.72% were from family Channidae, 3.77% were from family Osphronemidae, 1.89% were from family Anabantidae, 1.89% were from family Bagridae and 0.94% were from family Helostomatidae. The dominant species was Desmopuntius johorensis which accounts for 47.17% of the total fish recorded. The dominance of Cyprinidae in TCA was similar as in other peat swamp habitats. The result of our present study would provide useful information on the diversity of fish at Sungai Kulak which later could be valuable in conservation planning of the aquatic environment in the TCA of Tinbarap Estate.

Introduction

Oil palm production landscapes

Figure 1: Oil palm plantation on peat land

Conserving forest area/ Retaining forest patches

Strategies for biodiversity conservation & promoting sustainable agriculture

Study Site

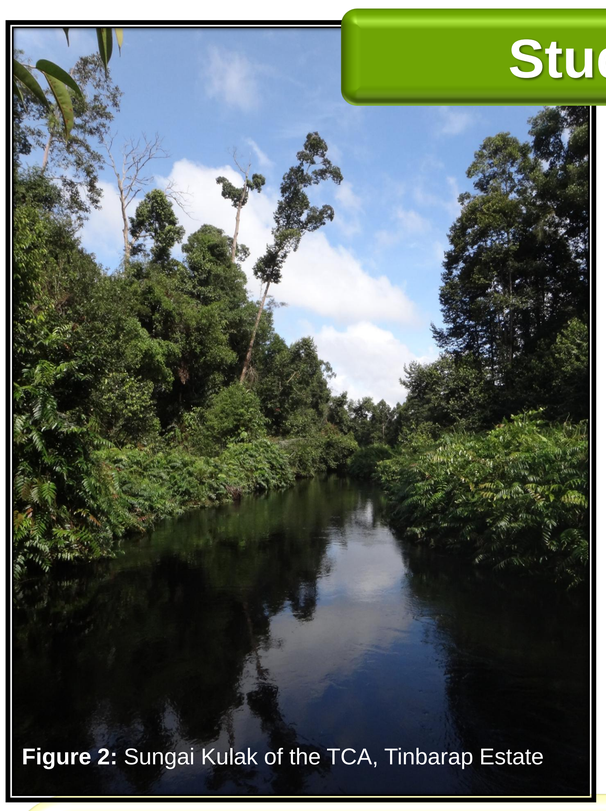
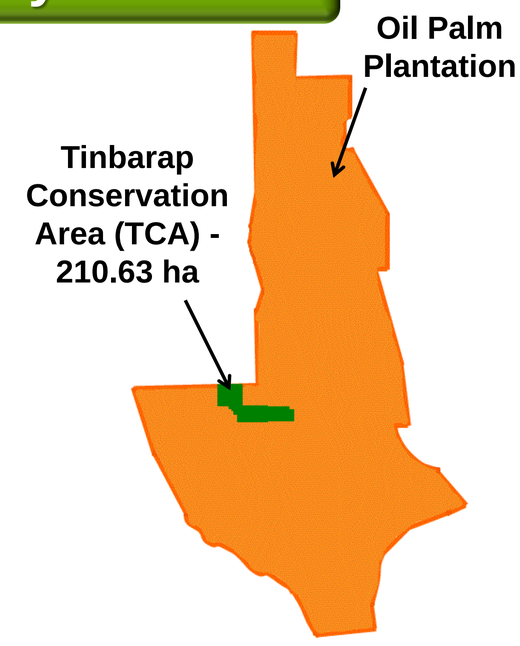


Figure 2: Sungai Kulak of the TCA, Tinbarap Estate



Tinbarap Estate (14, 103.65 ha)

Methodology

- Samplings were conducted along Sungai Kulak which flows through the TCA of Tinbarap Estate, Miri, Sarawak in April and November 2016.
- Fish were sampled using 3-layers gill net, monofilament gill nets (mesh size of 5.5 cm and 2.5 cm), hook and line, and scoop net. Sampling gears were deployed for a period of 3 days and 2 nights.
- Fish identification was carried out with reference to Kotellat *et al*. (1993), Inger & Chin (2002) and Froese & Pauly (2016).

- Physical & chemical properties of the blackwater habitat of Sungai Kulak:
  - Black in appearance
  - Slow flowing water
  - Depth: 1.33 – 1.83 m
  - Temperature: 28.36 – 29.21°C
  - Acidic, pH ranging from 3.74 – 3.90
  - Low in dissolved oxygen, DO: 2.62 – 3.33 mg/L

Fish Fauna of Tinbarap Conservation Area (TCA)

- The blackwater habitat of TCA harbours 13 fish species which belongs to 7 families.
- The dominance of Cyprinidae was similar as in other peat swamp habitats such as Maludam River, Sarawak (Nyanti & Bali, 2004), Paya Beriah Peat Swamp Forest, North Perak, Malaysia (Shah *et al.*, 2006) and Tripa Peat Swamp Forest in Indonesia (Muchlisin *et al*., 2015).

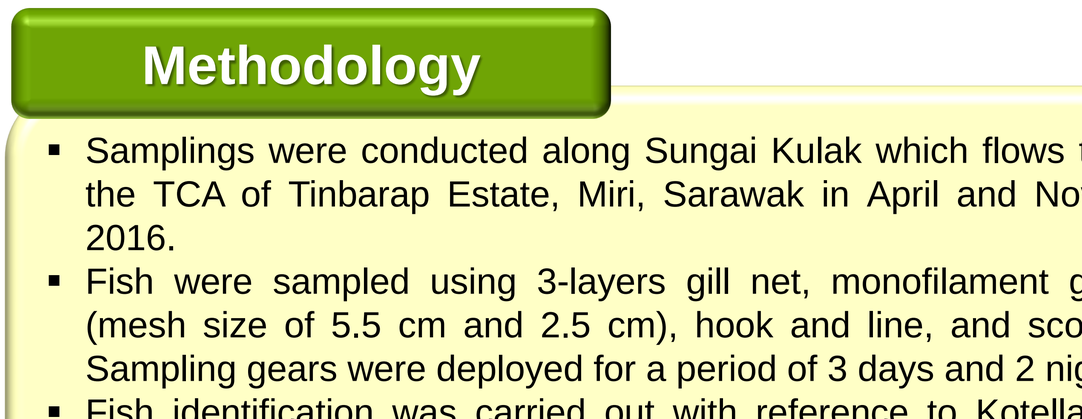


Figure 3: Percentage of fish by family recorded at Sg. Kulak in the TCA of Tinbarap Estate.

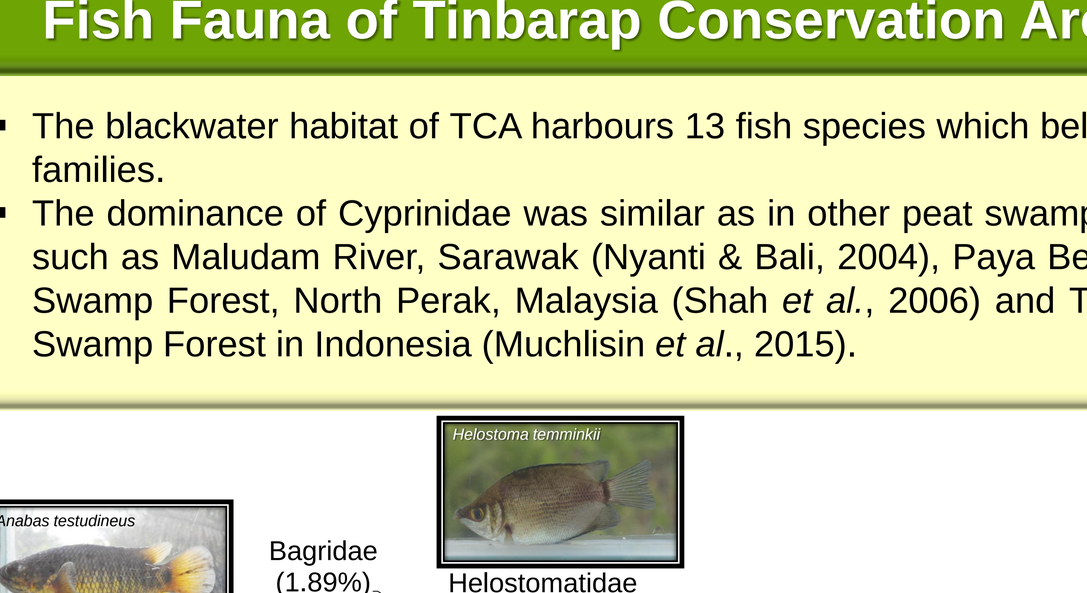


Figure 4: Percentage of fish by species recorded at Sg. Kulak in the TCA of Tinbarap Estate.

Table 1: List of fishes from Sg. Kulak in the TCA of Tinbarap Estate.

Family	Species	Common name
Anabantidae	*Anabas testudineus*	Climbing perch/ Puyu/ Betok
Bagridae	*Hemibagrus nemurus*	Asian redtail catfish/ Baung
Channidae	*Channa bankanensis*	Beluduk
	Channa lucius	Runtuk
Cyprinidae	*Osteochilus melanopleura*	Kelabau
	Desmopuntius johorensis	Striped barb/ Seluang
	Rasbora cephalotaenia	Seluang/ Enseluai
	Rasbora kalbarensis	Seluang
Helostomatidae	*Helostoma temminkii*	Kissing gourami/ Biawan
Osphronemidae	*Trichopodus pectoralis*	Snakeskin gourami
	Trichopodus trichopterus	Three spot gourami/ Sepat
Siluridae	*Kryptopterus limpok*	Long-barbel sheatfish/ Lais kera
	Wallago leerii	Tapah

Conclusion

This study provides information on the diversity of fish fauna inside the conservation area within the plantation landscapes which later could be valuable in conservation planning of the aquatic environment of TCA in Tinbarap Estate.

References

FROESE, R. and PAULY, D. (Eds.) (2016). FishBase. World Wide Web electronic publication. www.fishbase.org, version (10/2016).

INGER, F. R. and CHIN, P. K. (2002). The Freshwater Fishes of North Borneo. Revised edition with supplementary chapter by P.K. Chin. Kota Kinabalu: Natural History Publications (Borneo).

KOTTELAT, M., WHITTEN, A. J., KARTIKASARI, S. N. and WIRJOATMODJO, S. (1993). Freshwater fishes of Western Indonesia and Sulawesi. Hong Kong: Periplus.

MUCHLISIN, Z. A., AKYUN, Q., RIZKA, S., FADLI, N., SUGIANTO, S., HALIM, A., and SITI-AZIZAH, M. N. (2015). Ichthyofauna of Tripa Peat Swamp Forest, Aceh province, Indonesia. *The Journal of Biodiversity Data*, 11(2), 1560.

NYANTI, L. and BALI, J. (2004). Fish fauna of Maludam National Park Betong Division Sarawak. Alterra Green World Research, Netherlands; Forest Department Sarawak, Malaysia; and Sarawak Forestry Corporation, Malaysia.

SHAH, A. S. R. M., ZARUL, H. H., CHAN, K. Y., KHOO, K. H., and MASHHOR, M. (2006). A Recent Survey Of Freshwater Fishes Of The Paya Beriah Peat Swamp Forest, North Perak, Malaysia. *Jurnal Biosains*, 17(1), 51-64.