Composition and catch number of fish landings on the eastern coast of the Aceh region

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Abstract. Information on the composition and number of catches that comprise fish landings is an essential component of fisheries management. Because such data is especially limited with regard to the eastern coast of the Aceh region of Sumatra, the present study examined fish landing characteristics for this region. Data were collected from November 24 to December 24, 2019, in seven fish landing sites (TPI) in three districts (Aceh Utara, Bireuen, and Lhokseumawe) on the eastern coast of the Aceh region. Fishes were recorded daily in each TPI during the study period, and a total of 32 fish categories were identified. Pelagic fish dominated the catch: longtail tuna, scad, island mackerel, yellowfin tuna, Carangidae, frigate tuna, skipjack tuna, albacore, kawakawa, and white snapper were the most landed fish during the survey period. The study also showed marine fisheries production to be 181,994 kg/month, or an average of 7,000 kg/day. Across the three districts, Bireuen had the highest fisheries production (122,683 kg), followed by Aceh Utara (35,092 kg), and Lhokseumawe (24,220 kg). This study provides baseline data that will be valuable in developing an effective fisheries management strategy plan in the region.

1. Introduction
The Aceh region of Sumatra represents the island’s most extensive coastal area; it is surrounded by coasts measuring 1,660 km or more, and 295,370 km² of seawater area [1]. This region is also known to have high marine biodiversity [2–10]. Fisheries are an essential resource for the Aceh Province, including on the eastern coast of the Aceh region and, specifically, the Bireuen, Lhokseumawe, and Aceh Utara districts. These districts are directly opposite the Malacca Strait and Malaysian waters, and similar to other regions in the Malacca Strait, they have high coastal and marine biodiversity, and have been used to improve the community and regional economy [1].
However, there is limited available information on the composition and abundance of fish landings in this region. Accurate fish landing data is essential in fisheries management [11], and it is not easy to plan a well-managed fisheries strategy without the robust support of a scientific database. Hence, the present study's objective was to study the composition and number of catches on the eastern coast of the Aceh region.

2. Materials and Methods
This study was conducted from November 24 to December 24, 2019, in seven fish landing sites (TPI) located in three districts—Aceh Utara, Bireuen, and Lhokseumawe—on the eastern coast of the Aceh region (Figure 1). Fishes were recorded daily in each TPI during the study period according to the fish categories prepared by the Ministry of Marine Affairs and the Fisheries Republic of Indonesia (http://nelpin.kkp.go.id/index.php).

![Figure 1. Map of the study sites on the eastern coast of the Aceh region.](image)

3. Results and Discussion
This study recorded 32 fish categories among the landings in the region. The study also showed a total marine fisheries production of 181,994 kg/month, or an average of 7,000 kg/day. Bireuen was the district with the highest fisheries production (122,683 kg), followed by Aceh Utara (35,092 kg), and Lhokseumawe (24,220 kg) (Table 1). Furthermore, pelagic fish dominated the catch in the area, as longtail tuna (Thunnus tonggol), scad, island mackerel, yellowfin tuna, Carangidae, frigate tuna, skipjack tuna, albacore, kawakawa, and white snapper were the most landed fish during the survey period (Figure 2).

The number of fish catches during the study period was relatively low. Based on interviews with fishers, Panglima Laot, and the Head of Fishery Ports in the area, this condition happened because many fishing vessels (especially large vessels) did not go to sea due to bad weather conditions during the survey period. Furthermore, this survey was limited to fishing landing bases (TPI). Like other regions in Indonesia, there are many small and artisanal fish landing sites on the eastern coast of the Aceh; consequently, we do not have records of landing data, leading to unsustainable and unregulated fisheries [12].
In general, the catch in this study was dominated by pelagic fish. Although this was the dominant species caught in the Malacca Strait, as has been similarly reported in many previous studies [13–15], some demersal fish caught in this region also had high economic value, such as fishes from the families Siganidae and Mullidae [16]. In addition, longtail tuna was the highest-value fish landed in this region; it is widely distributed in the Indo-West Pacific, including in the Malacca Strait [17]. Based on the IUCN Red List Categories, the fish is designated as “Data Deficient,” and sustainability must be carefully considered when exploiting any of the species so categorized [18]. Furthermore, in their study on the morphometric variation of longtail tuna in Aceh waters, [19] observed that the longtail tuna on the eastern coast of Aceh had different morphometric characteristics than those from other parts of the Aceh region, indicating that they were from different fish stocks. It is recommended that these two stocks be managed independently; with proper fisheries management, it is unlikely that the species will become extinct in the near future.
The eastern coast of the Aceh region is also directly adjacent to Malaysian waters. Several studies showed that the fishes in this region shared the same stock. For example, in their study of orange-spotted grouper (*Epinephelus coioides*) from Thailand and Indonesia using microsatellite markers, [20] found that the grouper stock in the Malacca Strait was genetically the same as the grouper population from the South China Sea. Additionally, in their study of Indian mackerel (*Rastrelliger kanagurta*), [21] revealed that the fish in Aceh have a similar stock as the fish from Malaysia and Thailand, based on the Cyt b molecular marker. In another study, [22] revealed that the fish stock of Japanese scad (*Decapterus maruadsi*) in the Sundaland region, which is included in the Malacca Strait, belonged to the same stock. This shared stock is required for the proper combined management of the fisheries in both Indonesia and Malaysia. [23] also proposed cooperation between Indonesia and Australia for managing the snapper fisheries in the Arafura Sea with regard to their shared snapper stock. Finally, this study provides baseline data that will be valuable in developing an effective fisheries management strategy plan for the region in the future.

4. Conclusions
This study recorded 32 categories of fish landed in the Aceh region of Sumatra. Of note, pelagic fish dominated the catch —longtail tuna, scad, island mackerel, yellowfin tuna, Carangidae, frigate tuna, skipjack tuna, albacore, kawakawa, and white snapper—dominated the catch. This study provides baseline data that will be valuable in developing an effective fisheries management strategy plan in the region.

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