

Research Article

Crustaceans of Lendang Luar Beach, Northern Lombok

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Abstract: Lendang Luar Beach is a seagrass meadow area with sandy and rocky substrates located in northern Lombok. This beach has a lot of biota diversity including crustaceans. This research was conducted from June to July 2022. The purpose of this study was to determine the diversity of crustaceans in Lendang Luar Beach. Crustaceans have been observed using a purposive sampling method with hand sampling collection. Based on the research results, there were seven families including 11 species, they are *Alpheus heterochaelis*, *Alpheus* sp., *Calappa japonica*, *Calappa ocellata*, *Libinia emarginata*, *Panulirus versicolor*, *Percnon gibbesi*, *Charybdis annulate*, *Xanto pilipes*, *Atergatis floridus*, and *Zosimus aenus*. The most dominant species is *Alpheus* sp. where it was collected in rocky areas.

Keywords: *Crustaceans, Lendang Luar, Northern Lombok*

INTRODUCTION

Lombok is one of the main islands in Lesser Sunda archipelago which has a coastline length 2,333 km. Lombok has a high marine biodiversity fauna with high economical value [1]. The potential of coastal areas of Lombok is as a marine tourism sector, one of them is Lendang Luar Beach which is located in northern Lombok. One of the coastal community activities in Lendang Luar Beach is madaq (hunting of edible marine fauna such as molluscs and crustaceans). Madaq activity usually has been conducted by the coastal community during low tide sessions.

As one of the faunal that is hunted during madaq activity, the diversity and abundance of crustacea in Lendang Luar will be reduced. This study aimed to record the diversity of crustaceans in Lendang Luar beach. Crustaceans could be found in seagrass ecosystems, coral rocks, rocky beaches, and sandy substrates. Crustaceans are an important fauna of coastal ecosystems, burrowing the sediment to make nests. These activities have high ecological value and increase air circulation in the sediment to prevent the formation of phytotoxins such as Hydrogen Sulphide (H₂S) [2].

METHOD

Crustaceans were collected in coastal area of Lendang Luar Beach (08o27'41.6"S – 08o27'49.7"S and 116o02'08"E – 116o02'09.3"E), northern Lombok from June to July 2022 (Figure 1). The coastal area of Lendang Luar comprises three types of habitats. They are sandy, seagrass, and dead coral/ rocky areas. Crustaceans were collected using hand (direct capture) during low tide session using purposive sampling method with free sample collection. In rocky

areas, the dead coral are lifted, turned over, and broken to find the crabs and shrimps. Each species caught were photographed, several of them were collected and identified using the Field Guide to Lombok [3] and Tropical Pacific Invertebrates [4]. Identification processes were conducted at Biology Lab of Mathematics and Natural Sciences Faculty, University of Mataram.

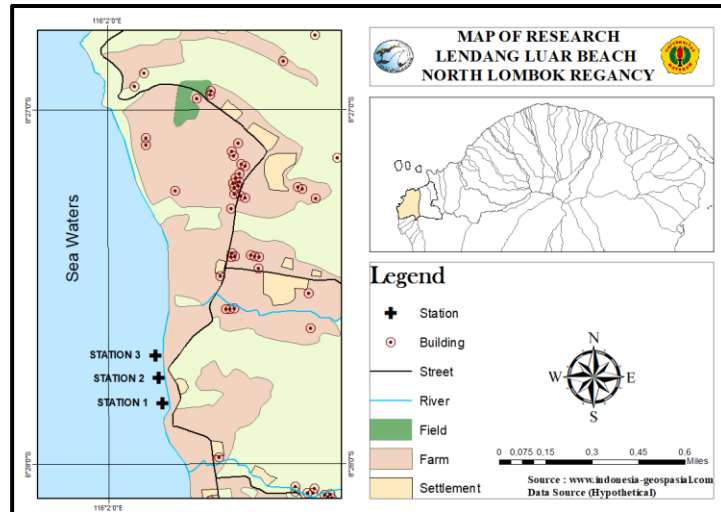


Figure 1. Research Map of Crustacean Sampling

RESULTS AND DISCUSSION

We recovered 34 individuals of crustaceans comprising three species of shrimps and eight species of crabs in total nine genera and seven families from Lendang Luar beach. The seven families are Alpheidae, Calappidae, Epialtidae, Palinuridae, Percnidae, Portunidae, and Xanthidae (Table 1).

Table 1. Records of Crustaceans in Lendang Luar Beach

Family	Species	Habitats	N
Alpheidae	<i>Alpheus heterochaelis</i>	Rocky/ Dead Coral	5
	<i>Alpheus sp.</i>	Rocky/ Dead Coral	7
Calappidae	<i>Calappa japonica</i>	Rocky/ Dead Coral	1
	<i>Calappa ocellata</i>	Rocky/ Dead Coral	1
Epialtidae	<i>Libinia emarginata</i>	Rocky/ Dead Coral	5
Palinuridae	<i>Panulirus versicolor</i>	Sandy	2
Percnidae	<i>Percnon gibbesi</i>	Rocky/ Dead Coral	4
Portunidae	<i>Charybdis annulate</i>	Sandy	1
Xanthidae	<i>Atergatis floridus</i>	Sandy	1
	<i>Zosimus aenus</i>	Rocky/ Dead Coral	6
	<i>Xanto pilipes</i>	Rocky/ Dead Coral	1

Alpheidae is a family of caridean snapping shrimp characterized by having asymmetrical claws. These shrimps have special claws that are shaped like a gun useful for protecting themselves from predators. These claws can spray water that makes a loud sound like the snap of a human finger. This is caused by friction or a strong valve from the tip of the large claw [5]. In this study, we found two species of Alpheidae (*Alpheus heterochaelis* and *Alpeus sp.*) which were burrowing in the sandy substrate and hiding under rocks to find food and clean themselves of dirt



attached to their bodies, especially the head and tail. This gun shrimp cannot be consumed because it is small and has almost no meat.

The family Palinuridae are commonly known as spiny lobsters or langoustes. The spiny lobster found in Lendang Luar is *Panulirus versicolor*. This species is nocturnal solitary crustacean which usually hides under dead coral [6]. *Panulirus versicolor* could also be found burrowing in sandy substrate near the rocks to protect him from waves, hiding places from predators and their foraging area. Palinuridae are omnivores that prey on small fish, molluscs, small crustaceans, worms and algae. *Panulirus versicolor* is very colorful with antennae in the base and sides of the carapace are pink. This lobster has high economic value because of human consumption.

Calappidae are often known as “Box Crabs” or “shame-faced crabs” because these crabs can hide their legs on the front of the carapace, so it has a unique body shape like a box or they look like they are shy [7]. These crabs usually live in rocky substrate, two species have been collected in Lendang Luar beach are *Calappa japonica* and *Calappa ocellata*. Calappa crabs do not have swimming legs, and often hide the legs under the body resembling a box. Several species of these crabs have economic value and could be consumed such as *Calappa philargius* and *Ashtoret Lunar*.

The Epialtidae are also known as spider crabs because they have long legs. One spider crab found in Lendang Luar beach is *Libinia emarginata*. This crab belongs to the decorator crab, which is a species that wraps itself in debris and small invertebrates. This crab usually lives under coral rocks.

Percnon gibbesi is a species of the Percnidae family. *Percnon gibbesi* lives exclusively among coral rocks. This type of crab has a colorful pattern so it is not difficult to find it under the rocks. *Percnon gibbesi* is commonly eaten by fish and invertebrates. *Percnon gibbesi* is a type of herbivorous crab that uses its chelae to catch pieces of macroalgae floating in the water or to tear pieces of macroalgae attached to large rocks.

Portunidae is a family of crabs which contains swimming crabs. These crabs are characterized by the flattening of the fifth pair of legs into broad paddles, which are used for swimming faster to escape from predators [8]. The other character is that the first pair legs have strong and sharp claws, allowing them to be fast and aggressive predators. Portunidae inhabited muddy, sandy, or rocky substrates. One species of Portunidae recorded in Lendang Luar is *Charybdis annulata*. Charybdis is one of the largest genera of the family Portunidae. This genera was characterized by the narrower of margin than the widest part of the carapace, and the anterolateral edge is curved and oblique with 6-10 anterolateral teeth.

Family Xanthidae is a family of crabs that live on sandy substrates and hide behind rock fragments. Xanthidae live in the crevices of coral rocks by gripping the rocks using their strong claws [8]. The species of this family usually have brightly coloured on carapace and pawn as sign highly poisonous. Three species found in Lendang Luar. They are *Atergatis floridus*, *Xanto pilipes* and *Zosimus aeneus*. This crab species does not have swimming legs, meaning it only has legs to walk on sand and can even climb trees. The species of *Zosimus aeneus* and *Atergatis floridus* are highly toxic and could be causing death in humans. Its venom is similar to the tetrodotoxin of puffer fish.

Based on observation in the field, the characteristic habitat of crustaceans in Lendang Luar are sandy and coral rock substrates. Most of the species are found in dead coral reefs which are their natural habitat, it makes them easy to forage and hide from predators. During the sampling period, we only found 11 species of crustaceans with low abundance.

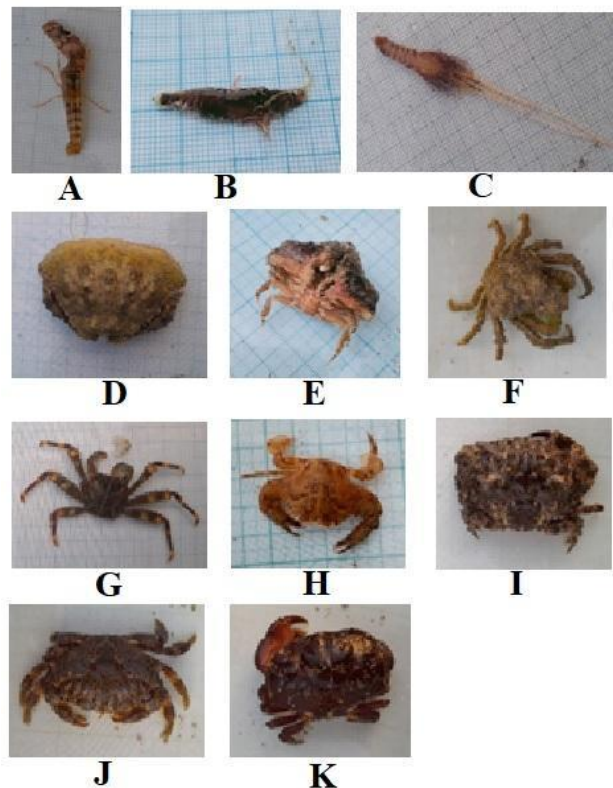


Figure 2. Crustaceans have been collected il Lendang Luar Beach. (A) *Alpheus heterochaelis*, (B) *Alpheus* sp, (C) *Panulirus versicolor*, (D) *Calappa japonica*, (E) *Calappa ocellata*, (F) *Libinia emarginata* (G) *Percnon gibbesi*, (H) *Charybdis annulata*, (I) *Xanto pilipes*, (J) *Zosimus aeneus*, and (K) *Atergatis floridus*.

CONCLUSION

Based on the results of research in Lendang Luar beach, northern Lombok, we found seven families including to 11 species of crustaceans, they are Palinuridae (*Panulirus versicolor*), Xanthidae (*Zosimus aeneus*, *Xanto pilipes* and *Atergatis floridus*), Portunidae (*Charybdis annulata*), Calappidae (*Calappa japonica*, *Calappa ocellata*), Epialtidae (*Libinia emarginata*), Percnidae (*Percnon gibbesi*), and Alpheidae (*Alpheus heterochaelis*, *Alpheus* sp.). The most frequently encountered species is *Alpheus* sp. who habituated the rocky habitat.

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