

## THE RESOURCES OF SPINY LOBSTER (*Panulirus spp*) IN SOUTHERN COASTAL WATERS OF BULUKUMBA REGENCY

Musbir<sup>1)</sup>, Sudirman<sup>2)</sup>, and Ridwan Bohari<sup>3)</sup>

Universitas Hasanuddin

[musbir\\_unhas@yahoo.co.id](mailto:musbir_unhas@yahoo.co.id)

### ABSTRACT

*There is availability of diverse Spiny lobster (*Panulirus spp*) resources in the southern coastal waters of Bulukumba, South Sulawesi. The lobster is one a potential important economic fisheries commodity in Indonesia. The main objective of the study was to find out the total catch of spiny lobster, the monthly catch number, and the catch percentage of fishing gear. The study was conducted from January to June 2016 in southern coastal waters of Bulukumba. The methods of study was an experimental fishing with using three fishing gears including bottom gillnet, rectangular trap, trapnet. The size of bottom was gillnet with 1000 m (10 pieces) length, 1.5 m height, 4-6 inch in mesh size. The netting twine was a monofilament with a number of 60 and mesh size 4-6 inch. The size of rectangular trap was 120 cm in length, 70 cm in width and 30 cm in height. The size of trap net was 75 cm in length, 50 cm in width and two layers a monofilament net with mesh size 5.5 inch. A ten fishing units used for each fishing gear. The result of study shows that the total catch of spiny lobster was 554 pieces. The monthly catch number was January 72, Pebruary 108, March 88, April 68, May 164, June 54 pieces. The catch percentage was 93.1 % was caught by gill net, 4.5 % by rectangular trap and 2.4 % by trap net. Five commercially important species of spiny lobsters, *Panulirus ornatus*, *P. versicolor*, *P. homarus*, *P. penicillatus*, and *P. longipes* are present in the location.*

**Keywords:** *Spiny lobster, bottom gillnet, rectangular trap, trap net, coastal waters*

### INTRODUCTION

Spiny lobsters of the family Palinuridae are found throughout tropical and temperate seas, where they are of considerable ecological and economic importance (Lipcius & Eggleston 2000; Freitas & Castro. 2005; Kizhakudan & Patel, 2010; Pérez-González, R.,2012; Vijayakumaran, et al., 2012).

In the coastal waters of Bulukumba, lobsters are mainly caught bottom gill net as the most common fishing gear. The lobsters are also caught with trammel nets, traps. Bottom set gillnet is common being used for lobster collection. The fishermen prefer spearing method for catching lobster over gillnet to avoid damage to the net. Although this area is considered to be a potentially

important ground for lobster fisheries, there are no organized fisheries for lobsters.

As this species has become an economic value to the market, hence it sufficient data and information on the resources of this species are needed. However, previous studies indicate that there is no up-to date us information can be shared in terms fishery of *Panilirus* especially in Bulukumba. The main objective of the study was to find out the total catch of spiny lobster, the monthly catch number, and the catch percentage of fishing gear from Bulukumba coastal water of Indonesia.

## MATERIALS AND METHODS

### *Study Area*

The study was conducted from January to June 2016 in southern coastal waters of Bulukumba, South Sulawesi, Indonesia. For management purposes, the South Sulawesi marine is divided into three fishing zones according to geographical location including : Makassar Strait, Flores Sea and Bone Bay. The lobster fishery takes place in these three areas, in shallow waters, where the sea floor is sandy with rocks and coral reefs. This study focuses on the spiny lobster population inhabiting the southern area coastal waters of the Bulukumba, South Sulawesi. Commercial fishing for lobster is carried out primarily in the shallow waters (3-30 m) an area between the barrier reef. Lobster fishing is done exclusively by free.

### *Fishing boats and gathering houses*

There are currently 30 boats participating in the Bulukumba lobster fishery during this study. The majority of the fleet consists of wood but some of the fleet consists of plastic boats, which are made of glass-reinforced fiber. One particular characteristic of the lobster boats is the presence of holds in their hulls. They have a lot of holes, which facilitate water circulation and keep the lobsters inside alive and properly oxygenated the whole way from the fishing grounds to the gathering house where they are landed. The gathering houses are located on beach and surrounded by water. They have pond where the lobsters are kept until they can be transported to the industries inland. This procedure guarantees the freshness of the lobsters and increases the quality of the final product.

### *Fishing gears*

The main fishing gears currently used in the lobster fishery in Bulukumba are bottom gillnet, rectangular trap, and trap net. The rectangular trap-like gear wire and have large leader nets (about 50 m long) attached at the two front corners in a V-pattern. They are placed in the sea singularly or several together in a zigzag pattern during the migratory season. The level of catchability and the size of spiny lobsters caught in different gears.

The methods of study was an experimental fishing with using three fishing gears including bottom gillnet, rectangular trap, trap net. The size of bottom gillnet was 1000 m (10 pieces) length, 1.5 m height, 4-6 inch in mesh size. The netting twine was a monofilament with a number of 60 and mesh size 4-6 inch. The size of rectangular trap was 120 cm in length, 70 cm in width and 30 cm in height. The size of trap net was 75 cm in length, 50 cm in width and two layers a monofilament net with mesh size 5.5 inch. A ten fishing units used for each fishing gear.

## RESULTS AND DISCUSSION

A wide variety of fishing gears are employed for catching lobsters. They vary in design, fabrication and mode of operation from place to place. fishing for lobsters In Bulukumba with gill net was successful and prevalent when the lobster population was very dense. Bottom set nets generally used for catching lobsters The nets are lowered and set at the bottom with a marker float and long buoy line at the beginning of the first piece and at the end of last piece.

The result of study show that from three kinds of fishing gears of spiny lobster including bottom gillnet, rectangular trap, trap net, that the bottom gill net caught a highest catch per unit effort. Fishing using

gillnet and trammel nets has led to damage to the resource by exploitation of undersize lobsters. Though trap fishing is an eco friendly method compared to bottom gill net

fishing, the composition of the catch with more of younger lobsters would have prompted him to suggest enforcement of a minimum size limit for the lobster fishery.

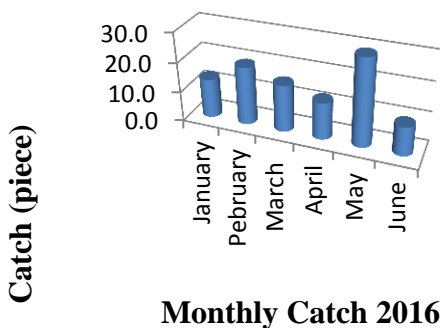


Figure 1. The monthly catch number of spiny lobster in southern coastal waters of Bulukumba.

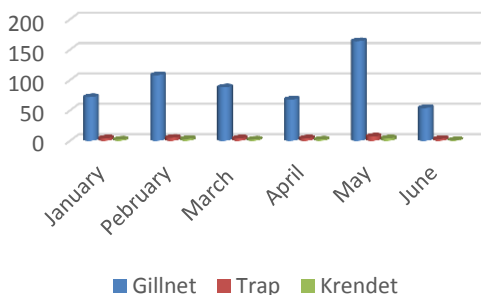


Figure 2. The percentage catch perunit effort of base on fishing gear

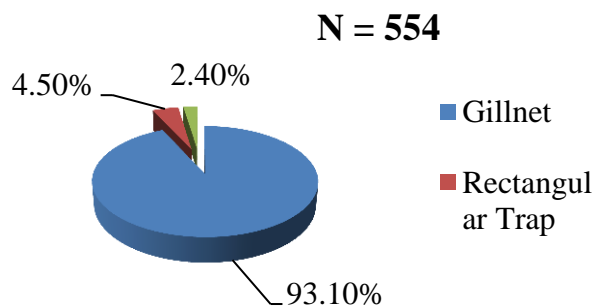


Figure 3. The percentage catch perunit effort of base on fishing gear

The lobster landings between January to June 2016 were estimated as 554 consist of . *P. ornatus* (ornate spiny lobster), *P. versicolor* (painted spiny lobster), *P. homarus* (scalloped spiny lobster), *P. penicillatus* (pronghorn spiny lobster), and *P. longipes* (long-legged spiny lobster) are common.

This study shows that *P. ornatus*. *P. versicolor* are abundant in southern coastal waters of Bulukumba. and is caught in gillnets, which is mainly operated in shallow waters. The observed pattern is consistent with information referred to by several authors who have studied habitat of the lobster fauna in other regions. *P. homarus* is a shallow water species and no movement or migration of egg bearing lobsters to deeper areas was evident. However, the egg bearing females in the catch during this period probably indicates breeding by *P. ornatus*.

The southern coastal waters of Bulukumba have vast near shore coral reefs and rocky bottoms, which are suitable habitats of spiny lobsters. Hence, Bottom-set gillnet is being used for lobster catching in southern coastal waters of Bulukumba. the fishermen prefer spearing method for catching lobster over gillnet to avoid damage to the net.

In this study, we observed that the fishermen set their nets close to the coast, the preferred habitat of *P. ornatus* (0.5-8.0 m depth), whereas the nets were deployed offshore over gravel-sandy bottoms at depths between 8.0 and 25- 35.0 m (the habitat of *P. homarus*). The fishermen deployed their nets on the type of bottom



where *P. ornatus* is more abundant to select for this species.

*P. ornatus* feeds on a wide range of animal food (MacFarlane and Moore, 1986).. However, the preferred food is the mussel which is available in plenty. The lobster ground is also known for lucrative mussel fishery. *P. ornatus* prefer rocky habitats with the associated flora and fauna of sea grass, algae, sea urchins, sponges and mollusks for settlement. There seems to be a close fauna association of lobster with sea urchins to be a good food for larger lobsters.

High demand for lobster drives high fishing effort, often resulting in declining harvest (Herrnkind, 2007). Information regarding biological features can be used to established guidelines for legalization of a great number of fishery resources for sustainable development and rational exploration of resources (Ikhwanuddin *et al.*, 2014).

#### ACKNOWLEDGEMENT

This research was supported by a grant from Ministry of Research, Tecnology and High Education of Republic of Indonesia. Researchers also wishes express their sincere gratitude to the lobster wholesaler for offering the lobster specimens and to thea nonymous referees for their valuable comments. We express our gratitude to the crews of the artisanal boats Ansar, Idris, Rustam, Sese, Pudding for their kindness during the on-board sampling. We also thank Senior Scientist, for his constant guidance for writing this paper.

#### REFERENCES

Coutures, E. 2000. Distribution of phyllosoma larvae of Scyllaridae and Palinuridae (Decapoda: Palinuridea) in the south-western lagoon of New

Caledonia. Marine and Freshwater Research 51, 363–369.

Freitas, R. & M. Castro. 2005. Occurrence of *Panulirus argus* (Latreille, 1804) (Decapoda, Palinuridae) in the northwest Islands of the Cape Verde Archipelago (central-east Atlantic). Crustaceana, 78(10): 1191- 1201.

George R.W. 1974. Coral reefs and rock lobster ecology in the Indo-West Pacific region. International Coral Reef Symposium 1, 321–325.

Holthuis L.B. 1991. Marine lobsters of the world. Food and Agriculture Organization of the United Nations (FAO) species catalogue volume 13. FAO: Rome.

Herrnkind, W.F. D. 2007. Artificial Shelters for Clawed and Spiny Lobsters: A Critical Review of Enhancement Efforts. American Fisheries Society Symposium 49,587-594.

Ikhwanuddin,M., S.N. Fatihah, J.R. Nurul, M.Z. Zakaria and A.B. Abol-Munafi. 2014. Biological Features of Mud Spiny Lobster, *Panulirus polyphagus* (Herbst, 1793) from Johor Coastal Water of Malaysia. World Applied Sciences Journal 31 (12): 2079-2086.

Kizhakudan, J.K. and S.K. Patel, 2010. Size at maturity in the mud spiny lobster *Panulirus polyphagus* (Herbst, 1793). J. Mar. Boil. Ass. India, 52(2): 170-179.

Lipcius, R. N.; Eggleston, D. B. 2000: Ecology and fishery biology of spiny lobsters. In: Phillips, B. F.; Kittaka, J. ed. Spiny lobsters: fisheries and



culture. Oxford, Fishing News Books.  
Pp. 1–41.

MacFarlane, J.W. and R. Moore. 1986.  
Reproduction of the ornate rock  
lobster, *Panulirus ornatus* (Fabricius),  
in Papua New Guinea. Aus. J. Mar.  
Freshwat. Res., 37: 55-65.

Pérez-González, R.,2012. Catch  
composition of the spiny lobster  
*Panulirus gracilis* (Decapoda:  
Palinuridae) off the western coast of  
Mexico. Lat. Am. J. Aquat. Res.,  
39(2): 225-235.

Vijayakumaran, M., A.Maharajan, S.  
Rajalakshmi, P. Jayagopal, M. S.  
Subramanian, and M. C. Remani.  
2012. Fecundity and viability of eggs  
in wild breeders of spiny lobsters,  
*Panulirus homarus* (Linnaeus, 1758),  
*Panulirus versicolor* (Latrielle, 1804)  
and *Panulirus ornatus* (Fabricius,  
1798). Journal of the Marine  
Biological Association of India Vol.  
54, No.2: 5-9.