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## Checklist of coral fishes in Lhoknga and Lhok Mata Ie Beaches, Aceh Besar, Indonesia

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**Abstract.** The objective of the present study was to inventory the coral fish fingerling in Lhoknga and Lhok Mata Ie Beaches, Aceh Besar District, Aceh Province, Indonesia. The study was conducted from February to March 2019 in two locations, namely; Lhoknga Beach and Lhok Mata Ie Beach in Aceh Besar District, Aceh Province, Indonesia. The fish sample was caught using a handline hook and casting net. A total of 51 fish were sampled during the study, and it belongs to 8 orders, 11 families, 19 genera, and 25 species. The Labriformes was predominant with six genus and eight species followed by Scorpaeniformes (four species), Perciformes and Blenniiformes, four species respectively. Carangiformes, Mugiliformes, and Gobiiformes with two species, respectively and Anguilliformes with one species. In addition, *Epinephelus* was the predominant genus with four species.

### 1. Introduction

Aceh is one of the provinces that has a big potency on marine resources; this province has 295,370 km<sup>2</sup> of territory sea waters with 2,310 km of the coastal line [1, 2]. Besides, this province also had potency on the inland fishery, for example at least 114 species of freshwater and brackish waters fishes [3-5]; of these 15 species have potency for aquaculture fish target [5]. According to Rudi [6, 7] Aceh province has at least 571 species belong to 53 families of coral fishes. Batubara et al. [8] have reported 77 species of marine fishes from Simeulue Island, while Fadli [9], reported 87 species from Ulee Lheue. According to Rudi et al. [10], Aceh waters are situated between the Indian Ocean, Malacca Strait, and the Andaman Sea resulted in combination species from these oceans. However, in general, information of marine fishes in Aceh especially coral fishes was very limited available.

Coral reefs are one of the diverse ecosystems in the world [11], and crucial for fish and other coral biotas [12]. According to Allen and Adrim [13], at least 7,000 species of fish are inhabiting this ecosystem. In Aceh, coral reefs are occurring in several locations [14], for example in Lhoknga and Lhok Mata Ie Beaches in Aceh Besar District. These beaches are very popular as an ecotourism destination for local people because nearby to the city of Banda Aceh [15]. Presently, the condition of coral reefs in these locations has been partly recovered after hitting by the Tsunami in 2004 [16]. Coral reefs in Lhoknga and Lhok Mata Ie Beaches were dominated by *Acropora* sp., *Montipora* sp., *Pocillopora* sp., and *Porites* sp. [6, 10, 17, 18].



Presently, there was no information on the coral fish in Lhoknga and Lhok Mata Ie Beaches. This information is very crucial to plant the conservation strategy of marine aquatic resources. This is because these beaches are the tourist destination that is very vulnerable to exposure to negative impacts from visitors and gave a further effect on fish life in these regions. Hence, the objective of the present study was to inventory the ichthyofauna in Lhoknga and Lhok Mata Ie Beaches, Aceh Besar District, Indonesia.

## 2. Material and Methods

### 2.1 Location and time

The sampling was done during on February 17, 2019 in Lhoknga Beaches and March 3, 2019 in Lhok Mata Ie Beaches. The fish sample was caught using handline hooks and casting net.

### 2.2 Sampling procedure and taxonomic identification

The sampling location was determined purposively at the site that is suspected of being fish and accessible. The handline hooks and casting were operated randomly in the waters. The representative of collected species was taken and photographed before preserving in 10% formalin then transported to Laboratory of Ichthyology, Syiah Kuala University for further analysis. The fish samples were identified based on Kottelat et al. [19], Allen [20], and FishBase.

### 2.3 Data analysis

The data were presented in tables and graphs then analysed descriptively by comparing the data with previous studies and other relevant reports.

## 3. Results and Discussions

A total of 51 fish were sampled during the study. It belongs to 8 orders, 11 families, 19 genera and 25 species (Table 1, Figure 1 and Figure 2). The Labriformes was predominant with eight species followed by Scorpaeniformes (four species), Perciformes and Blenniiformes, four species respectively. Carangiformes, Mugiliformes, and Gobiiformes with two species, respectively and Anguilliformes with one species. Based on the family Pomacentridae was dominant in genus and species richness; Besides, Serranidae was also higher in species richness (four species).

**Table 1.** Ordo, Family, Genus and species of fishes in Lhoknga and Lhok Mata Ie Beaches

Ordo	Family	Genus	Species	Location		Total
				1	2	
Labriformes	Pomacentridae	Abudefduf	<i>Abudefduf sordidus</i>	-	1	1
		Amblyglyphidodon	<i>Amblyglyphidodon curacao</i>	1	-	1
		Chrysiptera	<i>Chrysiptera leucopoma</i>	-	2	2
		Stegastes	<i>Stegastes fasciatus</i>	-	9	9
	Labridae	Thalassoma	<i>Thalassoma jensenii</i>	-	1	1
		Halichoeres	<i>Halichoeres biocellatus</i>	1	-	1
			<i>Halichoeres marginatus</i>	1	-	1
Perciformes			<i>Halichoeres solorensis</i>	-	1	1
	Chaetodontidae	Chaetodon	<i>Chaetodon vagabundus</i>	-	1	1
	Terapontidae	Terapon	<i>Terapon theraps</i>	-	4	4
	Lutjanidae	Lutjanus	<i>Lutjanus lemniscatus</i>	1	-	1
Anguilliformes	Muraenidae	Echidna	<i>Echidna nebulosa</i>	-	3	3
Blenniiformes	Blenniidae	Entomacrodus	<i>Entomacrodus vermiculatus</i>	-	1	1
		Istiblennius	<i>Istiblennius lineatus</i>	1	-	1

		Salarias	<i>Salariasfasciatus</i>	-	2	2
Scorpaeniformes	Serranidae		<i>Epinephelus bilobatus</i>	-	10	10
		Epinephelus	<i>Epinephelus hexagonatus</i>	1	-	1
			<i>Epinephelus magniscuttis</i>	1	-	1
			<i>Epinephelus</i> sp.	1	-	1
Carangiformes	Carangidae	Scomberoides	<i>Scomberoides tala</i>	1	-	1
		Gnathanodon	<i>Gnathanodonspeciosus</i>	1	-	1
Mugiliformes	Mugilidae	Liza	<i>Liza argentea</i>	3	-	3
			<i>Liza macrolepis</i>	1	-	1
Gobiiiformes	Gobiidae	Periophthalmus	<i>Periophthalmusargentilineatus</i>	1	-	1
		Valenciennea	<i>Valenciennea sexguttata</i>	1	-	1
Total						51

Note: 1: Lhoknga, 2: Lhok Mata Ie

In this study, the order Carangidae, Mugilidae, and Gobiidae were only found on the Lhoknga beach, while Anguilliformes found in Lhok Mata Ie beach, whereas species from the order Labriformes, Perciformes, Blenniiformes, and Scorpaeniformes can be found in both sampling locations.

A total of two species i.e. *Chrysiptera leucopoma* and *Chaetodon vagabundus* have been reported by Rudi [6], while 23 species were the new record from these areas. The *Epinephelus* was predominant genus in these locations with four species, namely *E. hexagonatus*, *E. magniscuttis*, *Epinephelus* sp. (Found in Lhoknga beach) and *E. bilobatus* (Found in Lhok Mata Ie beach) where *E. bilobatus* was predominant within this genus [21], and this species has been listed in the IUCN Redlist. Lutjanidae [22], Muraenidae, Serranidae [23], Carangidae and Mugilidae are a popular species for consumption [22, 23]. Besides, Pomacentridae, Labridae, Chaetodontidae, Terapontidae, Blenniidae, and Gobiidae had potency as ornamental fish and promises to be export commodities.

Coral reefs are essential for the fish; this ecosystem provides shelter and food for larvae and fingerling fish [24]. Therefore, most of the fish caught during the sampling is still at fingerling stage. Based on this result, it is strongly recommended that these locations should be determined as the Marine Protected Areas.

**Table 2.** The taxonomic composition of fishes of Lhoknga and Lhok Mata Ie Beaches

No	Order	Σ Family	Σ Genera	Σ Species
1	Labriformes	2	6	8
2	Perciformes	3	3	3
3	Anguilliformes	1	1	1
4	Blenniiformes	1	3	3
5	Scorpaeniformes	1	1	4
6	Carangiformes	1	2	2
7	Mugiliformes	1	1	2
8	Gobiiformes	1	2	2
Total		11	19	25





**Figure 1.** The photograph of fish species collected from the Lhoknga and Lhok Mata Ie Beaches, Aceh Besar, Indonesia



**Figure 2.** The photograph of fish species collected from the Lhoknga and Lhok Mata Ie Beaches, Aceh Besar, Indonesia

#### 4. Conclusion

A total of 51 fish were sampled during the study, it belongs to 8 orders, 11 families, 19 genera, and 25 species. The pomacentridae and serranidae were predominant with four species members followed by blenniidae (three species), labridae, mugilidae, carangidae, and gobiidae, two species respectively. Chaetodontidae, terapontidae, lutjanidae, and muraenidae with one species.



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