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ORIGINAL ARTICLE

Preliminary Ethnoichthyological Assessment: Fish Consumption Patterns among Orang Asli Semelai (Aborigines: Proto-Malay) in Tasek Bera, Pahang

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Abstract

Ethnoichthyology, as a field of study, examines the indigenous knowledge held by ethnic groups concerning different fish species. Despite its significance in understanding traditional fishing practices and cultural connections to aquatic resources, data on fish species consumption among the Orang Asli Semelai community remain limited. Therefore, this ethnoichthyological preliminary study aims to address this research gap by documenting the fish species utilized by the Orang Asli Semelai in the Tasek Bera region of Pahang, Malaysia. To achieve this objective, a comprehensive survey and interview session were conducted with a small sample size of four randomly chosen respondents. The study identified 15 fish species solely consumed as food by the community. The most commonly consumed fish species were the Climbing Perch (*Anabas testudineus*) and Snakehead Murrel (*Channa striata*). Additionally, the study revealed the presence of the Critically Endangered Jullien's Golden Carp (*Probarbus jullieni*) among the consumed species, indicating the urgent need for conservation efforts. The findings underscore the significance of integrating sustainable fishing practices and conservation efforts to protect the unique ecosystem of Tasek Bera and preserve the cultural heritage of the Orang Asli Semelai community. Further comprehensive studies and collaborative approaches are vital to safeguarding the region's aquatic biodiversity and ensuring the community's food security sustainably.

Keywords: Tasek Bera; ethnozoology; freshwater fish; indigenous people; Peninsular Malaysia.

Introduction

Throughout history, diverse cultures worldwide have demonstrated a profound understanding of their natural resources, fulfilling various necessities (Alves & Rosa, 2006; Mafimisebi & Oguntade,

2010). This invaluable form of indigenous knowledge, often referred to as ethnozoology, explores the intricate interplay between specific cultures and animals, as well as their surrounding ecosystems (Jaroli et al., 2010). Among the various disciplines within ethnozoology, ethnoichthyology, focusing on fish, emerges as a distinct scientific field examining the indigenous knowledge held by ethnic groups concerning different fish species (Oishi, 2016; Svanberg & Locker, 2020). This field encompasses diverse aspects related to fish, including traditional nomenclature of fish species understood by specific ethnic communities, socio-cultural and medicinal applications, as well as the symbolic significance of various fish species within tribes (Hounkanrin et al., 2022). Ethnoichthyology constitutes a rich and evolving body of knowledge, practices, and beliefs that have developed over time through adaptive processes. This collective wisdom is transmitted across generations through cultural channels, illuminates the intricate relationships among living beings, including humans, and their surrounding environment (Djidohokpin et al., 2020).

In Peninsular Malaysia, the Orang Asli sustain themselves through a diverse mix of activities such as hunting, fishing, gathering wild foods, cultivating crops, and trading forest resources (Endicott, 2016). As the original inhabitants of Peninsular Malaysia, the Orang Asli represent a minority within the overall population of Malaysia (Sawalludin et al., 2020). Consisting of three primary multi-ethnic categories – Negrito, Senoi, and Proto-Malay – which are further fragmented into 18 distinct tribes or sub-ethnicities, the Orang Asli populations inhabit specific areas. These areas are divided into the northern, central, and southern regions of Peninsular Malaysia, as indicated by Odani (2017), Masron et al. (2021), and JAKOA (2022). The Proto-Malays are a varied collection of sub-ethnic Jakun, Semelai, Temuan, Orang Seletar, Orang Kanaq, and Orang Kuala. Over 7,500 members of the Semelai group reside primarily in the states of Pahang, Negeri Sembilan, and Perak, making up 3.59% of Malaysia's indigenous population (Mokhtar, 2021; JAKOA, 2022). The Semelai people, estimated to number 3,500 in the Tasek Bera region, depend on a variety of forest products as well as hunting, fishing, and other wildlife viewing activities for their survival and way of life (Elagupillay et al., 2008; Masron et al., 2013).

Tasek Bera, a naturally occurring freshwater wetland in the Bera district of southwest Pahang, holds the distinction of being the first site in Malaysia to be protected under the Ramsar Convention in November 1994 (Munisamy et al., 2020). Rich in biodiversity, the lake area houses 453 vertebrate species, including 62 species of amphibians and reptiles, 94 species of fish, 230 species of birds, and 67 species of mammals (Jaafar & Ashraf, 2017). For the local community, especially the Orang Asli Semelai, the lakes serve as essential sources of water and freshwater fish catchment areas (Jegatesen, 2019). While several scientific studies have been conducted on fish and aquatic resource utilization among various Orang Asli groups in Peninsular Malaysia, including studies by Ramakrishna (2005), Azliza et al. (2012), Yahaya (2015), and Ariffin et al. (2021), none have been recorded specifically on fish utilization by the Semelai, despite studies on the traditional knowledge of Semelai people in Tasek Bera by Man and Halim (2022). Therefore, the objective of this study is to offer understanding into the fish species utilized by the Orang Asli Semelai residing in close proximity to Tasek Bera.

Materials and Methods

Study Site

The study was conducted in March 2023, within the Orang Asli Semelai community residing around the Tasek Bera, as shown in Figure 1. Nestled between the main and eastern mountain ranges of Peninsular Malaysia, this captivating lake stretches approximately 35 km in length and spans 20 km in width, its waters eventually draining into the Pahang River. Encompassing an extensive area of over 60,000 ha, Tasek Bera boasts undulating plains nestled between the Main

Range and eastern hill ranges. Within its bounds, the wetland itself spans more than 6,800 ha and is characterized by a plethora of diverse micro-habitats and flourishing flora communities, including open water, rassau swamp, Lepironia reed-bed, seasonal freshwater swamp forest, and the surrounding lowland dipterocarp forest (Rafidah et al., 2014). Notably, the unique and precious ecosystem of Tasek Bera holds immense ecological significance, particularly due to the presence of rare and endemic species exclusively found in this captivating area. As a result, Tasek Bera demands special attention and conservation efforts, as the preservation of these unique species becomes integral to maintaining the overall biodiversity and habitat diversity of Peninsular Malaysia (Rafidah et al., 2014).

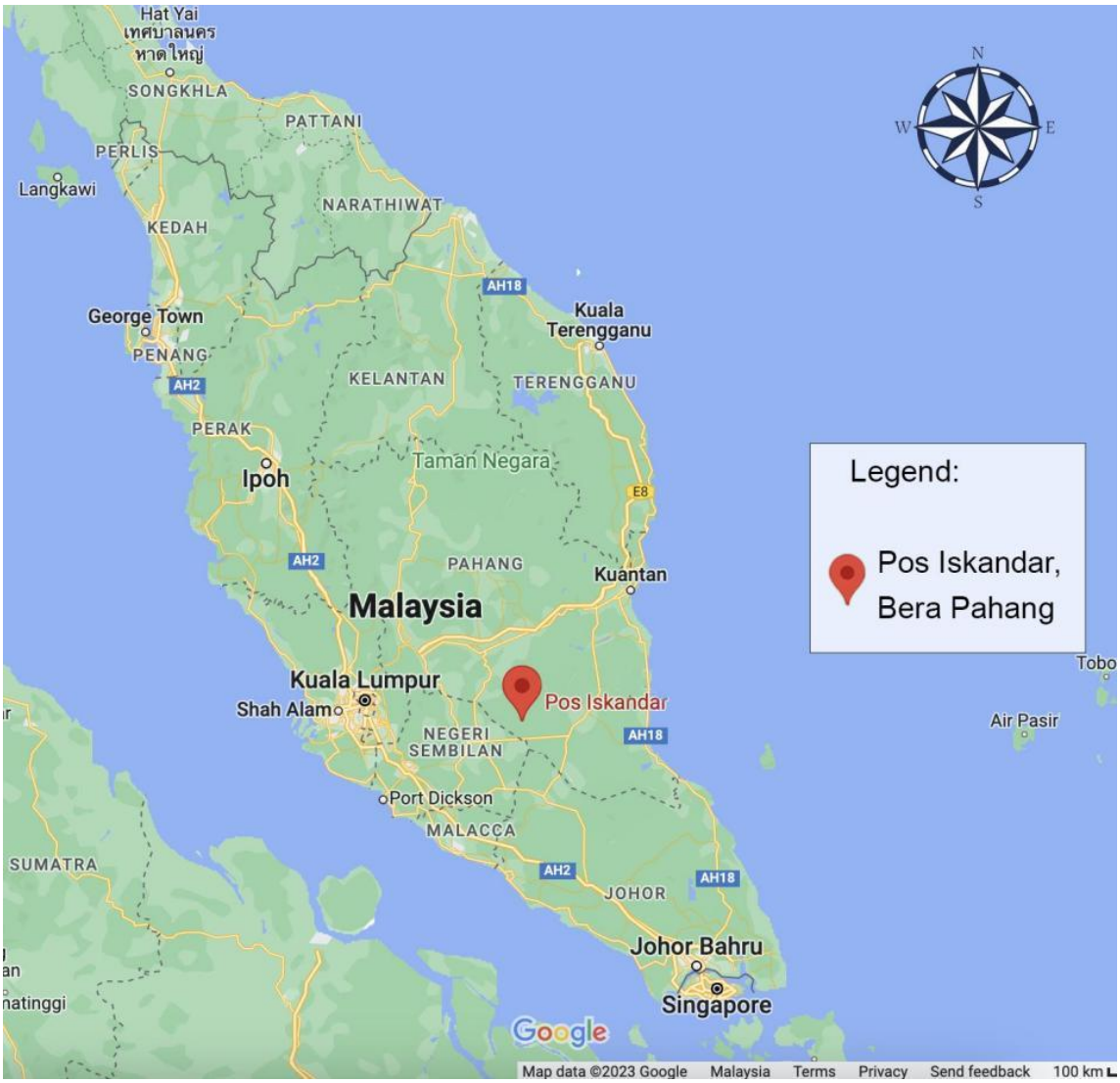

Figure 1. Study site map of Tasek Bera, Pahang

Access and Benefit Sharing (ABS) and Prior Informed Consent (PIC) Forms

All respondents were fully informed about the goal of the study. They were also given the Access and Benefit Sharing (ABS) and Prior Informed Consent (PIC) forms to ensure that any benefits obtained through this study would be equally shared with them.

Survey and Interview Session

The preliminary survey and interview session, featuring a relatively small sample size, involved four randomly selected respondents from two villages surrounding Tasek Bera (Fig. 2). The questionnaire was thoughtfully structured, comprising two distinct parts. The first part sought to gather sociodemographic information from the respondents, encompassing their age, gender, marital status, and occupation. On the other hand, the second segment focused on inquiries related to the knowledge of ethnoichthyology and fish consumption practices within the region using EthnoKIT© questionnaire. To conduct these interviews, EthnoKIT© was utilized, accompanied by visual aids designed to assist participants and alleviate potential confusion, especially concerning the local names of fish species. A total of 30 visual aids depicting various fish species were carefully selected based on previous studies regarding the utilization of fish by the Orang Asli in Peninsular Malaysia.

The visuals and names of each fish species were confirmed and double-checked with experts in the field of ichthyology, as well as trusted websites such as MyBIS and FishBase. The intention behind these aids was to enhance the participants' comprehension during the interview phase. Furthermore, to ensure smooth understanding, the entire questionnaire was presented in the Malay language, aligning with the cultural context and linguistic preferences of the Orang Asli Semelai community. Prior to conducting this study, the questionnaire had been validated through a few pilot surveys conducted with the Orang Asli Semoq Beri (Abdul-Latiff et al., 2021; Najmuddin et al., 2021) and Orang Asli Temuan (Fatin et al., 2021), in order to ensure the reliability of the questions. The interview process was meticulously recorded, utilizing a jotter book, audio recorder, and video recorder, enabling comprehensive documentation for further analysis.

Figure 2. Preliminary survey and interview session with Orang Asli Semelai in Tasek Bera.

Results and Discussion

Demographic characteristics of the respondents

The preliminary study involved a total of four respondents from the Orang Asli Semelai community residing in two villages around Tasek Bera. The demographic information gained from the questionnaire were as displayed in Table 1.

Table 1. Demographic profile of respondents of Orang Asli Semelai

Profile	N	%
Gender		
Male	2	50
Female	2	50
Age		
15-25	0	0
26-35	0	0
36-55	2	50
>55	2	50
Marital status		
Married	3	75
Single	1	25
Occupation		
Yes	3	75
No	1	25

Fish Consumption Patterns

The initial ethnoichthyological survey revealed that among the 30 visual aids depicting various fish species given to the participants, a total of 15 species were recognized as exclusively used for food consumption (Table 2). The respondents showcased exceptional understanding and familiarity with these specific fish species, underscoring their strong and enduring relationship with traditional fish consumption practices deeply ingrained in their cultural heritage (Fig. 3). A linguistic note of interest resides in the Semelai vernacular, where the term for "fish" is articulated as "cereh." Notably, two fish species emerged as prominent protagonists within the realm of customary gastronomy: The Climbing Perch (*Anabas testudineus*), locally acknowledged as "Puyu," and the Snakehead Murrel (*Channa striata*), colloquially referred to as "Haruan" or "Belangkak." These species were classified as Least Concern (LC) according to their conservation status, indicating their relative abundance in the region and the absence of immediate threats. Additional frequently consumed fish species encompassed the Tinfoil Barb (*Barbonymus schwanenfeldii*), Forest Snakehead (*Channa lucius*), Giant Snakehead (*Channa micropeltes*), and Slender Walking Catfish (*Clarias nieuhofii*). Remarkably, these species have been documented as being utilized by other Orang Asli groups, such as Semoq Beri (Kuchikura, 1996), Temuan (Azliza et al., 2012), Lanoh, and Temiar (Yahaya, 2015).

Furthermore, aside from serving as a source of sustenance, *C. lucius*, *C. micropeltes*, and *C. striata* have been employed for medicinal purposes by the Orang Asli Semoq Beri in Tasik Kenyir (Ariffin et al., 2021) and Temuan in Ulu Kuang (Azliza et al., 2012). The meat of these species is believed to accelerate wound healing when consumed. However, among the listed fish species, a particularly noteworthy finding was the inclusion of Jullien's Golden Carp (*Probarbus jullieni*), categorized as Critically Endangered (CR) according to the IUCN Red List. Due to its scarcity, the respondents reported catching this fish species beyond the confines of Tasek Bera, particularly in the Pahang River, as its occurrence was previously recorded by Rashid et al. (2018). Another fish species on the list, the Malayan Mahseer (*Tor tambra*), was also reported by the Semelai as being caught outside the Tasek Bera region. Similarly, these two species were not included in the ichthyofaunal checklist conducted by Fahmi-Ahmad et al. (2015) at Tasek Bera, Pahang.

Table 2. The list of fish species utilized by the Semelai in Tasek Bera, Pahang

No	Scientific name	Common name	Local name	Usage	IUCN
1	*Anabas testudineus*	Climbing Perch	Puyu/ Pepuyuk	food	LC
2	*Barbonymus schwanenfeldii*	Tinfoil Barb	Lampam sungai/ Lampan	food	LC
3	*Chitala spp.*	Knifefish	Belida/ Belidak	food	N/A
4	*Channa striata*	Snakehead Murrel	Haruan/ Belangkak	food	LC
5	*Channa lucius*	Forest Snakehead	Bujuk/ Bujok	food	LC
6	*Channa micropeltes*	Giant Snakehead	Toman/ Tuman	food	LC
7	*Clarias nieuhofii*	Slender Walking Catfish	Keli limba/ Kelik	food	LC
8	*Monopterus javanensis*	Oriental Swamp Eel	Belut/ Nyeh	food	LC
9	*Osteochilus vittatus*	Hard-lipped Barb	Terbol	food	LC
10	*Pristolepis grootii*	Malayan Leaffish	Patung	food	LC
11	*Oxyeleotris marmorata*	Marbled Goby	Ketutu/ Betutu/ Ikan putu/ Ikan ubi/ Ikan hantu	food	LC
12	*Probarbus jullieni*	Jullien's Golden Carp	Temoleh/ Temelian	food	CR
13	*Oxygaster anomalura*	Sharp-belly Barb	Lalang/ Seluang	food	LC
14	*Tor tambra*	Malayan Mahseer	Kelah	food	DD
15	*Wallagonia leerii*	Striped Wallago Catfish	Tapah/ Selempu	food	LC

*CR= Critically Endangered, LC= Least Concern, DD= Data Deficient, N/A= Not Available

Figure 3. Some of the fish species consumed by Orang Asli Semelai in Tasek Bera (A= *Channa micropeltes* (Toman), B= *Tor tambra* (Kelah), C= *Channa lucius* (Bujuk), D= *Anabas testudineus* (Puyu)).

Hunting Tools for Fishing

The Orang Asli Semelai community exhibits a rich repertoire of fishing tools employed to catch fish species (Fig. 4). Among these tools, one widely utilized by the Semelai is the "bubu," a traditional fish trap meticulously crafted from bamboo or rattan (Kuchikura, 1996). Skillfully positioned in shallow waters or near aquatic vegetation, these fish traps facilitate easy entry for fish while rendering escape difficult, promoting a sustainable and selective fishing approach. This traditional trap is also commonly employed by other tribes, including Semoq Beri (Kuchikura, 1996; Abdul-Latiff et al., 2021) and Jakun (Sam & Wee, 2014). The Semelai community, adept in utilizing this trap, employs fermented palm kernel as a common bait, emitting an attractive scent that entices fish into the trap (Turchini et al., 2010). Another fishing tool embraced by the Semelai community is the fish net and fishing rod. Fishing rods, frequently chosen by the respondents, exemplify practicality, ease of handling, and cost-effectiveness. Similarly, fish rods are favored for their versatility and efficiency in fishing activities. In addition to these specialized tools, the Orang Asli Semelai showcase remarkable traditional fishing skills, utilizing their bare hands for fishing.

Figure 4. Fish traps used by Orang Asli Semelai (A= Fermented palm kernel as bait for *bubu* trap; Orang Asli Semelai employing *bubu* (B), fish net (C) and fish rod (D)).

Conclusion

This preliminary ethnoichthyological study elucidates on the fish consumption patterns among the Orang Asli Semelai residing around Tasek Bera, Pahang. The findings reveal a diverse array of fish species utilized as a significant food resource within the community. The majority of the identified fish species were categorized as Least Concern (LC) according to the IUCN Red List, indicating a relatively stable population in the area. However, the presence of Jullien's Golden Carp (*Probarbus jullieni*) among the consumed species raises significant conservation concerns due to its Critically Endangered (CR) status. This highlights the importance of integrating conservation efforts and sustainable practices within the community's fishing activities to protect the irreplaceable species found within the unique ecosystem of Tasek Bera. Further

comprehensive studies and collaborative efforts involving local communities, policymakers, and conservationists are warranted to ensure the preservation of the region's aquatic biodiversity while meeting the food security needs of the Orang Asli Semelai in a sustainable manner.

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