CRAB EXTRACTIVISM IN INSULAR ENVIRONMENTS ON THE COAST OF PARANÁ-BRAZIL: LIMITS AND POTENTIALITIES

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Abstract: *The extractivism of the Uçá crab (Ucides cordatus) in insular environments on the coast of Paraná is a traditional activity that integrates culture, economy, and local sustainability, being essential for the survival and maintenance of popular knowledge acquired through generations of fishing communities. However, there are few and scattered studies on the dynamics of this activity in these environments. This study aimed to organize an overview of the activity in insular environments on the coast of Paraná. An exploratory descriptive study was carried out with 15 traditional families engaged in this activity and residing on the region's islands. The study revealed a low educational level among the respondents, with most having only completed primary education (60.2%). The average age of the collectors was 51 years, a concerning factor due to the absence of younger people in the activity, as the younger generation has migrated to urban centers in search of alternative economic opportunities. The average monthly income of respondents was approximately R$ 1,200.00; however, during the specific crab "walking" season, income increased by around 200%, representing significant values even though the period is short. Positive aspects highlighted included extra financial income, direct sales from homes without the need for displacement, and the recognition of community production as high quality, facilitating product flow. Negative aspects were the temporary nature of income, the physically exhausting effort of traversing mudflats, and insect attacks during collection.*

Keywords: **Ucides cordatus, Mangrove, Fisheries, Sustainability, Traditional communities.**

1. INTRODUCTION

The coast of Paraná comprises approximately 100 km, featuring the bays of Guaratuba, Guaraqueçaba, Antonina, and Paranaguá, containing hundreds of islands. The Paranaguá Estuarine Complex, with a water surface area of 255 km², stands out as one of Brazil's most important due to its diverse ecosystems, including mangroves, marshes, sandbanks, and islands with rocky outcrops. Within this context, most insular communities are concentrated in the territories of Guaraqueçaba and Paranaguá.

Coastal and insular communities in this region have a long-standing presence of caiçara groups, which, according to Diegues (1983), originated during Brazil's colonial period through the racial mixture of Europeans, Africans, and indigenous peoples. These communities historically maintained survival systems based on subsistence agriculture, artisanal fishing, and seafood harvesting.

Among the seafood resources, particular attention is given to the Uçá crab (Ucides cordatus Linnaeus, 1763). Historical records indicate its extractivism dating back to the post-discovery period of Brazil's coast, revealing the longstanding consumption of this species in indigenous settlements across the islands of Paraná. Over centuries, crab consumption remained a traditional dietary practice.

Simon and Silva (2006) emphasized that the exploitation of fishing resources has always been central to life along the Paraná coast, peaking in the early 1990s when around 10,000 people inhabited more than 60 islands and villages across six municipalities. However, significant socioeconomic transformations have affected this sector in recent decades.

Currently, the caiçara population is estimated at around 35 rural communities, comprising approximately 4,000 people and over 600 families. According to Anacleto and Michaliszyn Filho (2025), the lifestyle and culture of these communities remain more preserved in the islands, where crab extractivism continues to serve as a complementary income source.

The ecological and cultural relevance of this species is evident through its presence in

local monuments and festivals celebrating its consumption. In the islands, knowledge of crab harvesting is transmitted across generations as empirical and cultural heritage. Marques (2025) warned of the importance of sustaining this intergenerational knowledge transmission and retaining local populations to counter the erosion of environmental knowledge caused by social changes and youth exodus.

Yet, as Marques (2025) and Anacleto et al. (2024) point out, little is known about the current state of this extractivist activity in these areas. Therefore, this study aimed to provide a diagnosis of the limits and potential of Uçá crab extractivism in Paraná's insular environments, with particular attention to the São Miguel Island community.

2. METHODOLOGY

An exploratory and descriptive study was conducted following the methodology proposed by Negrelle et al. (2014), Anacleto and Scheuer (2023) and Anacleto e Ferreira (2024). Data collection took place through field interviews from April to November 2024. To better understand the activity context, as suggested by Anacleto et al. (2025), the participant observation technique was applied, with researchers accompanying the daily routines of crab collectors, enabling observation of the different phases of extractivism.

The chosen microregion for data collection was São Miguel Island (Figure 1), also known as Tambarutaca, located in Paranaguá Bay on Paraná's coast. The site was selected based on Anacleto et al. (2024), who identified it as a significant habitat for Ucides cordatus, a regional reference for crustacean harvesting.

Data were obtained through a semi-structured questionnaire addressing socioeconomic information, capture systems, post-harvest practices, marketing systems, sale prices, and the destination of the catch. A convenience and accessibility sampling approach began with a community leader known for crab collection and then expanded through the snowball sampling technique, with participants referring other potential respondents.

In total, fifteen crab collectors voluntarily participated in the study, reporting both the activity's limitations and potential in insular settings.

3. RESULTS AND DISCUSSION

a) Extractive Island Communities

Families living in these island communities seek food autonomy given their distance from urban centers. It is common to observe the cultivation of subsistence crops such as cassava, rice, fruits, and vegetables, as well as the raising of small animals for family consumption, such as chickens, ducks, and pigs, which are hardy and resistant to the region's subtropical climate.

Sea fishing in the bay areas is the island's main economic activity and occurs year-round. The region is known nationally for its crab fishing using cages, a method developed in the region and currently used in other regions of Brazil and the world.

People involved in artisanal fishing have an average of 40 years of experience in the activity. Among those interviewed, 20% were single and 80% were married or in a civil union, with an average of three children per family. The crab collection activity in these island environments contrasts with other regions where the activity is carried out exclusively by men who, in most cases (53%), worked alone. In these locations, women represent 27% of the collection workforce, who in this case carried out the collection accompanied by other people, and it is not uncommon for them to also be responsible for the cleaning and marketing of the collected animals.

The average age of the collectors was 51 (Table 1). However, a concern was the lack of involvement of younger individuals in the activity. The average age of those who were introduced and learned the crab-catching activity was 12 years old. Contrasting this scenario, the study revealed a moderate trend: older age groups saw an increase in the number of crabs collected during the period (Table 1).

Table 1. Sample distribution of the study by age group and quantity collected

Age group	Percentage (%)	Dozens collected per period
Up to 19 years old	0	0
20 to 29 years old	7,0	52,5
30 to 39 years old	15,0	45,5
40 to 49 years old	35,0	50,5
50 to 59 years old	23,0	74,0
60 to 65 years old	20,0	103,3
Over 65 years old	10,0	60

The study revealed low educational attainment among the interviewees, with the majority (60.2%) having only completed basic education. According to all interviewees, difficulties in accessing formal job opportunities and technology led to an exodus of younger generations to places where they could study, earn a living, and earn an income. This situation has consequently reduced the crab gathering population in island environments.

b) The resource extracted

The Uçá crab, Ucides cordatus (Linnaeus, 1763), belongs to the crustacean group and is native to the coast of Paraná. Its predominantly nocturnal habits make it a constant presence in island mangroves. The species is also known as the crab, mangrove crab, catanhão, or true crab (GONÇALVES et al., 2022).

U. cordatus is a nocturnal, semi-terrestrial crab that lives in the intertidal zone of mangroves. By digging burrows, it stirs up sediment and promotes soil oxygenation and the decomposition of organic matter. These behaviors increase the availability of essential nutrients for plants and microorganisms, contributing to the maintenance of mangrove productivity and ecological balance. Therefore, U. cordatus is considered one of the most important biological components of the mangrove ecosystem. According to Gonçalves et al. (2021), mangroves located in Conservation Units (CUs) on the northern coast of Paraná have higher population densities and a greater proportion of animals larger than legally permitted, compared to unprotected areas subject to anthropogenic influence, such as the mangroves near the Port of Paranaguá. Vegetation conservation is directly correlated with crab density, demonstrating that healthy mangroves provide more crabs.

Anacleto et al. (2024) describe the species as ecologically important to the coast of Paraná and describe the data that it feeds on leaves, distributes nutrients in the soil, and provides nutrients for other organisms in the food chain. Gonçalves et al. (2022) reveal that the species generates work and income in addition to serving as a food source, which gives it social relevance. Finally, the Department of Rural Economy of Paraná (DERAL, 2025) describes the species as economically important, generating approximately R$9 million annually.

c) General characterization of the extractive process

Crab collection in island environments off the coast of Paraná was carried out on the islands where the collectors resided, with the average time spent collecting being four hours, including travel time. Due to the greater ease of the environment, the majority of interviewees (n=73%) traveled by canoe or even on foot, and the long time spent inside the mangrove swamp occurred using the capture method called “arm method” (braceamento), a movement in which the arm is placed inside the burrows and the crabs are removed individually, which requires patience and a long time for collection.

The tools used to catch crabs were described as root cutters, protective gloves, and woven bags for storing the collected animals. The work is always carried out in humid and unsanitary environments, and most interviewees (n=60%) reported moderate to low-severity accidents,

such as falls and scratches, attacks by wasps and bees, and occasional cuts and broken bones. No protective equipment was reported.

The frequency of capture was determined by weather conditions; however, when the weather was favorable, most interviewees (60%) collected daily due to the short crab travel time (Table 2). The capture times were determined by the tide, which, according to the fishermen, could only be done at low tide. However, a group of people also worked more sporadically, weekly (27%) and monthly (13%).

All collection and marketing activities were carried out using available family labor, and there were no reports of hiring temporary workers to work in crustacean harvesting.

All interviewees allocated a minimal portion of their crustacean harvest for family consumption; however, the focus of the harvest was marketing, with various strategies being used by the interviewees.

All interviewees emphasized that the harvested produce was primarily destined for the Paranaguá municipal market, in a commercial modality known as "trato" by collectors, which involves the agreed delivery of the crabs and payment in cash.

Crab harvesting is limited by the specific time of year.

The average monthly income of those interviewed was approximately R$1,200.00. However, during the specific reproductive migration phenomenon ("andada") period, collection represented the main source of income among the interviewees, given that the average family income increased by approximately 200%, significant figures even though the reproductive migration phenomenon ("andada") period was short. The most important points of these two criteria are related to the additional financial contribution and the high demand for the product (Table 2).

Table 2. Positive factors of Uça crab harvesting on the coast of Paraná, as perceived by respondents.

Classification	Positive Factors	IR
1	Extra financial income	24,1
2	Retailers and wholesalers seek it at home	12,9
3	Community-owned production is recognized as being of high quality	11,4
4	Money obtained quickly and immediately after catching	10,8
5	No need for cleaning/processing to sell	9,32
6	No investment required to generate income	8,09
7	No production/catch costs	6,01
8	Zero cost for fishing equipment	6,01
9	Satisfactory income in a short period of activity	6,01
10	Activity developed during the day, while fishing is at night	5,36

***IR = Relevance Index**

Income being classified as a seasonal activity due to the species' biology, coupled with the strenuous physical effort involved in moving through the mud, were the main limitations of the activity (Table 3).

Table 2. Negative factors in Uça crab harvesting in island environments on the coast of Paraná, as perceived by respondents.

Classification	Negative Factors	IR
1	Temporary income only	18,5
2	Strenuous physical effort due to moving through the mud	12,4
3	Insect attacks during collection in the mangrove	11,1
4	Low production price compared to the capture effort	10,3
5	Crab attacks (pinching) during capture	9,08
6	Unhealthy conditions due to long stay in the mangrove	8,82
7	Cost of transportation to mainland markets	7,93

8	Disparity in profits compared to retail and wholesale	7,93
9	Decrease in the amount collected per year	7,93
10	Dependence on tidal flow for labor	6,01

***IR = Relevance Index**

Understanding the context surrounding island communities like those along the Paraná coast requires the dedication of the scientific community in the pursuit of knowledge and understanding of the situations that shape their existence. These culturally distinct groups not only preserve ancestral ways of life through oral tradition and tradition, but they do so amidst a scenario of permanent instability, marked by the erosion of their symbolic references due to the exodus of new generations, which intensifies their socioeconomic vulnerabilities.

The reported phenomenon highlights that the intergenerational transmission of practices and knowledge, which ensures the material and immaterial reproduction of these communities, is weakened by recurring processes that disrupt the local economy based on the communal use of resources and also violate environmental governance regimes that, for generations, have maintained an ecological balance stemming from their ways and conceptions of life.

In this sense, although families gain income during the crab walk period, during other periods the struggle for survival and combating poverty cannot be reduced to an economistic interpretation or to income and consumption indicators. This is a multidimensional poverty, structured by institutional fragility, the absence of organized social capital, the precariousness of human capital—understood here as access to education, information, and technical capacity—and the lack of bargaining power in the regional and national economic system. This cycle of vulnerability is self-reinforcing: their remote and peripheral condition imposes limitations that keep these populations out of political and economic decision-making arenas, and their exclusion from these spheres fuels precariousness. The legal discourse that recognizes the right to maintain traditional ways of life and community-based resource management is not implemented in everyday practice, highlighting the disconnect between the regulatory framework and concrete government actions.

The proposal to reverse this situation, articulated through legislation protecting traditional communities, still lacks operational effectiveness. The mere legal provision for participatory technical studies and the promotion of citizenship fails to address the structural obstacles imposed by the neoliberal logic of capital's territorialization and the appropriation of common goods. More than creating "more attractive" markets for traditional products, it is necessary to reframe the notion of development in traditional territories, shifting it from the logic of economic growth and the market to a model based on community autonomy, territorial sovereignty, and the valorization of indigenous knowledge systems.

This situation is evident and reflected in practice in crab extraction in island environments in the region. Therefore, the discussion about traditional communities on the Paraná coast transcends the mere observation of vulnerabilities and becomes part of the contemporary debate on environmental justice and territorial rights. The persistence of socio-environmental inequalities and the invisibility of these communities in decision-making processes constitute a particular expression of the asymmetrical relationship between tradition and modernity, highlighting the urgent need for new debates and new thinking on public policies and governance instruments that recognize traditional communities not as obstacles to development, but as legitimate agents of knowledge and culture production, breaking with developmentalist paradigms and maintaining these groups of people in their places of origin with dignity and sustainability.

4. FINAL CONSIDERATIONS

The study revealed a low level of education among the interviewees, with the majority (60.2%) having only completed elementary school. The average age of collectors was 51, which revealed a worrying factor: the lack of participation of young people in the activity, who have been fleeing to urban centers in search of other economic alternatives.

The average monthly income of those interviewed was approximately R$1,200.00. However, during the specific reproductive migration phenomenon ("andada"), collection represented the main source of income among the interviewees, given that the average family income increased by approximately 200%, significant figures even though the reproductive migration phenomenon ("andada") was short. The main positive factors of Uça crab harvesting on the Paraná coast, according to the interviewees, were the additional financial income, sales often made from their own homes without requiring travel, and the quality of the produce produced by the communities, which facilitated the distribution of the produce.

The main negative factors reported were the fact that the income was only temporary, the strenuous physical effort involved in wading through the mud to capture the crustaceans, and insect attacks during harvesting in the mangroves.

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