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Original article

Food Habits of *Eriphia Verrucosa (Eriphiidae)* and *Pachygrapsus marmoratus (Grapsidae)* in the Mediterranean Coast of Eastern Libya in Sosa

Hind Abdrabba*, Ayiman Faraj

Department of Marine Science, Omar Al-Mukhtar University, Albaida, Libya

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Corresponding Email. *hend.abdrabba@omu.edu.ly*

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ABSTRACT

The current study aims to determine the type and abundance of food for two species of crabs, Pachygrapsus marmoratus and Eriphia verrucosa, that inhabit the rocky beaches in the south. Mediterranean coast. A total of 40 crabs of each species collected during 2022 were used. We found that P. marmoratus and Eriphia verrucosa are carnivores, meaning they feed on what is available in their environment. Gastric fullness was determined. Food availability in habitats. The abundance of food in the stomach varies according to varieties, but the general trend was molluscas and crustaceans > Cnidarians > Algae > Seaweed > Fish; this is for the Pachygrapsus crab. Marmoratus, but the general trend was molluscas and cnidarians > And fish > Seaweed > And crustaceans > And algae. This is for the crab Eriphia verrucosa. This study provides information on the abundance and type of food by examining the stomach and knowing the percentage of its fullness and the type and abundance of food in the stomach.

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INTRODUCTION

Crabs are small to medium-sized crustaceans in the order Decapod. It is flattened and protected by a waterproof exoskeleton made of chitin [1, 2]. They have two claws. Crabs live at the bottom in marine and salty areas. Water, and some of them live in semi-terrestrial areas [3]. Crabs feed on waste and carnivorous animals. Crabs provide food for many of the animals that live with them. Crabs have 5 pairs of walking legs, the first of which is chelicerae (ending in pincers), and this pair of claws is much stronger than the others [4,5]. Crabs have a distinctive dorsoventrally flattened body, often wider than long, and are able to move laterally in all directions. Adult males and females are distinguished by the shape of their abdomen. In females it is broad, usually semicircular to U-shaped, while in males the abdomen is triangular to broad V-shaped, with part of the abdominal surface covered for egg-laying [6].

The marbled rock crab, *Pachygrapsus marmoratus* of the family Grapsidae, is common on the rocky shores of the southern Mediterranean coast [7,8]. The warty crab *(Eriphia verrucosa)* lives in shallow water. Crabs are distributed along tropical rocky coasts and many temperate regions. *E. verrucosa* has been found In the Mediterranean Sea and the eastern Atlantic Ocean from Britain to Mauritania [9,10]. This study was conducted to identify the food habits of two types of crabs on the eastern Libyan coast.

METHODS

Study setting

The crabs *Pachygrapsus marmoratus* and *Eriphia verrucosa* used in this study were collected from rocks. Susa (21° 58' 34"E, 31° 53' 32"N) in eastern Libya.
They are small fish landing inlets typical of those spread along the southern Mediterranean seacoast.

Sample collection

About 40 *P. marmoratus* and *Eriphia verrucosa* samples were randomly selected. rocky beaches at Sosa between February and March of 2022. *P. marmoratus* and *Eriphia verrucosa* were classified together as crabs. After being carefully removed from the rocky shoreline and put in preservation boxes, they were brought to the research lab. Find out what foods and nutrition cancer patients eat. Visual estimation was used to determine each crab's percentage of stomach fullness, as per [11]: empty (about 0% full), trace (<25% full), quarter full (approximately 25% full), half full (approximately 50% full), three-quarters full (approximately 75% full), and entirely full (approximately 100% complete). Subsequently, the various crabs' stomach contents were transferred into distinct Petri plates, each holding a modest volume of water. Under a dissecting microscope, it is studied. The point-and-repeat method of occurrence produced nutrients both quantitatively and qualitatively [12]. It was determined what proportion of each sort of food was abundant in the stomach. In the months of February and March, the study site's sandy beaches were visually inspected. *P. marmoratus* and *Eriphia verrucosa* food availability and predicted abundance for the year 2022.

RESULTS

Qualitative and quantitative analysis of digestive tract contents

Pachygrapsus marmoratus

The stomach contents of marbled crab samples were analyzed, and the percentage of stomach fullness was found to be less than 25% in 5 samples. The percentage of stomach fullness was 25% in 4 samples. The percentage of stomach fullness was 50% in 18 samples. The percentage of stomach fullness was 75% in 10 samples. The percentage of stomach fullness was 100% in 3 samples. The rock crab's diet consists mainly of molluscas, crustaceans, and cnidarians, at 40, 30, and 12%, respectively. Algae was consumed by 8%, seaweed by 5%, and fish by 5%.

Eriphia Verrucosa (Eriphiidae)

The stomach contents of yellow crab samples were analyzed, and the percentage of stomach fullness was found to be less than 25% in 2 samples. The percentage of stomach fullness was 25% in 4 samples. The percentage of stomach fullness was 50% in 8 samples. The percentage of stomach fullness was 75% in 12 samples. The percentage of stomach fullness was 100% in 14 samples. The yellow crab's diet consists mainly of molluscs, cnidarians, and fish, at 30, 20, and 20%, respectively. Seaweed was consumed at a rate of 15%, crustaceans at a rate of 10%, and algae at a rate of 5%.

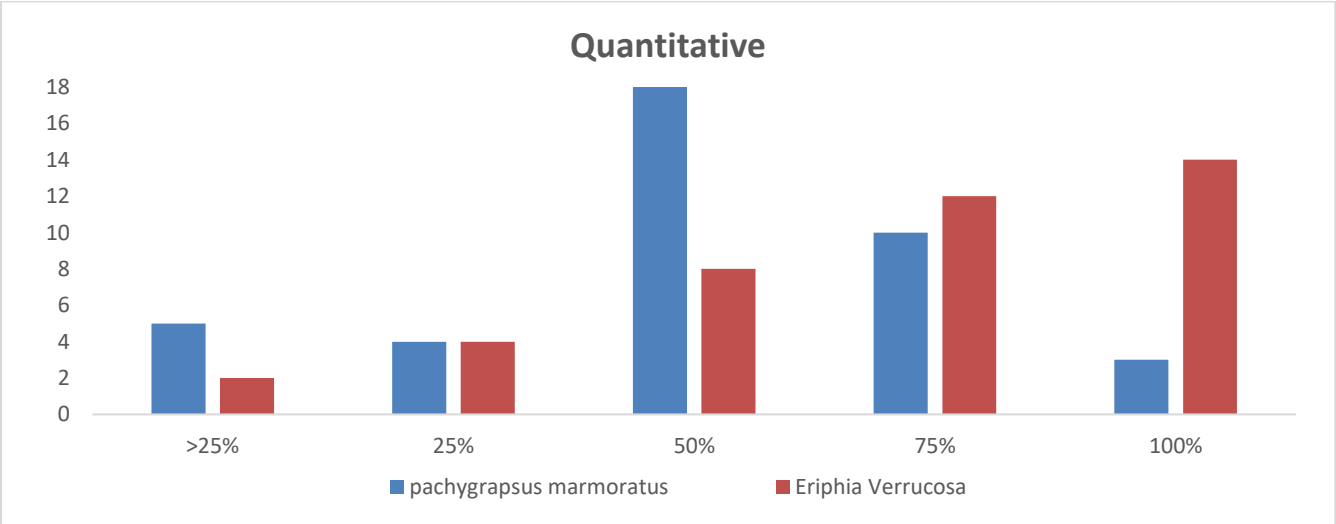

Figure 1. Quantitative analysis of digestive tract contents for Pachygrapsus marmoratus and Eriphia verrucosa (Eriphiidae)

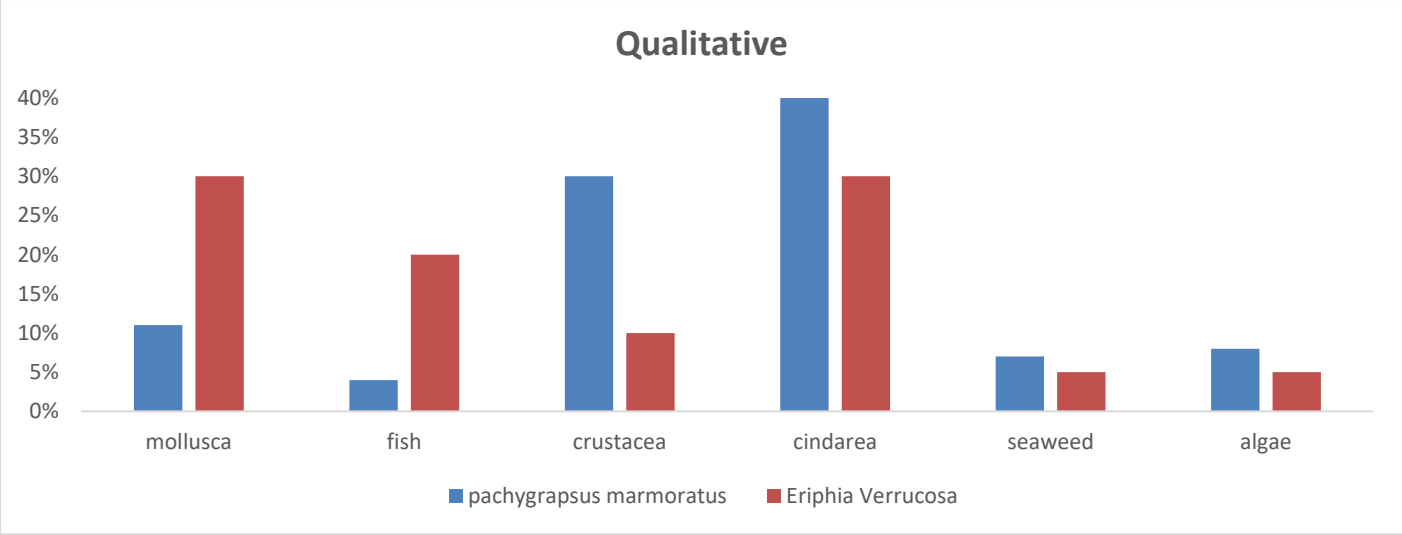

Figure 2. Qualitative analysis of digestive tract contents for Pachygrapsus marmoratus and Eriphia verrucosa (Eriphiidae)

DISCUSSION

Food abundance by species in *P. marmoratus's* stomach was examined in this study. It originated from the cnidarians and algal order, which was followed by the crustaceans, molluscas, and seaweed in that order. It was Cnidarians, mostly represented by sea anemones, microalgae for algae, and bivalves for molluscas. and seaweeds, primarily as filamentous algae, as well as gastropods, shallow subterranean investigations.

The study sites' intertidal zones revealed a high concentration of cnidarians. According to this study, the majority of food found in the rock crab's stomach was made up of molluscas, followed by crustaceans, cnidarians, algae, and seaweed, with trace amounts of fish. Sea anemones are the representatives of cnidarians, filamentous algae are the representatives of algae, and bivalves are the representatives of molluscas. First and foremost was the type of food that was abundant in the yellow crab's stomach. Fish come first, molluscas, then cnidarians. Seaweed, crabs, and algae are a tiny proportion behind that, determined from earlier research that the physiochemical characteristics of the surrounding environment, such as pH, salinity, winds, tides, temperature, and nutrients, as well as Predatory and grazing practices, human activity, the pollution it causes, and the illogical use of resources, all play a role in the intertidal and coastal biota's diversity. These variables fluctuate in space and time.

Animals living in the intertidal zone, like P. marmoratus in our study, obtain meal from their surroundings. Numerous among these creatures are feeds that are facultative, meaning they consume what is offered [13]. Previous study indicated that the Italian species of P. marmoratus is omnivorous and dependent on a variety of trophic sources according to their temporal availability in southwestern Europe [14]. An earlier study discovered that the stomach of *P. marmoratus* from the Egyptian shore of Alexandria included sediments, benthic invertebrates, and algae [15]. On the other hand, the current investigation did not find any sediments in the stomachs of *P. marmoratus*. According to the current study, food availability appears to have the biggest impact on the crab's stomach's level of fullness. The more food that is accessible, the more of it the crab will consume, filling his belly and accelerating his growth. Greater stomach fullness Previous research revealed that *P. marmoratus* feeding habits and tactics depended on environmental factors that influence the rate of food intake in addition to the type and quantity of food available in the habitat. Previous studies stated that environmental elements like temperature and salinity can affect the food and feeding patterns of marine creatures, with food intake decreasing at low temperatures and salinities [16-19].

CONCLUSION

Current studies offer fundamental knowledge on eating patterns and nutritional needs. Regarding the in site (Sousa) crabs *Pachygraps marmoratus* and *Eriphia verrucosa* Particularly in eastern Libya, the amount of food in the crab stomach varied depending on the type: Food accessibility within environments. While the amount of food in the stomach varied from species to species, there was a basic pattern that was unique to the crab Pachygrapsus: molluscas and crustaceans > cnidarians > algae > seaweeds > fish. *Marmoratus*, for the crab *Eriphia verrucosa*, the overall trend was molluscas and cnidarians > fish > seaweeds > crustaceans > algae.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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العادات الغذائية لسرطان البحر Eriphia Verrucosa (Eriphiidae) و Pachygrapsus marmoratus (Grapsidae)في ساحل البحر الأبيض المتوسط شرق ليبيا في سوسة

هند عبد ربه*، إيمان فرج

قسم علوم البحار، جامعة عمر المختار، البيضاء، ليبيا

المستخلص

تم تحليل محتويات معدة عينات السلطعون الرخامي،وجد نسبة امتلاء المعدة أقل من 25% في 5 عينات. وكانت نسبة امتلاء المعدة 25% في 4 عينات. وكانت نسبة امتلاء المعدة 50% في 18 عينة. وكانت نسبة امتلاء المعدة 75% في 10 عينات. وكانت نسبة امتلاء المعدة 100% في 3 عينات. يتكون النظام الغذائي لسلطعون الصخور بشكل أساسي من الرخويات والقشريات واللواسع بنسبة 40 و30 و12% على التوالي. تم استهلاك الطحالب بنسبة 8% والأعشاب البحرية بنسبة 5% والأسماك بنسبة 5%. تم تحليل محتويات معدة عينات السلطعون الأصفر،ووجد أن نسبة امتلاء المعدة أقلمن 25% في عينتين. بلغت نسبة الامتلاء في المعدة 25% في 4 عينات،وبلغت نسبة الامتلاء في المعدة 50% في 8 عينات،وبلغت نسبة الامتلاء في المعدة 75% في 12 عينة،وبلغت نسبة الامتلاء في المعدة 100% في 14 عينة. يتكون النظام الغذائي للسلطعون الأصفربشكل رئيسي من الرخويات، واللاسعات، والأسماك، بنسبة 30،و20،و20% على التوالي،وتم استهلاك الأعشاب البحرية بنسبة 15%،والقشريات بنسبة 10%،والطحالب بنسبة 5.%.

الكلمات المفتاحية. سرطان البحر، Pachygrapsusmarmoratus، Eriphia Verrucosa، الغذاء، عادات التغذية، جنوب البحر الأبيض المتوسط، شرق ليبيا.