



Species Composition and Catch Per Unit Effort of Some Carangids Fish in Chaungtha Coastal Area, Ayeyarwady Region (Myanmar)

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INFORMATION

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ABSTRACT

Abstract

Species composition and catch per unit effort (CPUE) of some carangids fish in Chaungtha coastal area were investigated from November 2023 to July 2024. A total of 12 species of 7 genera belonging to the family Carangidae were recorded during the study. The total catch 1472.978 kg of carangids was observed from November 2023 to July 2024. On monthly concern, the highest catch rate occurred in December 2023 followed by November 2023 and the lowest in July 2024. The highest composition of carangids, 16.55%, was recorded in December 2023 followed by 16.48% in November 2023 while 0.10% was the composition in July 2024. The highest catch per unit effort 0.72 kg/boat day/fishing day was recorded in December 2023 followed by 0.71 kg/boat day/fishing day in November 2023 and the lowest catch per unit effort 0.005 kg/boat day/fishing day in July 2024. The mean CPUE was 0.48 kg/boat day/fishing day and range from 0.005–0.72 kg/boat day/fishing day recorded in November 2023 to July 2024.

Keywords

Carangids fish, Catch per unit effort, Chaungtha, Specie composition, Myanmar

1. Introduction

Carangids fish (Family-Carangidae) such as jacks, scads, trevallies, pompanos, and queenfish, play a vital role in marine fish biodiversity and are essential to coastal fisheries in tropical and subtropical areas. In the coastal regions of Ayeyarwady, these species play a crucial role in both artisanal and commercial fishing, supporting food security and the livelihoods of local communities. Chaungtha, a prominent coastal area in the Ayeyarwady Region, is known for its diverse marine ecosystems and active fishing activities. Despite the economic and ecological importance of carangid fishes in this region, comprehensive data on species composition and fishing productivity remain limited. Understanding the species composition and catch per unit effort (CPUE) of carangids is essential for assessing fish stock status, managing fishery resources sustainably, and guiding policy decisions.

This study aims to investigate the species composition and CPUE of selected carangid fishes in the Chaungtha Coastal Area. The findings will provide baseline information on the abundance and diversity of carangid species and contribute to the sustainable management of coastal fisheries in the Ayeyarwady Region.

2. Materials and Methods

Species composition and catch per unit effort (CPUE) of some carangids fish were monthly assessed from November 2023 to July 2024 in two different landing sites: Phoe Kalar Kyun, and Myint Family Landing Center in Chaungtha coastal area, Ayeyarwady Region (Fig. 1).

For weight determination, fish were randomly sampled from the local fishermen and landing centers monthly. Then calculate the total weight (kg) of caught fish each month.



Based on the collected data, species composition of some carangids fish was computed by the total catch of individual

species to the total catch of all species present in the effort multiplied by 100 (Norris et al., 1991).

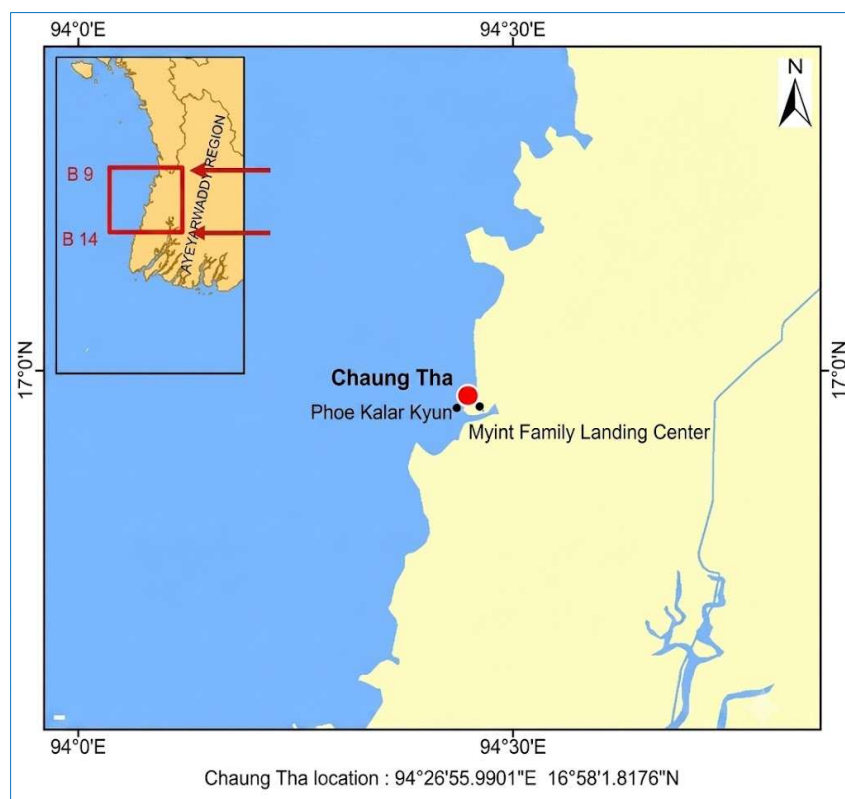


Fig. 1. Map showing the study site of Chaungtha Coastal Area

Moreover, catch per unit effort (CPUE) was also assessed by the total weight of carangids per boat day per fishing day (Stamatopoulos, 2002). After collecting, scaled photographs were taken to obtain the natural size and colour. The collected

species will be identified and labelled with local names before preserving them in 10% formalin. All sampled fish were identified at the species level using standard literature by Psomadakis et al. (2019).

Table 1. Common and local names of some carangids fish in Chaungtha coastal area

No	Species	Common name	Local name
1	<i>Alectis indica</i>	Diamond trevally	Byar San Wike Gaung Lone
2	<i>Carangoides chrysophrys</i>	Longnose trevally	Zar Gyan Hnar Shae
3	<i>C. hedlandensis</i>	Bump-nose trevally	Zar Gyan Hnar To
4	<i>C. malabaricus</i>	Malabar trevally	Malabar Zar Gyan
5	<i>Caranx hippos</i>	Crevalle jack	Zar Gyan
6	<i>Megalaspis cordyla</i>	Torpedo scad	Pyi Taw Thar, Da Ma Naing
7	<i>Scomberoides commersonnianus</i>	Talang queenfish	Nga Lett War Chauk Kywet
8	<i>S. lysan</i>	Double-spotted queenfish	Nga Lett War Set Hnit Kywet
9	<i>S. tol</i>	Needle-scaled queenfish	Nga Lett War Shit Sin Kywet
10	<i>Selar boops</i>	Oxeye scad	Nga Kye Kann Myet Pyuu Gyi
11	<i>Trachinotus blochii</i>	Snubnose pompano	Nga Htaw Butt Hnar To
12	<i>T. botla</i>	Largespotted dart	Nga Htaw Butt Kywet Gyi

3. Results and Discussion

Observation of some carangids fish was conducted in two landing centers of Chaungtha coastal area and the study period lasted for nine months from November 2023 to July 2024. There were 12 species of 7 genera belonging to the family Carangidae recorded with common and local names in the study area (Table 1). Of these 12 species, 1 species of *Alectis*, *Caranx*, *Megalaspis*, *Selar*; 2 species of *Trachinotus*; 3 species of *Carangoides* and *Scomberoides* were collected in this

study area (Figs. 2 A-L). In this study area, carangids fish species were recorded using three different fishing methods: drift gillnet, purse seine, and beach seine nets (Table 2).

The marine fishery in Chaungtha coastal area was carried out both near shore and the sea up to 30 m depth. Still, fishes were caught with bottom set gillnet, drift gillnet, bag seine, sand seine, longline, diving fishing, and trap fishing in inshore regions. The total catch 1472.978 kg of carangids was

observed from November 2023 to July 2024. On monthly concern, the highest catch rate occurred in December 2023 followed by November 2023 and the lowest in July 2024.

The composition and dynamics of fish species within a designated inshore fishing area of the Chaungtha coastal area

are influenced by various factors like fishing methods, environmental conditions, and local management strategies. In the present study, the highest composition of carangids, 16.55% were recorded in December 2023 followed by 16.48% in November 2023 while 0.10% was the composition in July 2024 (Fig. 3).

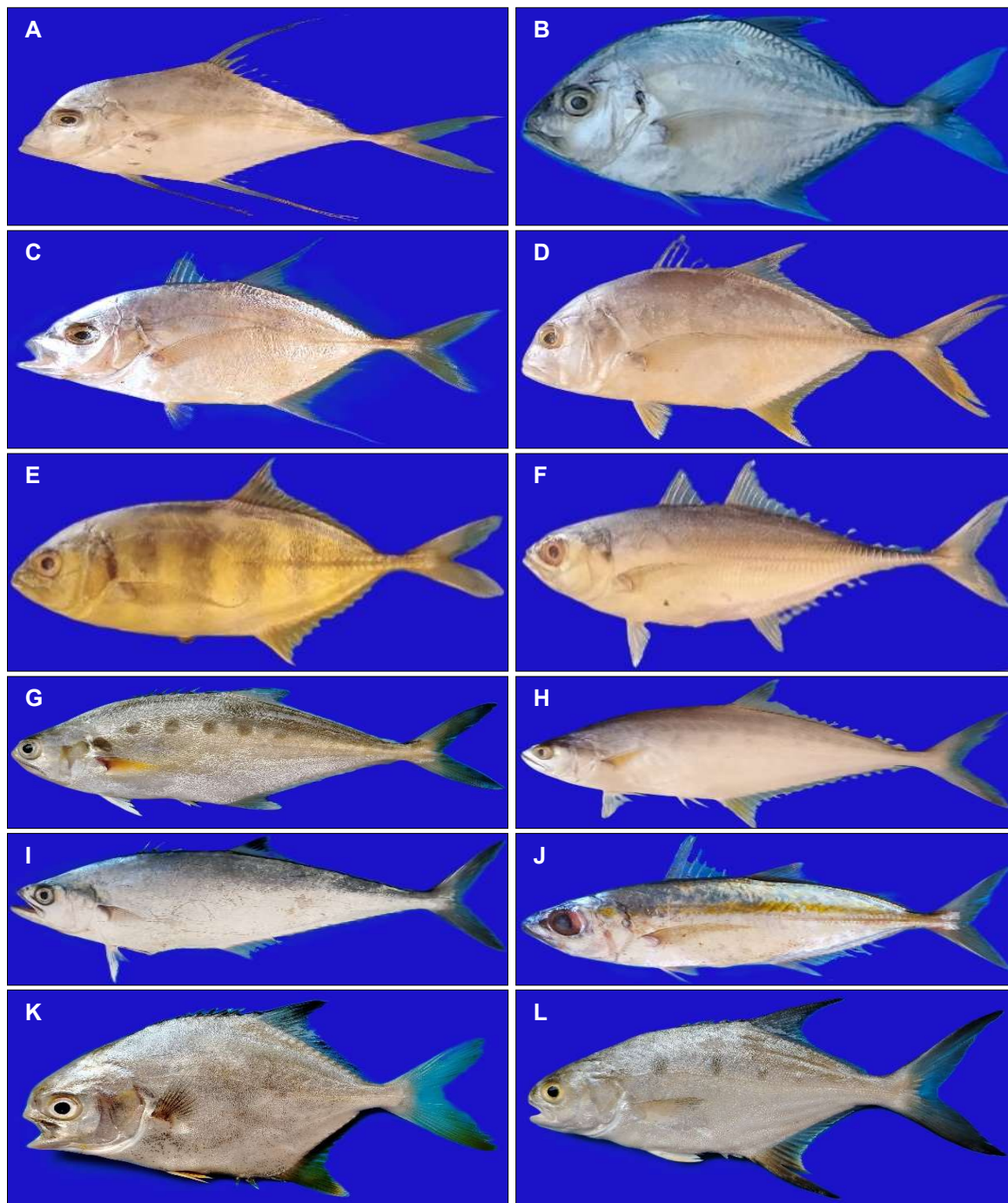


Fig. 2. Some Carangids fish in Chaungtha Coastal Area: A) *Alectis indica*, B) *Carangoides Chrysophrys*, C) *C. hedlandensis*, D) *C. malabaricus*, E) *Caranx hippos*, F) *Megalaspis cordyla*, G) *Scomberoides commersonnianus*, H) *S. lysan*, I) *S. tol*, J) *Selar boops*, K) *Trachinotus blochii*, L) *T. botla*. Scale bars = 10 cm

Catch per unit effort (CPUE) is typically assessed in fisheries management, which represents the amount of catch (e.g. fish) obtained per unit of effort (e.g. hours fished, number of traps used). In general, CPUE is used as an indicator of abundance, meaning that a commensurable change in CPUE

is anticipated to represent the same commensurable change in stock size (FAO, 1999). Chaungtha Coastal Area is one of the major fishery production areas in Ayeyarwady Region.

The highest catch per unit effort 0.72 kg/boat day/fishing

day was recorded in December 2023 followed by 0.71 kg/boat day/fishing day in November 2023 and the lowest catch per unit effort 0.005 kg/boat day/fishing day in July

2024. The mean CPUE was 0.48 kg/boat day/fishing day and range from 0.005- 0.72 kg/boat day/fishing day recorded in November 2023 to July 2024 (Fig 4).

Table 2. Gear wise species occurrence of some carangids fish in Chaungtha coastal area

Family	Genus	Sr. No	Species	DG	PS	BS
Carangidae	<i>Alectis</i>	1	<i>A. indica</i>		+	+
		2	<i>C. chrysophrys</i>		+	
	<i>Carangoides</i>	3	<i>C. hedlandensis</i>		+	
		4	<i>C. malabaricus</i>	+	+	
	<i>Caranx</i>	5	<i>C. hippos</i>	+		
	<i>Megalaspis</i>	6	<i>M. cordyla</i>	+	+	+
		7	<i>S. commersonianus</i>		+	
	<i>Scomberoides</i>	8	<i>S. lysan</i>		+	
		9	<i>S. tol</i>		+	
	<i>Selar</i>	10	<i>S. boops</i>		+	+
		11	<i>T. blochii</i>			+
	<i>Trachinotus</i>	12	<i>T. botila</i>			+
Total				3	9	5

Symbols: + = Present, DG: Drift Gillnet, PS: Purse Seine, BS: Beach Seine

Current CPUE data supports the enforcement of fishing regulations, including catch limits and gear restrictions. It can identify illegal, unreported, and unregulated (IUU) fishing activities by revealing discrepancies between reported catches and fishing efforts. Additionally, CPUE can enhance economic efficiency by optimizing fishing practices, ensuring that the time, fuel, and resources invested in fishing are proportional to the catch obtained. This improves not only economic returns for fishers but also minimizes wasteful practices. In this study, local CPUE remains a common practice in Chaungtha, as the number of vessels, types of gear used, and time spent fishing are well-balanced.

Local demand and export potential of about 70 species under

29 families are considered commercially important fishes described by Sann Aung (2003). Of these families, Carangidae such as *Carangoides malabaricus*, *Megalaspis cordyla*, and *Scomberoides commersonianus* also occurred in the present study.

Carangids fish were locally marketed and were mostly consumed in their fresh condition. When the catch exceeded local demand, the fish, along with several smaller species, were sundried. To prepare them for drying, the fish were soaked in a salt solution for a day before being laid out on the sandy beach to dry in the sun. After drying, the fish was either packed into plastic bags or wrapped in newspapers before being sent to the local marketplaces.

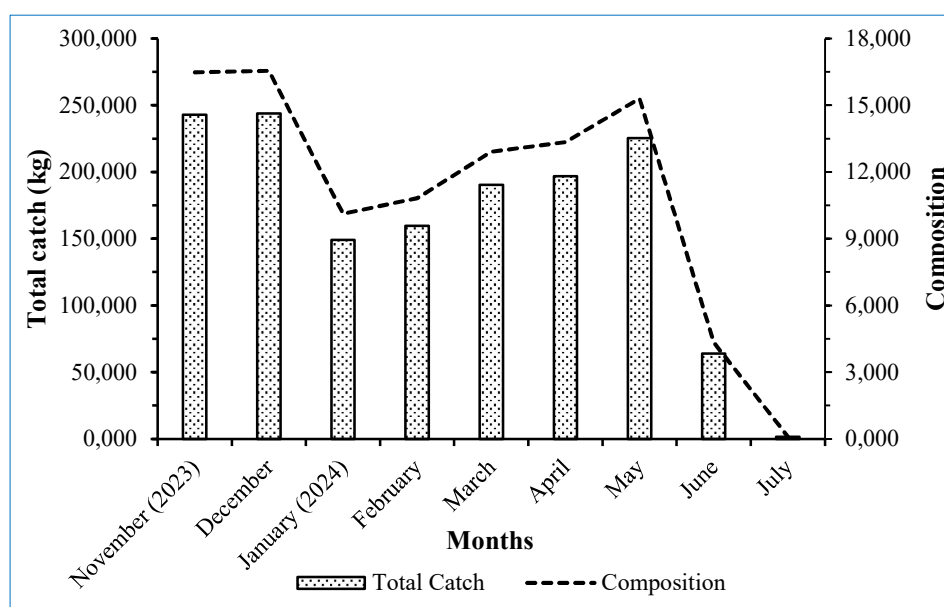


Fig. 3. Monthly total catch and species composition of some carangids fish in Chaungtha Coastal Area

Min et al. (2021) monitored the biodiversity and catch efficiency of carangid fishes (jacks and trevallies) across three coastal sites in Mon State, Myanmar, between June 2013 and

May 2015. By analyzing landings from bag nets and drift gill nets, the researchers identified 17 distinct carangid species across 10 genera. Asin emerged as the most productive and

biologically diverse site, boasting 15 species, the highest total catch weight (averaging 24,829 kg), the best catch-per-unit-effort (3.7 kg/boat/day), and the largest share of carangids in the total catch (23.83%). In comparison, Zeephyuthaung recorded intermediate values (14 species, 21,563 kg), while Kyaikkhami showed the lowest diversity and yield (9 species, 3,724 kg). Temporally, carangid catches peaked during the post-monsoon and early winter months—spanning September to December at Zeephyuthaung, October to December at Asin, and November to January at Kyaikkhami—highlighting a distinct seasonal trend in abundance across Mon coastal waters.

By identifying specific peak catch seasons (September to January depending on the site) and establishing baseline catch-per-unit-effort (CPUE) metrics, the study gives fisheries managers the exact data needed to design seasonal

fishing regulations or temporary closures to prevent overfishing. Documenting 17 distinct carangid species across three locations clearly identifies Asin as a critical biodiversity and productivity hotspot. This helps conservationists prioritize specific coastal zones for habitat protection or special monitoring.

Because the data tracks a two-year window (2013–2015), it serves as a vital scientific baseline. Future researchers can compare current or future catch sizes and species diversity against this data to see if climate change, pollution, or overfishing are degrading Mon State's coastal health.

Understanding which gear types (bag nets vs. drift gill nets) and which specific months yield the highest catch allows local fishing communities to optimize their efforts, reducing wasted fuel and time while maximizing economic returns.

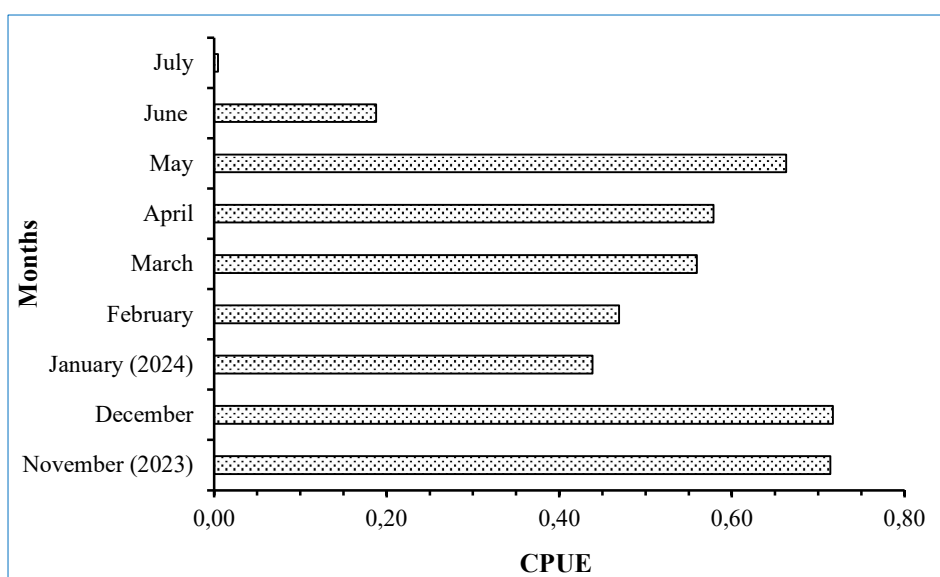


Fig. 4. Monthly CPUE of some carangids fish in Chaungtha Coastal Area

In Chaungtha coastal area, fishing activities are highly dependent on the weather conditions. Fishing was operated from the shore within around 9.66 km and at a depth of 15 m in the inshore fisheries. The average catch per net fishing varied depending on the fishing months and fishing grounds although small-scale fishing operation was made year-round. In general, more catch of fish was obtained from November to March, and the lowest catch was throughout the monsoon season (from June to August) because it was a prohibited period for fryfish catching by the Department of Fishery (DoF).

4. Conclusion

This study provides valuable insights into the species composition and catch per unit effort (CPUE) of carangid fishes in the Chaungtha coastal area of the Ayeyarwady Region. The results indicate that several species of carangids are commonly caught in this area, with notable variation in abundance and distribution. The analysis of CPUE data reflects the relative availability and fishing pressure on different species, offering a useful indicator of fishery

performance. The findings highlight the ecological and economic significance of carangid species in local fisheries. Sustainable fishing practices, combined with regular assessment of stock status, are essential to ensure the long-term viability of carangid populations and the livelihoods dependent on them.

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