



Community Structure of Fiddler Crabs (*Uca*) in the Mangrove Ecosystem of Lalombi Village, South Banawa District, Donggala Regency

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Abstract: This study aimed to analyze the community structure of fiddler crabs (*Uca*) in the mangrove ecosystem of Lalombi Village, South Banawa District, Donggala Regency, and to utilize the research findings as instructional media in the form of a flipbook. This ecological study employed a quantitative descriptive approach based on community structure analysis, with samples collected using purposive sampling. The parameters analyzed included species composition, density, the Shannon–Wiener diversity index, the Simpson dominance index, and the evenness index, along with environmental variables such as temperature, salinity, pH, and substrate type. The results showed that the fiddler crab community in the mangrove ecosystem of Lalombi Village consisted of five species, namely *Uca annulipes*, *Uca lactea*, *Uca forcipata*, *Uca tetragonon*, and *Uca dussumieri*. Abundance varied across sampling stations, and the overall diversity level was classified as low to moderate. The occurrence frequency of these five fiddler crab species was very low. The recorded densities were 6 ind/m² for *Uca annulipes*, 3 ind/m² for *Uca lactea*, 5 ind/m² for *Uca forcipata*, 7 ind/m² for *Uca tetragonon*, and 3 ind/m² for *Uca dussumieri*, with a low dominance index. The environmental physicochemical conditions recorded for fiddler crab habitat were a temperature of 30°C, water pH of 8.25, salinity of 31, and a muddy substrate type. Overall, the fiddler crab community structure in the mangrove ecosystem of Lalombi Village was relatively stable, characterized by low to moderate diversity, low dominance, and a clumped distribution pattern influenced by substrate conditions and mangrove density.

Keywords: Fiddler crabs (*Uca*); community structure; mangrove ecosystem

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INTRODUCTION

Mangroves are complex ecosystems composed of coastal flora and fauna that inhabit both terrestrial and marine environments, specifically in the zone between high and low tide. In addition to protecting coastlines from waves and wind, mangrove ecosystems also provide habitat for a wide range of organisms, including mammals, birds, fish, and crustaceans. One of the crustaceans commonly found in mangrove ecosystems is the fiddler crab.

Fiddler crabs are recognized as indicator species because of their sensitivity to environmental change (Smith & Jones, 2023). Ecologically, their bioturbation activity through burrow construction plays a vital role in nutrient cycling and sediment oxygenation in mangrove environments, which are typically anaerobic (Brown et al., 2022). They also serve an important function as detritivores, consuming organic detritus, while acting as bioindicators of sediment fertility through their bioturbation activity (Hasan, 2015). Morphologically, this crab is distinguished by sexual dimorphism in males; the movement of the smaller chela from the substrate to the mouth resembles a violinist drawing a bow, which is also the origin of its common name

(Actuti et al., 2019). Fiddler crabs tend to prefer denser substrates because such conditions provide stronger and safer burrow structures than soft substrates (Murniati & Pratiwi, 2015).

Environmental conditions in mangrove forests, particularly substrate texture and salinity, are major determinants of the persistence of fiddler crab communities (Syam et al., 2024). The community structure of fiddler crabs is characterized by a clumped spatial distribution pattern along the intertidal zone (Aslamyah et al., 2021). Population density within these communities varies considerably in the horizontal dimension, with the highest abundance of individuals generally concentrated in areas exposed to air for longer periods during low tide (Fitaloka et al., 2022). In addition, the community structure is marked by variation in carapace size, reflecting growth dynamics and the continued success of juvenile recruitment into the adult population (Pratama et al., 2022). Community structure, including density, diversity, and spatial distribution, is strongly influenced by the biophysical characteristics of the environment. Recent studies have shown that factors such as sediment texture, salinity, and the percentage of mangrove canopy cover are key determinants regulating fiddler crab zonation patterns (Numbere, 2023).

In the era of global climate change, pressures on fiddler crab community structure are increasing. Rising sea surface temperatures and alterations in tidal regimes have been reported to affect the reproductive behavior and metabolic rates of these decapods (Oonishi et al., 2023). In Indonesia, mangrove degradation caused by land-use conversion poses a serious threat, directly reducing habitat space and food availability for macrobenthos (Wicaksono et al., 2022).

Preliminary survey data collected in the mangrove ecosystem of Lalombi Village showed that fiddler crabs were distributed in muddy substrates. Based on these initial observations, several habitat characteristics were identified as potential drivers of fiddler crab community structure, including physical variables such as substrate or sediment texture, moisture, and mangrove cover, as well as aquatic environmental factors such as salinity, pH, and temperature. These findings provided the basis for conducting a study on the community structure of fiddler crabs (*Uca*) in the mangrove ecosystem of Lalombi Village, with the objectives of analyzing the community structure of fiddler crabs (*Uca*) and evaluating their potential as a flipbook-based learning medium. Although numerous studies have examined fiddler crab community structure in various mangrove ecosystems, specific studies on the community structure of *Uca* in the mangrove area of Lalombi Village remain limited.

Lalombi Village is one of the villages within the administrative area of South Banawa District, Donggala Regency, Central Sulawesi Province. This village is part of a coastal region and has frequently served as a research site for studies on mangrove coastal ecology and land use for agriculture and aquaculture. It is located in the coastal area of Donggala Regency, approximately 1 km from the district administrative center, around 32 km from the capital of Donggala Regency, and about 66 km from the provincial capital (Wahyuningsih, 2025). Lalombi Village, South Banawa District, Donggala Regency, still retains mangrove areas that remain ecologically functional, with an effective area of approximately 50 ha serving as habitat for mangrove biota and other associated organisms (Rauf et al., 2024).

This study is expected to provide information for local communities and university students regarding the community structure of fiddler crabs in Lalombi Village. Specifically, the study aims to accurately measure species composition, dominance level, and the diversity of fiddler crabs in Lalombi Village.

METHOD

Study Area and Research Design

This study employed an ecological survey using a quantitative descriptive approach based on community structure analysis and purposive sampling. Quantitative descriptive research is intended to explain phenomena systematically, factually, and accurately through the collection of numerical data (Sugiyono, 2020). In this study, the approach was used to examine the community structure of fiddler crabs (*Uca*) in the mangrove ecosystem of Lalombi Village, Banawa Selatan District, Donggala Regency.

The study was conducted in July 2025 in the estuarine mangrove area of Lalombi Village, Banawa Selatan District, Donggala Regency. The population comprised all fiddler crab species (*Uca*) inhabiting the study area. Sampling was carried out at three observation stations (Stations 1, 2, and 3), which were selected purposively to represent the mangrove ecosystem conditions of the study site.

Sampling Procedure

At each station, a 100 m line transect was established, with a distance of 100 m between adjacent stations. Sampling was conducted during the lowest low tide to facilitate the observation and collection of fiddler crabs. The timing of field sampling was determined based on local tidal conditions and information obtained from residents living around the sampling area (Murniati & Pratiwi, 2015).

Fiddler crabs encountered along each transect were collected manually using the hand-collection method. A 100 m raffia rope was used to mark each transect line. The collected specimens from each station were then recorded according to species and number of individuals for subsequent community structure analysis.

Species Identification

Species identification was carried out based on external morphological characteristics, including body size, carapace shape and coloration, chela morphology, and other distinguishing features. Identification referred to relevant taxonomic and morphological descriptions of fiddler crabs, particularly those provided by Murniati (2010) and Murniati and Pratiwi (2015). The species recorded in this study were *Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*.

Environmental Parameters

Environmental measurements were conducted in situ at each observation station. The measured physical and chemical parameters included water temperature, pH, salinity, and substrate type. Water temperature was measured using a thermometer, pH using a pH meter, and salinity using a refractometer, whereas substrate characteristics were determined through direct field observation.

The equipment used in this study included a shovel, GPS, thermometer, pH meter, refractometer, raffia rope, ruler, measuring tape, sample bottles, pens, camera, and laptop. The materials used were distilled water, 70% alcohol, fiddler crab specimens, gloves, tissue paper, and label paper.

Data Collection and Analysis

The data collected in this study were quantitative and consisted of species composition, abundance, frequency of occurrence, density, diversity index, dominance index, and morphological characteristics of fiddler crabs. Data sources included both primary data obtained directly from field observations and secondary data derived from relevant literature.

Community structure analysis was performed based on the number of individuals of each species recorded at each station. Species abundance was determined from the total number of individuals found at each station. Frequency analysis was used to determine the occurrence of each species within the observation area. Density was expressed as the number of individuals per unit area (ind/m^2). Species diversity was analyzed using the Shannon–Wiener diversity index (H'), while species dominance was assessed using the dominance index (C). The results were then presented descriptively in tables and narrative form to describe the community structure of fiddler crabs and the environmental characteristics of the mangrove ecosystem in Lalombi Village.

Data Presentation

The findings were presented descriptively, including the identification of fiddler crab species (*Uca*) of the family Ocypodidae, their distribution across observation stations, and the ecological indices used to characterize the community structure in the mangrove ecosystem of Lalombi Village, Banawa Selatan District.

RESULTS AND DISCUSSION

Species of Fiddler Crabs (*Uca*)

A total of five fiddler crab species (*Uca* spp.) were identified in the mangrove ecosystem of Lalombi Village, South Banawa District: *Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*. These five species are presented in Figure 1.

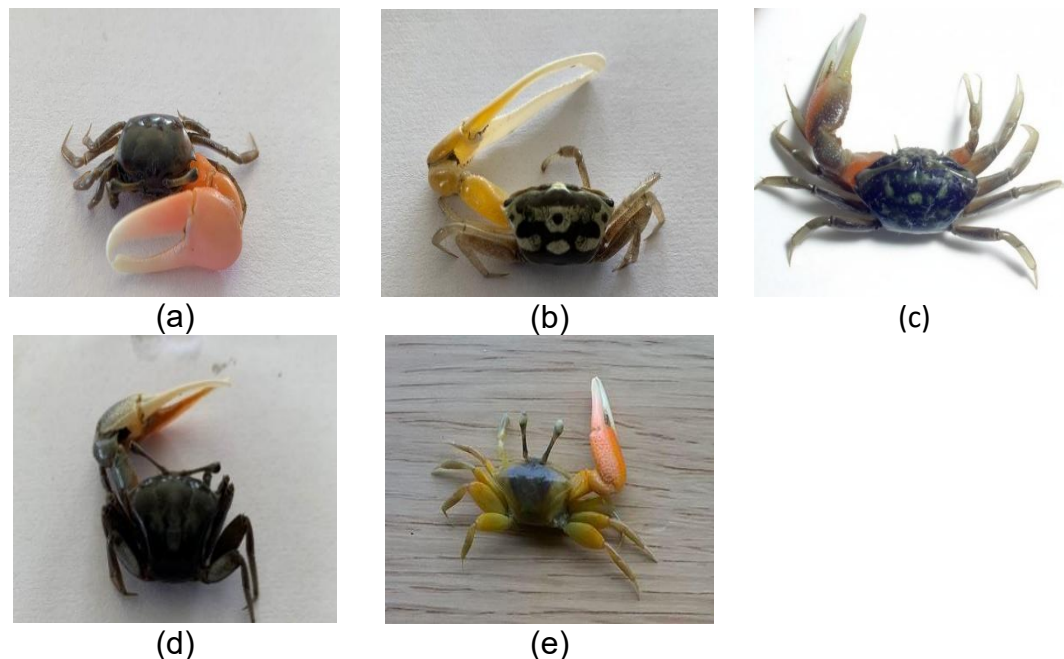


Figure 1. (a) *Uca annulipes*, (b) *Uca lactea*, (c) *Uca orcipata*, (d) *Uca tetraganom*, and (e) *Uca dussumieri*.

Uca annulipes

Based on the present study, *Uca annulipes* had a body size ranging from 10 to 16 mm. The male chela was pinkish orange, while the carapace was dark with a plain pattern. The name *annulipes* refers to banded or striped legs. Male *U. annulipes* possess one enlarged chela, which functions in attracting females, competing with other males, and visual communication, whereas females have two small symmetrical

chela used primarily for feeding. *Uca annulipes* is distributed along the coasts of the western Indian Ocean and the Arabian Sea (Chumsri et al., 2023).

Uca lactea

Based on the present study, *Uca lactea* had a body size ranging from 12 to 18 mm. The male major chela was lighter in color, and the carapace exhibited a tendency toward symmetrical spotting patterns. The enlarged male chela functions in female attraction and defense against predators. *Uca lactea* has a plain white carapace, whereas some other species exhibit a ceramic-like coloration. This species has a carapace width of approximately 15 mm. Its legs are generally plain white, although some individuals also display gray spotted patterns. The major chela is white, with the dactyl longer than the pollex, and the tip of the dactyl forms a hook-like structure. In females, the abdomen is broader than in males. *Uca lactea* is commonly found in sandy areas within open mangrove forests (Rizal et al., 2017).

Uca orcipata

Based on the present study, *Uca orcipata* had a body size ranging from 15 to 22 mm. Its carapace was relatively flat and dark in color, and the male possessed a large, elongated chela with a smooth surface. This species inhabits muddy mangrove coasts and is included among mudflat-associated crabs. *Uca orcipata* lives on sandy clay substrates.

This species has a black carapace with bluish patterns and an inverted triangular shape, with a pointed carapace tip. Carapace length ranges from 12 to 15 mm, while carapace width ranges from 13 to 16 mm. The dorsal region is elongated, and the walking legs are black with bluish patterns. The eyestalks are brown, whereas the eyes are blackish blue. The carapace is broad, and the major chela is red-orange with white tips at both ends. Coarse granules are scattered on the large chela, which is white-black in color, and the white surface of the chela is roughly serrated. The propodus length reaches 30 mm. The remaining legs are blackish blue, the thorax is blue, and the abdomen is rounded and black. This species has four pairs of walking legs (Murniati, 2010).

Other characteristics include a hard and smooth body texture, while the chelae are hard and rough in texture. The frontal region is narrow, and the carapace width may reach 25 mm. The carapace is longitudinally curved and narrows toward the lower part, while the gastric region is clearly delimited. The major chela is covered with large granules, and the tips of the pollex and dactylus form a pincer-like arrangement. This species is found on muddy substrates (Murniati, 2010). Wulandari (2013) further stated that the dactyl is shorter than the pollex, and a single tooth is present on both the dactyl and pollex. A lateral margin is visible on the carapace, giving the appearance of two sections, while the lateral sides of the carapace curve inward.

Uca tetraganom

Based on the present study, *Uca tetraganom* had a body size ranging from 18 to 30 mm. Males possessed one very long and pointed chela, which was more tapered than that of *Uca orcipata* and yellowish to cream in color. The carapace was generally dark with a fine pattern. *Uca tetragonon*, approximately 50 mm in length, is black with a pattern of three blue polka dots. The manus is red with black spots, the posterior part of the carpus is blue in the middle, and the pollex and dactylus of the chela are red. A narrow black frontal carapace with a blue pattern is considered its main distinguishing characteristic (Murniati and Pratiwi, 2015).

Uca dussumieri

Based on the present study, *Uca dussumieri* had a body size ranging from 20 to 28 mm. The male major chela was broad and somewhat flattened in the upper part. The carapace was generally grayish green, with a contrasting chela coloration, and this species inhabited muddy intertidal areas. Murniati and Pratiwi (2015) reported that one of its main diagnostic characteristics is a large chela with a red pollex and a white dactylus. In females, the ventral margin of the fourth walking leg is bordered by a ridge. This species is distributed in India, East Africa, Madagascar, Australia, Papua New Guinea, Indonesia, the Philippines, Thailand, China, and Japan.

Abundance of Fiddler Crabs in the Lalombi Mangrove Ecosystem

The study conducted in the mangrove area of Lalombi Village, South Banawa District, recorded five species: *Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*. Their abundance is presented in Table 1.

Table 1. Abundance of fiddler crabs in the Lalombi mangrove ecotourism area

Species	Station 1	Station 2	Station 3
<i>Uca annulipes</i>	80	51	30
<i>Uca lactea</i>	123	90	85
<i>Uca orcipata</i>	66	58	70
<i>Uca tetraganom</i>	53	40	50
<i>Uca dussumieri</i>	137	150	85
Total	459	389	320

The abundance of fiddler crabs in Lalombi Village, South Banawa District, Donggala Regency, varied among species. The total abundance across Stations 1, 2, and 3 was 161 individuals for *Uca annulipes*, 298 for *Uca lactea*, 194 for *Uca orcipata*, 143 for *Uca tetraganom*, and 372 for *Uca dussumieri*. According to Pratama (2016), abundance refers to the number of individuals per unit area. The high abundance observed is presumably related to the dense mangrove vegetation at the study stations, which produces abundant organic matter. Amin et al. (2012) also stated that organic matter is highly beneficial as a nutrient source for benthic organisms; however, when present in excessive amounts, it may become a pollutant. In this study, *Uca dussumieri* had the highest abundance.

Diversity Index (H') of Fiddler Crabs in the Mangrove Ecosystem

The calculated diversity index values of fiddler crabs varied among stations. The diversity index for each station is presented in Table 2.

Table 2. Diversity index (H') of fiddler crabs by station

Station	H'	Category
1	1.5416	Moderate diversity
2	1.4846	Moderate diversity
3	1.5399	Moderate diversity

The three study locations in Lalombi Village, South Banawa District, showed moderate diversity. This may be attributed to the fact that the mangroves at the study sites are part of a conservation area and are still in the growth phase, with relatively sparse vegetation, resulting in a limited number of species. The diversity index values

were 1.5416 at Station 1, 1.4846 at Station 2, and 1.5399 at Station 3, indicating that the diversity of *Uca* species in the study area falls within the moderate category.

Moderate diversity indicates that environmental conditions are sufficiently supportive of crab survival and that, ecologically, the mangrove habitat is suitable for habitation and growth (Rajulani et al., 2022). Rahayu et al. (2018) explained that diversity and abundance within a community can influence ecosystem diversity, which may decline when the number of species decreases or when there is large variation in the number of individuals among species, with some species represented by substantially more individuals than others. Actuti et al. (2019) reported that low diversity may be caused by several factors, including immature mangrove vegetation that does not yet produce sufficient litter to meet the nutritional needs of fiddler crabs. In addition, tidal fluctuations may influence diversity because fiddler crabs are diurnal and are active during low tide. Other contributing factors include noise pollution and vibrations generated by human and natural activities, as fiddler crabs prefer quiet and undisturbed habitats.

Frequency

The frequency of occurrence of fiddler crab species observed in the sampling area is presented in Table 3.

Table 3. Frequency values of fiddler crabs recorded in the observation area

Species	Value	Category
<i>Uca annulipes</i>	1%	Very rare occurrence
<i>Uca lactea</i>	1%	Very rare occurrence
<i>Uca orcipata</i>	1%	Very rare occurrence
<i>Uca tetraganom</i>	1%	Very rare occurrence
<i>Uca dussumieri</i>	1%	Very rare occurrence

The frequency of occurrence of the five *Uca* species found in Lalombi Village, South Banawa District, Donggala Regency—*Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*—was classified as very rare, with a value of approximately 1%. According to Rajulani et al. (2022), the low occurrence of these five species may be due to their limited adaptation to the substrate conditions or to the dominance of other *Uca* species in the area.

Density

The density values of fiddler crab species recorded within the observation area are presented in Table 4.

Table 4. Density values of fiddler crabs recorded

Species	Density value
<i>Uca annulipes</i>	6 ind/m ²
<i>Uca lactea</i>	3 ind/m ²
<i>Uca orcipata</i>	5 ind/m ²
<i>Uca tetraganom</i>	7 ind/m ²
<i>Uca dussumieri</i>	3 ind/m ²

The results showed that the density of each *Uca* species varied in the study area of Lalombi Village, South Banawa District, Donggala Regency. The highest density was recorded for *Uca tetraganom*, at approximately 7 ind/m², whereas the lowest density was observed for *Uca lactea*, at approximately 3 ind/m². According to Redjeki et al. (2017), crab survival is limited by several environmental factors, including temperature, salinity, pH, substrate type, and the organic matter content of the substrate. If the values of these required factors fall below or exceed tolerance limits, the species will not be found in those waters.

Dominance Index (C)

The dominance values calculated for each of the five fiddler crab species identified in the study are presented in Table 5.

Table 5. Dominance index categories of fiddler crabs

Species	D value	Category
<i>Uca annulipes</i>	0.0187	Low dominance index
<i>Uca lactea</i>	0.0650	Low dominance index
<i>Uca orcipata</i>	0.0275	Low dominance index
<i>Uca tetraganom</i>	0.0148	Low dominance index
<i>Uca dussumieri</i>	0.1011	Low dominance index

The dominance index analysis showed that no species dominated any mangrove station in Lalombi Village, South Banawa District, Donggala Regency. The dominance values were 0.0187 for *Uca annulipes*, 0.0650 for *Uca lactea*, 0.0275 for *Uca orcipata*, 0.0148 for *Uca tetraganom*, and 0.1011 for *Uca dussumieri*, indicating that all five *Uca* species had low dominance indices. According to Rajulani et al. (2022), a low dominance index occurs when no single species dominates the community. This is reflected in the relatively balanced number of individuals recorded for each species at the study site.

Rajulani et al. (2022) further explained that a low dominance index indicates the absence of a dominant species and suggests that the crabs are well adapted to local environmental conditions. A low dominance index also implies a more even distribution of abundance among species. The dominance index is used to determine the extent to which one biotic group dominates another.

Environmental Physicochemical Conditions

Physicochemical environmental conditions are major factors influencing the growth of all living organisms, including fiddler crabs. Measurements of environmental parameters, including temperature, pH, salinity, and substrate type, are presented in Table 6.

Table 6. Results of physicochemical environmental measurements

No.	Physicochemical parameter	Station I	Station II	Station III	Average
1	Temperature	30°C	30°C	30°C	30°C
2	pH	8.23	8.16	8.38	8.25
3	Salinity	33	35	25	31
4	Substrate	Muddy	Muddy	Muddy	—

Water Temperature

The measurement of physicochemical conditions in the study area of Lalombi Village, South Banawa District, Donggala Regency, showed that water temperature was 30°C at Stations 1, 2, and 3. These conditions are suitable for mangrove growth. This is supported by Sari et al. (2023), who reported that mangroves can grow and photosynthesize well at temperatures ranging from 25 to 35°C, and that temperature strongly influences coastal aquatic ecosystems and is a highly important factor in mangrove ecosystem processes such as photosynthesis and respiration. Wahyudyawati et al. (2017) stated that mangrove crabs are able to survive at temperatures ranging from 12 to 35°C and can grow optimally at 23 to 32°C. Environmental measurements were conducted to assess whether the conditions in the mangrove conservation area support crab growth and reproduction.

Water pH

The pH value recorded at the study site averaged 8.25, which can be categorized as highly suitable for crab growth and development. According to Tulango et al. (2019), the optimum pH range for mangrove crabs is 7.5 to 8.7. pH strongly influences aquatic life because it affects microbial activity. Acidic waters tend to cause mortality, whereas overly alkaline conditions can reduce oxygen availability.

Salinity

The salinity recorded at the study site averaged 31 ppt. Murniati and Pratiwi (2015) reported that fiddler crabs can live at salinity levels of 20-31 ppt. Therefore, the waters in the Lalombi mangrove ecotourism area meet the environmental standards required for marine biota.

Substrate

The substrate conditions at all three study locations were muddy, which represents suitable habitat for fiddler crabs. *Uca* spp., or fiddler crabs, are highly dependent on sediment texture because it is closely related to their feeding activity and burrow construction (Aslamyah et al., 2021). The preferred substrate is characterized by silty sand or sandy mud with a specific grain size composition (Fitaloka et al., 2022). Such a texture allows these crabs to use their specialized mouthparts efficiently to filter organic material from sediment particles (Muffley & Smith, 2020).

The substrate type in the Lalombi mangrove ecotourism area is therefore consistent with the habitat requirements of fiddler crabs, facilitating burrow excavation and sheltering while also providing abundant organic matter. This is consistent with Actuti et al. (2019), who reported that clayey mud containing fine sand is a substrate type that supports fiddler crab life. Mangrove crabs are one of the aquatic biota that are inseparable from mangrove ecosystems because they are highly dependent on them (Rajulani et al., 2022).

According to Katili et al. (2017), an organism will occur in an area when the ecological factors are suitable for its survival. In mangrove conservation areas, the most dominant crabs are often those of the genus *Uca* spp., because these crabs are highly suited to muddy substrates for burrow construction. These burrows function as shelters from predators. Wa'dah and Siti (2016) further noted that *Uca* burrows facilitate air flow into the substrate, which can be utilized by mangrove plants as a source of inorganic materials that support mangrove growth.

CONCLUSION

Based on the study conducted in the mangrove ecotourism area of Lalombi Village, South Banawa District, Donggala Regency, the community structure of fiddler

crabs (*Uca* sp.) comprised five species: *Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*. Across the three sampling stations, the recorded abundances were 161 individuals for *Uca annulipes*, 298 individuals for *Uca lactea*, 194 individuals for *Uca orcipata*, 143 individuals for *Uca tetraganom*, and 372 individuals for *Uca dussumieri*. The calculated diversity index indicated a moderate level of fiddler crab diversity at each station, with values ranging from 1.48 to 1.54. The occurrence frequency of all five *Uca* species—*Uca annulipes*, *Uca lactea*, *Uca orcipata*, *Uca tetraganom*, and *Uca dussumieri*—was classified as very rare, with percentages of approximately 1%. Species density varied among the five fiddler crab species, with the highest density recorded for *Uca tetraganom* at approximately 7 ind/m², while the lowest density was found for *Uca lactea* at approximately 3 ind/m². The dominance index analysis showed that no single species dominated any of the mangrove stations in Lalombi Village. However, the highest dominance index value was recorded for *Uca dussumieri*, with a value of $D = 0.1011$.

RECOMMENDATION

This study may serve as a source of information for the community of Lalombi Village, South Banawa District, as well as for local government authorities regarding the community structure of fiddler crabs (*Uca*) in the mangrove ecosystem of Lalombi Village. In addition, it may be used as a reference for students conducting practical activities or research related to the community structure of fiddler crabs (*Uca*).

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REFERENCES

- Actuti, N., Apriansyah, A., & Nurdiansyah, S. I. (2019). Keanekaragaman kepiting biola (*Uca* spp.) di ekosistem mangrove Desa Pasir, Kabupaten Mempawah, Kalimantan Barat. *Jurnal Laut Khatulistiwa*, 2(1), 25.
- Amin, B., Nurrachmi, I., & Marwan. (2012). Kandungan bahan organik sedimen dan kelimpahan makrozoobenthos sebagai indikator pencemaran perairan Pantai Tanjung Uban, Kepulauan Riau. *Recent Research in Science and Technology*, 4(10), 16–20.
- Aslamyah, S., Akmaliyah, A., & Karim, M. Y. (2021). Hubungan karakteristik sedimen dengan kepadatan kepiting *Uca* (*Uca* spp.) di kawasan mangrove Kabupaten Maros. *Jurnal Iktiologi Indonesia*, 21(2), 145–158.
- Brown, A. L., Miller, R. T., & Davis, K. P. (2022). Bioturbation effects of fiddler crabs on mangrove sediment geochemistry. *Journal of Marine Ecology*, 45(2), 112–125.
- Chumsri, A., Tina, F. W., & Jaroensutasinee, M. (2023). Human disturbance affects behavioural time allocation in *Austruca annulipes*. *Journal of Animal Behaviour and Biometeorology*, 11(1).
- Fitaloka, A., Kusuma, A. B., & Riani, E. (2022). Karakteristik substrat dan sebaran spasial kepiting biola (*Uca* spp.) di ekosistem mangrove Pantai Pasir Putih, Lampung. *Journal of Marine Research*, 11(3), 412–424.

- Hasan, R. (2015). Populasi dan mikrohabitat kepiting genus *Uca* di kawasan konservasi mangrove Pantai Panjang, Bengkulu. *Prosiding Seminar Nasional XII Pendidikan Biologi FKIP UNS*, 676–681.
- Katili, A. S., Utina, R., & Mopangga, N. L. (2017). Short communication: Crab species distribution under mangrove stands in Tabongo, Gorontalo Province, Indonesia. *Biodiversitas*, 18(2), 520–524.
- Muffley, K., & Smith, N. F. (2020). Substrate preference and burrowing behavior of fiddler crabs (*Uca* spp.) in response to varying sediment grain sizes. *Marine Ecology Progress Series*, 645, 105–117.
- Murniati, D. C. (2010). Keanekaragaman *Uca* spp. dari Segara Anakan, Cilacap, Jawa Tengah sebagai pemakan deposit. *Fauna Indonesia*, 9(1), 19–23.
- Murniati, D. C., & Pratiwi, R. (2015). *Kepiting Uca di hutan mangrove Indonesia: Tinjauan aspek biologi dan ekologi untuk eksplorasi*. LIPI.
- Numbere, A. O. (2023). Impact of environmental factors on the distribution and abundance of fiddler crabs (*Uca* spp.) in tropical mangrove swamps. *Journal of Coastal Conservation*, 27(1).
- Oonishi, K., et al. (2023). Climate change impacts on coastal macrobenthos: A review of physiological and community shifts. *Ocean & Coastal Management*, 231(1).
- Pratama, D. R., Yusuf, M., & Helmi, M. (2016). Kajian kondisi dan sebaran kualitas air di perairan selatan Kabupaten Sampang, Provinsi Jawa Timur. *Jurnal Oseanografi*, 5(4), 479–488.
- Rahayu, S. M., Wiryanto, & Sunarto. (2018). Keanekaragaman kepiting biola di kawasan mangrove Kabupaten Purworejo, Jawa Tengah. *Bioeksperimen*, 4(1), 53–63.
- Rajulani, R., Wahyuni, A. K., & Haruna, M. F. (2022). Struktur komunitas kepiting bakau di kawasan konservasi mangrove Desa Polo, Kecamatan Bunta, Kabupaten Banggai. *Jurnal Pendidikan Biologi*, 9(2), 150–159.
- Rauf, A., Bustamin, B., & Mawaddah, H. (2024). Struktur komunitas kepiting bakau pada ekosistem mangrove di Desa Lalombi, Kecamatan Banawa Selatan, Kabupaten Donggala dan pemanfaatannya sebagai bahan ajar mata kuliah. *Jurnal Kreatif Online*, 12(1).
- Redjeki, S., Mas'ad, A., Retno, H., & Laras, K. (2017). Kepadatan dan persebaran kepiting *Uca* di ekosistem hutan mangrove Segara Anakan, Cilacap. *Jurnal Kelautan Tropis*, 20(2), 131–139.
- Rizal, M., Febriyanti, D., Sabila, H., Damarwati, W., & Isfaeni, H. (2017). Struktur komunitas *Uca* spp. di kawasan hutan mangrove, Bedul Utara, Taman Nasional Alas Purwo, Jawa Timur. *PARAMETER: Jurnal Pendidikan Universitas Negeri Jakarta*, 29(1), 30–38.
- Sari, D. P., Idris, M. H., Anwar, H., Aji, I. M. L., & Webliana, K. (2023). Karakteristik perairan mangrove pada kerapatan yang berbeda di Desa Eyat Mayang, Kabupaten Lombok Barat. *Jurnal Hutan Pulau-Pulau Kecil*, 7(2), 149–157.
- Smith, J. D., & Jones, L. M. (2023). *Coastal biodiversity and bioindicators* (2nd ed.). Academic Press.
- Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Syam, A. R., et al. (2024). Species composition and density of *Uca* spp. at Passo mangrove ecosystem, Ambon City. *Platax Scientific Journal*, 12(1), 104–112.
- Tulangouw, C., Santoso, P., & Lukas, A. Y. H. (2019). Pengaruh frekuensi pemberian pakan ikan rucah terhadap pertumbuhan kepiting bakau (*Scylla serrata*) dengan menggunakan sistem baterai. *Jurnal Aquatik*, 2(2), 50–61.

- Wa'dah, & Siti. (2016). Analisa lubang kepiting binatu (*Uca demani*) pada ekosistem hutan mangrove Tahura Ngurah Rai, Desa Suwung Kauh, Kecamatan Denpasar Selatan, Provinsi Bali. *Jurnal Ilmiah Rinjani*, 3, 163–172.
- Wahyudyawati, E., Rahardjanto, A., & Wahyuni, S. (2017). Analisis hubungan kerapatan mangrove terhadap fungsi nursery ground pada kepiting bakau (*Scylla* sp.) di hutan mangrove Pantai Cengkong, Kabupaten Trenggalek. *Prosiding Seminar Nasional III Tahun 2017*, 294–299.
- Wicaksono, P., dkk. (2022). Mangrove deforestation and its impact on benthic community structure in Southeast Asia. *Marine Pollution Bulletin*, 185(1).
- Wulandari, T., Hamidah, A., & Siburian, J. (2013). Morfologi kepiting biola (*Uca* spp.) di Desa Tungal I, Tanjung Jabung Barat, Jambi. *Biospecies*, 6(1), 6–14.