



Check list of marine fishes from Simeulue Island waters, Aceh Province, Indonesia

Agung Setia Batubara, Zainal A. Muchlisin*, Muhammad Yunus Thamren, Usnardi Usnardi, Nur Fadli

Faculty of Marine and Fisheries, Syiah Kuala University, Banda Aceh 23111, Indonesia. *Email: muchlisinza@unsyiah.ac.id

ABSTRACT

The objective of the present study was to inventory the marine commercial fishes in Simeulue waters, Aceh Province, Indonesia. Sampling was conducted on August 2017. The sampling was conducted in fish landing and direct sampling by using handline hooks and casting net. A total of 77 species of marine commercial fishes belong to 7 orderS, 26 families and 54 genera were recorded during the study. Serranidae was a predominant family with 14 species followed by Lutjanidae with 13 species and Carangidae 9 species.

Keywords: Simeulue; Serrinidae; Lutjanidae; Carangidae

INTRODUCTION

Aceh Province has big potency on aquatic resources for example, 70,000 inland waters, 73 main rivers, marshes and wetlands and lakes (Muchlisin, 2012). Muchlisin and Siti-Azizah (2009) recorded 114 species of freshwater fishes in Aceh waters where several species have potency for aquaculture development (Muchlisin, 2013); However, no information on the marine fishes in Aceh waters. In addition, there were two species of endemic fishes recorded in Aceh waters, namely *Rasbora tawarensis* dan *Poropuntius tawarensis* (Muchlisin *et al.*, 2013). Previous studies showed that several species of fishes in Aceh waters have been listed in IUCN redlist, for example genus *Tor* (Muchlisin *et al.*, 2015a), *Anguilla* (Muchlisin *et al.*, 2017a), *Epinephelus* (Ramadhani *et al.*, 2017) and *Zenarchopterus* (Fadhil *et al.*, 2016).

Presently, the study on fish diversity in Aceh waters was focusing on inland waters (Muchlisin and Siti-Azizah, 2009; Rudi and Fadli, 2012; Muchlisin *et al.*, 2013; Nasir, 2014; Muchlisin *et al.*, 2015b), and it was very limited information on marine fishes. Simeulue Island is situated in the Indian Ocean about 115 km from the mainland Sumatra. This Island has potency in marine and freshwater fishes, for example the annual catch volume was increasing from 8,042.00 tons in 2011 to 13,966 tons in 2015 (BPS Simeulue, 2016). Several studies have been conducted in Simeulue Island waters, for example characteristic of capture fishery (Carle *et al.*, 2014) and marketing chains of lobster businesses (Zulham and Nasution, 2016; Triyanti and Yusuf, 2015) and ichthyofaunal of Lake Lauik Tawar and Lake Lauo (Muchlisin *et al.*, 2017b). This paper reported the marine fishes harvested from Simeulue Island waters, Aceh Province, Indonesia.

MATERIALS AND METHODS

The study was conducted on August 3rd, 2017 in Simeulue Island (Figure 1). Fish samples were collected by direct sampling using handline hooks and casting nets. The handline hooks are used on deep ocean waters, while the casting nets are used on the coastal shallow waters. The location of the sampling was based on information from local fishermen. The coordinate of each location was recorded. Beside, the fish samples were also collected from fishermen catches in fish landings.

The representative of each species was collected and photographed prior to preserving in 10% formalin. The sampled fishes were measured for total length using the digital calipers (Mitutoyo, CD-6CS. Error = 0.01 mm), and weighed using a digital balance (Toledo, AB-204. Error= 0.01 g). The fish samples were identified based on Kottelat *et al.* (1993), Allen (2000), Inger dan Kong (2002), Vida dan Kotai (2006) dan Ambak *et al.* (2010). The data were presented in

tables, graphs and photos then analyzed descriptively by comparing the data with previous studies and other relevant reports.

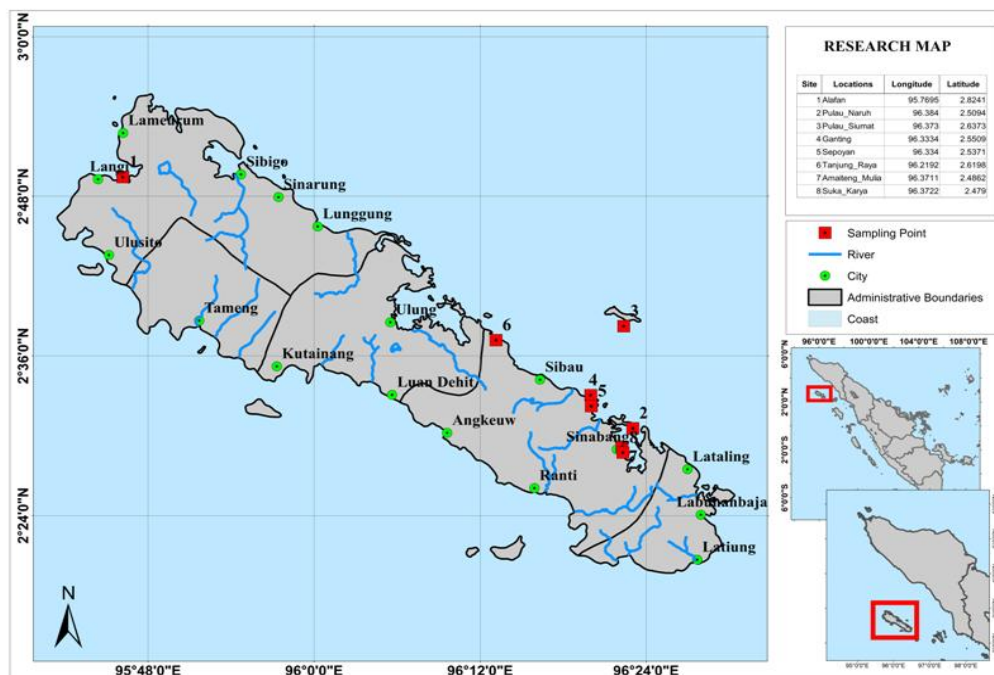


Figure 1. Map of Simeulue Island showing location sampling (red dots)

RESULTS

A total of 77 species of marine fishes belonging to 7 orders, 26 families and 54 genera were recorded during the study (Table 1). Perciformes was a predominant order with 18 families, 44 genera and 67 species (Figure 2), where Serranidae is predominant family with 14 species followed by Lutjanidae with 13 species and Carangidae 9 species (Appendix).

Table 1. Total family, order and species of marine fishes in Simuelue Island waters

No.	Order	Family	Genera	Species
1.	Clupeiformes	3	4	4
2.	Elopiformes	1	1	1
3.	Gonorynchiformes	1	1	1
4.	Mugiliformes	1	2	2
5.	Perciformes	18	44	67
6.	Rhinopristiformes	1	1	1
7.	Squaliformes	1	1	1
Total		26	54	77

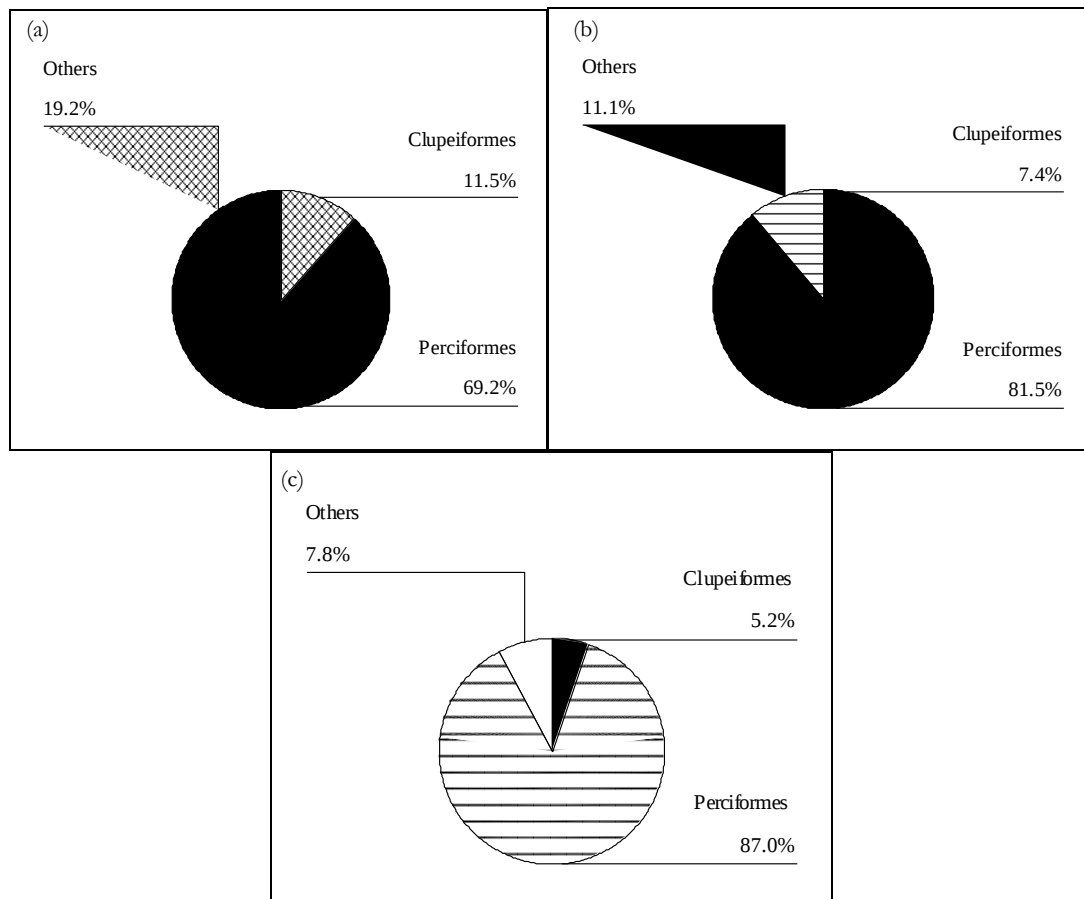


Figure 2. Composition of orders based on number of families (a), based on number of genera (b), based on number of species (c)

DISCUSSION

A total of 77 species of commercial marine fishes from Simeulue waters were recorded in this study. Of these, 47 species are coral reefs fishes, where Serranidae and Lutjanidae are predominant (Appendix). This is probably due to the condition of the coral reefs in Simuelue Island have been recovered after more than 10 years of massive tsunami in December 2004 and March 2005. Several studies just after tsunami reported that most of the coral reefs areas in Simeulue has damaged by tsunami waves and in several parts, the coral reefs was uplifted 1.55 to 1.60 meters (Aron *et al.*, 2010; Suyarso, 2008; Fujino *et al.*, 2014). Fortunately, in recent years the coral reefs have been grown and recovered well, thus becoming a habitat for marine organisms, especially for fishes (Carles *et al.*, 2014; Mutmainah *et al.*, 2016). The previous study by Muchlisin *et al.* (2017b) have been successfully recorded 11 species of freshwater fishes from this region. Hence, a total of 88 species of marine and freshwater fishes were documented from Simuelue Island.

The results showed that Serranidae or common name groupers is a predominant group of fishes in Simeulue Island waters, this is the commercial important of fishes (Jaafar *et al.*, 2012; Blaber *et al.*, 2005; Bulanin *et al.*, 2017a). Several species of groupers have been successfully cultured and studies intensively worldwide (Ruckert *et al.*, 2009; Solis *et al.*, 2013; Puebla *et al.*, 2014; Bulanin *et al.*, 2017b). This study indicate that Simeulue Island has a big potency as center for marine culture in Indonesia, because this island has higher diversity of commercial marine fishes

which have potency to be cultured, for example within the group of Serranidae and Lutjanidae. Beside, the Simeulue Island has many appropriate sites for floating cages nets for fish culture (Purnawan *et al.*, 2015).

CONCLUSION

A total of 7 orders, 26 families, 54 genus and 77 species of marine fishes were recorded in Simeulue Island waters. Serranidae and Lutjanidae are predominant based on number of species.

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Appendix. The list of order, family, genera dan species of fishes in Simeulue Island

Ordo	Family	Spesies
Clupeiformes	Clupeidae	<i>Amblygaster Sirm</i>
		<i>Sardinella fimbriata</i>
	Dussumieriidae	<i>Dussumieria elopsoides</i>
	Engraulidae	<i>Stolephorus indicus</i>
Elopiformes	Megalopidae	<i>Megalops cyprinoides</i>
Gonorynchiformes	Chanidae	<i>Chanos chanos</i>
Mugiliformes	Mugilidae	<i>Crenimugil heterocheilos</i>
		<i>Liza melinoptera</i>
Perciformes	Ambassidae	<i>Ambassis miops</i>
	Apogonidae	<i>Apogon lateralis</i>
	Gobiidae	<i>Periophthalmus kalolo</i>
	Caesionidae	<i>Caesio cuning</i>
		<i>Pterocaesio tile</i>
	Carangidae	<i>Carangoides malabaricus</i>
		<i>Caranx ignobilis</i>
		<i>Caranx papuensis</i>
		<i>Caranx sexfasciatus</i>
		<i>Decapterus macrosoma</i>
		<i>Elagatis bipinnulata</i>
		<i>Gnathanodon speciosus</i>
		<i>Megalaspis cordyla</i>
		<i>Selaroides leptolepis</i>
	Coryphaenidae	<i>Coryphaena hippurus</i>
	Labridae	<i>Anampses caeruleopunctatus</i>
		<i>Stethojulis bandanensis</i>
	Lethrinidae	<i>Gymnocranius frenatus</i>
		<i>Lethrinus lentjan</i>
		<i>Monotaxis grandoculis</i>
	Lutjanidae	<i>Aphareus rutilans</i>
		<i>Aprion virescens</i>
		<i>Etelis carbunculus</i>
		<i>Lutjanus argentimaculatus</i>
		<i>Lutjanus bohar</i>
		<i>Lutjanus campechanus</i>
		<i>Lutjanus fulviflamma</i>

	<i>Lutjanus gibbus</i>
	<i>Lutjanus lemniscatus</i>
	<i>Lutjanus maxweberi</i>
	<i>Lutjanus russellii</i>
	<i>Pristipomoides multidens</i>
	<i>Pristipomoides typus</i>
Mullidae	<i>Mulloidichthys vanicolensis</i>
	<i>Upeneus vittatus</i>
Nemipteridae	<i>Nemipterus nemurus</i>
	<i>Parascolopsis eriomma</i>
	<i>Pentapodus caninus</i>
	<i>Scolopsis vosmeri</i>
	<i>Scolopsis xenochroa</i>
Pomacentridae	<i>Dischistodus chrysopoecilus</i>
	<i>Pomacentrus sp.</i>
	<i>Pomacentrus tripunctatus</i>
Priacanthidae	<i>Priacanthus blochii</i>
	<i>priacanthus hamrur</i>
Scatophagidae	<i>Selenotoca papuensis</i>
Scombridae	<i>Euthynnus affinis</i>
	<i>Grammatorcynus bilineatus</i>
	<i>Scomberomorus guttatus</i>
	<i>Thunnus albacares</i>
Serranidae	<i>Aethaloperca rogaa</i>
	<i>Cephalopholis miniata</i>
	<i>Cephalopholis microprion</i>
	<i>Cephalopholis sonnerati</i>
	<i>Cephalopholis urodeta</i>
	<i>Epinephelus areolatus</i>
	<i>Epinephelus bleekeri</i>
	<i>Epinephelus fasciatus</i>
	<i>Epinephelus lanceolatus</i>
	<i>Epinephelus quoyanus</i>
	<i>Epinephelus trimaculatus</i>
	<i>Plectropomus leopardus</i>
	<i>Variola albimarginata</i>
	<i>Variola louti</i>
Siganidae	<i>Siganus vermiculatus</i>

	Sphyraenidae	<i>Sphyraena barracuda</i>
		<i>Sphyraena novaehollandiae</i>
Rhinopristiformes	Rhinidae	<i>Rhyncobatus</i> sp.
Squaliformes	Centrophoridae	<i>Centrophorus</i> sp.

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