

# THE DEFESOMORATORIUM SEASON FOR THE UÇÁ CRAB (*UCIDES CORDATUS* L.): AN ANALYSIS OF PERCEPTION OF CONSUMERS AND VENDORS<sup>1</sup>

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## Introduction

The crab *Ucides cordatus* Linnaeus, 1763, popularly known as uçá (Fig. 1), is a semi-terrestrial species and widely distributed on the coast of the Western Atlantic, including Florida, Gulf of Mexico, Central America, Antilles, northern coast of South America, Guianas and, in Brazil, with records from Pará to Santa Catarina (ALVES, 1975; IGARASHI, 2007b; ARAÚJO; CALADO, 2008). Within the crustaceans, uçá stands out as one of the most exploited species in Brazil (IVO; GESTEIRA, 1999; NASCIMENTO et al., 2017) and its consumption is part of the gastronomy and culture along the Brazilian coast. Depending on the season, the species presents a characteristic coloration ranging from light blue to dark brown. They inhabit individual galleries about 1 m deep, excavated in the intertidal zones, where they remain for most of the year (IGARASHI, 2007b; ARAÚJO; CALADO, 2008). This is a long-living species, which takes approximately 6 to 11 years until reaches commercial size (NASCIMENTO, 1993).

This mangrove crab is one of the most economically important species for coastal communities and its capture is one of the oldest extractive activities in Brazil, moving an extensive economic network composed of crab hunters, intermediaries, traders and consumers (ALVES; NISHIDA, 2003; ALVES, 1975; IGARASHI, 2007a; NASCIMENTO et al., 2017). Its meat is highly appreciated, being sold in large amount to locals and tourists who visit parts of the Brazilian coast (ALVES; NISHIDA, 2003). In some cities, it is common to find hundreds of establishments selling the uçá, especially in the Northeast, where it is greatly appreciated. However, the overexploitation of the species to meet an

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increasing consumer demand has already compromised the uçá stocks in some regions (NORDI et al., 2009).

High rates of exploitation and fishing mortality, the destruction of mangroves and diseases affecting the uçá justify the concern of researchers about the risk of extinction of this species (BOEGER et al. 2005) and capture should be regulated by the environmental authorities. However, this is not the reality experienced by the species in Brazil, where its capture rarely experiences some more rigorous control. *U. cordatus* had been previously identified as threatened (MMA, 2003) but, in a controversial and not consensual move, in 2014 the species was moved to a lower threatened status (Near Threatened - MMA, 2014).

The phenomenon known as *andada* (“walking”) is a denomination given by the coastal communities to the behavior that uçá presents at certain times of the year, when males and females leave their burrows and move slowly through the mangrove for mating purposes. *Andada* is a crucial period for the species conservation, as individuals become more vulnerable. During the *andada*, a moratorium known as *defeso* is officially declared, and the species’ capture, transportation, processing, industrialization and commercialization is prohibited (e.g. MPA, 2015). This measure aims to protect animals during the most vulnerable phase of their life cycle and the *defeso* is usually declared at the same time in the Brazilian states of Pará, Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe and Bahia (MPA, 2015). However, in practice, the uçá capture increases during the *andada*, and surveillance and control of capture during those periods are extremely important in a conservation perspective (NORDI, 1994; IGARASHI, 2007b; ARAÚJO; CALADO, 2008).

Although the adoption of the uçá’s *defeso* has legal support, the effectiveness of such strategy directly depends on the existence of control mechanisms and, above all, on the willingness of consumers to respect the moratorium. In this sense, providing sellers and consumers with the information about what is the *defeso* and which are their effective periods is fundamental for an effective outcome. Initiatives involving consumer attitudes may fail due to a lack of basic information, commitment or interest of the people involved (e.g. PEATIE, 2010). Thus, understanding how uçá sellers and consumers perceive the *defeso* can be useful to evaluate its effectiveness, as well as for the improvement and correction of eventual problems. In this sense, ethnozoological studies are particularly important because they can provide a better understanding about some species’ cultural, economic and social role, and can provide a better understanding on the actions of agents directly and indirectly involved with them (e.g. NORDI, 1995; ALVES et al. 2005; NORDI et al. 2009). Such studies may also play an important role in the management and conservation of biodiversity (NISHIDA et al., 2006; ALVES, 2012; CAPISTRANO; LOPES, 2012; NASCIMENTO et al., 2012; NASCIMENTO et al., 2016).

Ethnozoological studies on crustaceans in Brazil are mostly focused on the role crab hunters play. In a pioneering approach involving *U. cordatus*, in this study we investigated the level of knowledge and attitudes of sellers and consumers of uçá-crab in relation to the *defeso* in the Metropolitan Region of Recife, Pernambuco, an important metropolis of Northeastern Brazil, with high consumption of uçá. Our main objectives were a) to

evaluate the knowledge of vendors and buyers about the definition of the *defeso* and the legal procedures involved; b) access information on which factors determine preference among sellers and consumers; c) identify the perception of the interviewees about the sustainability of uçá consumption and on existing alternatives in the region; and d) identify possible contradictions between discourse and practices involving the consumption of this species.

## Methodology

Recife (hereafter RMR) is the second largest metropolitan area in the North-Northeast, and the sixth largest in Brazil, with a population of 3,914,317 habitants (IBGE, 2015). The study was conducted in four of the 18 municipalities that form the RMR: Jaboatão dos Guararapes, Recife, Olinda and Paulista. Questionnaires were applied to sellers and consumers to obtain information on the commercialization of the uçá crab (See FISCARELLI; PINHEIRO, 2002; ALVES; NISHIDA, 2003; MAUAD; TERRA, 2007). Interviews were conducted with two distinct groups: managers of restaurants or bars selling the uçá (hereafter vendors), and consumers. In order to eliminate consumers who did not know the target species or those who could confuse the uçá with other crab species, we approached only people who were eating uçá at the time of the interview. The approach to these groups was direct, with the identification of the interviewer and the purpose of the research, followed by the request for an interview. In the case of refusal, the interviewer thanked and sought another interviewee. Vendors were approached outside of business hours so they could calmly answer the questions. Vendors sometimes asked to be interviewed in another day or time and in those cases at least one more interview attempt has been made.

Two questionnaires with objective questions were developed: vendors were asked to answer 26 questions, and consumers 16 questions (Appendix 1). Questions directed to vendors were focused on the uçá's commercialization, animal sourcing, the approximate sales amount, perceptions on supply trends, preference factors, the uçá's minimum size for commercialization and information on the *defeso* (definition, periods and procedures adopted), perceptions on consumers' environmental concerns, alternatives of consumption during the *defeso*, occurrence of inspection, and on their willingness to get more information on the subject. For consumers, questions were directed to the frequency of consumption, preference factors, animal origin and environmental concerns, knowledge on the *defeso* and attitudes during it, and on their willingness to know more about the subject. In both cases, to facilitate the tabulation of responses, most of the questions had multiple answer choices.

A total of 117 consumers and 18 vendors were interviewed and interviews were conducted in the period corresponding to the 2<sup>nd</sup> and 3<sup>rd</sup> *defesos* of 2013 (February 1<sup>st</sup> to 16<sup>th</sup>, February 26<sup>th</sup> to March 3<sup>rd</sup>, March 12<sup>th</sup> to 17<sup>th</sup>, and March 28<sup>th</sup> to April 2<sup>nd</sup> – as established by Normative Instruction 01/2013 by the Ministry of Fisheries and Aquaculture). Answers were digitalized and descriptive statistics used for the analysis.

## Results

**Vendors** - All interviewed vendors were selling uçá and 38% traded the species for more than 10 years, being the pre-cooked crab the most common offer (83%). Sixty-one percent said they were aware of the origin of the animals traded, indicating they were purchased through a commercial supplier. Fifty-six percent of the vendors stated that there was a minimum legal size for the uçá commercialization, but 50% of them did not know to correctly point that size. Ninety-four percent of vendors expressed a preference for buying male crabs, mainly due to surveillance reasons (41%), or due to species conservation (23%), higher supply (17%), or because they considered that males tend to be bigger individuals (6%). Seventy-two percent of vendors declared they sell uçá throughout the whole year. For the 28% who declared not trading during the whole year, the *defeso* was appointed as the main reason (60%).

Fifty percent of vendors declared they have never heard of the *defeso*. Among the 50% who declared knowing the *defeso*, 77% defined it correctly, but 33% did not correctly point the *defeso* periods. Environmental agencies (33%) and suppliers (33%) were the largest sources of information on the *defeso*. Seventy-two percent of vendors stated they had never received an environmental education team and 94% expressed the desire to get more information on the crab and the *defeso*. Fifty percent of the vendors declared that there was a decrease in the supply of uçá in recent years, while 11% reported an increase in that supply. Eighty-eight per cent of vendors declared themselves very concerned about the possibility of uçá to disappear in nature, mainly because of ecological reasons (50%), because they believed that uçá is important for nature, or due to financial reasons, because they could lose their income (27%). Fifty percent declared that their clients never expressed concern about the possibility of uçá's extinction or, in case of concern, it did not happen very often (33%).

Forty-four percent of vendors stated that there is no direct substitute for uçá during the *defeso*. For those who indicated a substitute, the guaiamum crab (*Cardisoma guanhumí*, Latreille) was the most cited (38%). Although 88% of the vendors claimed to have received environmental inspection in the previous year, 44% did not declare their stocks of uçá in 2013. All vendors familiar with the *defeso* declared they change their selling routine, with 44% saying they did remove the uçá from the menu; 55% declared that sells during the *defeso* came from stored stocks.

**Consumers** - Seventy-two percent of the 117 consumers showed no preference for a specific species of crab, but among those who declared preference the uçá was the choice for 76%. Regarding the frequency of consumption, 75% consumed uçá a maximum of once a month and 6% more than three times a week. Ninety percent were not interested in the origin of the animal consumed and 80% stated that they chose the largest individuals for consumption. However, 56% of consumers said they had no preference between males and females. Among those who declared, preference was higher for females (64%), mainly because of the size (39%) or the presence of ova, considered tasty.

When questioned about the *defeso*, 53% of consumers had never heard of it. All those 47% who declared familiar with the *defeso* had heard the correct definition, but

50% of them pointed to the wrong periods; 34% declared they did not know the right period. Television, internet, magazines or newspapers were the main sources of information about the *defeso* (45%) (Table 1). Seventy-six percent of consumers declared they were very concerned on the possibility of uçá's extinction in nature. But 61% of consumers familiar with the *defeso* declared they did not change their habits and continued to consume the crab openly. For those who changed, consumption was replaced by shrimp or fish (75%). Ninety-six percent of consumers expressed the desire to get more information about the crab and the *defeso*, and 55% preferred that the information should be via TV or the internet.

**Table 1 - Perceptions on the *defeso* moratorium and on the sustainability of the consumption of uçá crab (*Ucides cordatus*) among vendors and consumers in the metropolitan area of Recife, Pernambuco, Brazil. Questionnaires with 16 and 26 questions (see Appendix 1) were used for consumers and vendors, respectively, between February and April 2013. Results in %.**

Questions	Vendors (n = 18)		Consumers (n = 117)	
	Yes	No	Yes	No
Have you ever heard about the <i>defeso</i> ?	50	50	47	53
Defined it correctly?	77	-	100	-
Do you know when it happens?	67	34	16	84
Do you feel a decrease in the crab offer?	50	50	-	-
Do you feel concerned about the possibility of the uçá-crab to disappear in nature?	88	12	76	24
Do you change your selling / consumption routine during the <i>defeso</i> ?	100	0	39	61
Would you like to get more information on the uçá and the <i>defeso</i> ?	94	6	96	4

## Discussion

The present study demonstrated that the trade and consumption of the uçá-crab (*U. cordatus*) in the Metropolitan Region of Recife (RMR), Northeastern Brazil, has several contradictions between the declared conservation concern of both vendors and consumers and their practices during the *defeso* moratorium. There are contradictions and an information gap on what is the *defeso*, on when it occurs and on which procedures should be adopted during that period. Although there is a perception on the decrease in uçá's supply, and although vendors declared they are very concerned about the possibility

of stock collapses, the sell of uçá continues to meet a demand from consumers, which although express concern about the possible of disappearance of the species, do little to reverse their consumption routine. Nearly 50% of the interviewees had never heard of the *defeso*, the moratorium established to protect the species, and among the interviewees who were familiar with, a third of the vendors and half of the consumers were not able to correctly indicate the periods in which the *defeso* occurs.

The contradictions were also observed regarding the required procedures, standards for daily trade and specific practices vendors and consumers were expected to follow during the *defeso*. In 2003, IBAMA – the Brazilian federal agency responsible for environmental surveillance and enforcement – increased from 45 mm to 60 mm the minimum width of the uçá's carapace so crabs could be captured for consumption in Brazil (ARAÚJO; CALADO, 2008). Such decision was based on studies which indicated a decrease in the average size of crabs from different populations along the Brazilian coast (eg. ARAÚJO; CALADO, 2008), a clear indicative that the current capture scenario was unsustainable.

Araújo and Calado (2008) analyzed the average size and weight of uçás in the Lagunar Mundáu/Manguaba Estuary complex, in Alagoas, and observed that males and females no longer presented a statistically significant difference in their body sizes. Such lack of sexual dimorphism contradicts the known patterns for the species, for which males tend to be larger and heavier than females. Similar patterns to those from Araújo and Calado (2008) were found by Botelho et al. (1999) in the estuaries of the Formoso and Ilhetas rivers, in Pernambuco, where males and females also presented the same average carapace length, but with heavier males. Araújo and Calado (2008) also found even lower values of catch per effort unit between sexes and attributed the reduction in the body size difference to a larger male-biased capture effort to meet a consumption demand. Further, crabs captured in Alagoas were smaller than specimens analyzed in many other Brazilian estuaries. In fact, the overexploitation of the uçá has been also pointed out along the coast of Pará, in Northern Brazil (GONDIM, 1996).

Half of the interviewed vendors stated that there was a minimum size for uçá commercialization. However, half of those same interviewees did not know what that minimum size was. Such contradiction indicates that, in practice, crabs smaller than those permitted by the legislation may be traded in the Metropolitan Region of Recife. The legislation also indicates that before the *defeso* period vendors must declare their stocks so crabs already in their possession can be legally sold (MPA, 2015). Once again, contradictions: Although declare they were frequently monitored, most vendors did not correctly declare their stocks as required by law and kept trading crabs even during the *defeso*. For those who suspended sellings, the alternative fell on another crab species, the blue land crab *guaianum* (*Cardisoma guanhumu* L.). The lack of information on the minimum commercialization size by vendors, associated with the non-compliance with the stock declaration and the lack of inspections, can compromise *defeso*'s effectiveness (IVO; GESTEIRA, 1999). In fact, some authors believe that the complete prohibition of crab commercialization and consumption during the period of crab reproduction would be doomed to failure, given the cultural nature of this activity and the difficulties in maintaining an efficient surveillance system (ALVES; NISHIDA, 2003). In a research in

the Mamanguape River estuary, in Paraíba, authors found that although a large number of crab hunters agree with a possible prohibition of capture during the defeso, they affirm they would not cease capture activities, claiming no alternative for subsistence (ALVES; NISHIDA, 2003). The perception that a total moratorium on capture faces strong resistance from crab hunters is also shared by other authors (RODRIGUES et al., 2000).

The artisanal hunting of uçá, a species restricted to mangroves, has a large socio-economic importance for fishing communities in Northeastern Brazil, the region with the highest productivity of that species in Brazil (ALVES et al., 2005; NASCIMENTO et al., 2017). Such extractivism is characterized as the most significant conservation threat on the species (DIELE, 2005) and four main groups are involved: crab hunters, responsible for the capture of the crab; intermediaries, responsible for linking the first to the consumer market; restaurants and bars, which sell the product; and consumers (NORDI, 2009; NASCIMENTO et al., 2017). Although a simple activity, which can be done with no boats or with more complex tools, various techniques are employed to capture crabs: traps, which although prohibited by IBAMA throughout the national coast are still widely used; the braceamento method, which consists of manual removal of the crab from inside their galleries; and the tapamento, consisting of filling the gallery opening with mud or branches (NORDI, 2009; NASCIMENTO et al., 2011; NASCIMENTO et al., 2016).

In the coastal regions, uçá is one of the most exploited natural resources for human consumption (JANKOWSKY et al., 2006). This species reaches its average size (8 to 10 cm of carapace width) after eight years (CASTILHO et al., 2008). With relatively slow growth, crab hunters rarely wait until individuals reach maturity. The perception and concern from crab hunters on the population decrease of the species and the role it plays in the environment has been identified for more than two decades (NORDI, 1994). This same author had already detected an intensification of captures during the andada due to economic reasons; at the same time hunters perceive an abrupt increase in the offer during the andada, they also complain that no benefits are offered to them to avoid capturing crabs during that period. Thus, in a combination of a lack of awareness programs, of alternative work, and of surveillance and enforcement, regulations like the defeso become inefficient (ALVES; NISHIDA, 2002). Alternative socioeconomic proposals and a more effective participation from all those involved with the administrative decisions becomes an important element in the uçá's conservation planning (NORDI, 1994; ALVES et al., 2005).

The perception expressed by vendors on the decrease in uçá's supply can be an effective indicative of a real population decrease in nature. Changes in population size can be attributed to anthropogenic pressures like overfishing and/or biased capture, and this can be potentialized by the degradation of mangrove areas, frequently affected by sewage disposal, landfills and deforestation (ALVES; NISHIDA, 2003; ARAÚJO; CALADO, 2008). There is an increasing tendency on the pressures and threats affecting mangrove in Brazil, aggravated by a lack of adequate surveillance. Besides compromising the direct consumption of the species, drastic reductions in population sizes and the depletion of uçá stocks can result in ecological damages. Crabs play a fundamental role in nutrient recycling in their habitats, aiding in the decomposition process due to their behavior of

crushing mangrove leaves (JONES, 1984). The collapse of uçá stocks can also negatively impact local economies due to the large number of people involved with hunting and commercialization (IVO; GESTEIRA, 1999). Facing such a scenario, the establishment of population monitoring programs, with an intensification of surveillance, especially during the *andada* period, seems essential.

### ***What can and should be done?***

A characteristic common to both interviewed groups can and should be used in reversing this unfavorable scenario to the uçá: about 80% of interviewees expressed concern about the disappearance of the species in the wild and 95% wanted to get more information about the *defeso*. Such high percentages clearly points out that vendors and consumers are at least receptive to get information and are interested in deepening their knowledge about the subject. This is an opportunity that needs to be explored for the dissemination of a message oriented to protect not only the uçá, but also to the other crab species consumed by Brazilians.

The way in which this message will be disseminated requires further discussion and must be included in action plans for both the crab and other mangrove species. In either way, this will require joining efforts from government agencies, crab hunters, NGOs and research institutions, not only for research and monitoring, but also to encourage the local crab trade in an orderly and sustainable manner, with the adoption of better environmental practices. Other educational and environmental awareness practices for the sustainable exploitation of the uçá are necessary, otherwise a similar scenario experienced by the *guaiamum*, which due to the indiscriminate hunting and habitat destruction almost disappeared from the mangroves in the State of Alagoas, may occur in other parts of the Brazilian coast (ARAÚJO; CALADO, 2008).

The message to be transmitted to vendors and consumers should be clear: The *defeso* is a strategy whose ultimate goal is to keep allowing the uçá consumption. But how can this message be better disseminated? Below are some suggestions to be considered.

- Finding the dates of *defeso* is not an easy task and frequently requires a qualified search. Thus, the federal and state government agencies involved definitively needs to better disseminate those dates, setting specific and clearly publicized channels for that purpose. Besides the official channels used (e.g. Diário Oficial da União), dates and the necessary procedures during the *defeso* must be better indexed in the standard searching sites so the information would be clearly and quickly available;

- Such information dissemination should also benefits from new technologies and the power of social media. Facebook, Twitter and Instagram, for example, can and should be used for environmental education and species conservation purposes.

- The uçá crab should be considered a flagship species or mascot for the protection of mangroves, maximizing the dissemination of information on its importance and on the environmental services it provides. Existing mangrove conservation initiatives should also be highlighted.



- The creation of cooperatives of crab hunters should be encouraged, as well as their participation in programs focused on best practices. The establishment of a certification system should be considered for those respecting the environmental practices and the current legislation.
- Once in *defeso*, that information should be clearly and obligatorily informed in the menus exposed in bars and a restaurant, improving the chance that uninformed consumers become aware of what is the *defeso* and when it occurs.

Significant consumers' behavioral change requires, in some cases, breaking paradigms, and this is not usually fast or intuitive (CARRIGAN; ATTALLA, 2001; PEREIRA; AYROSA, 2004; SILVA et al., 2012; MUTZ, 2016). The consumption of uçá crab is quite strong in the culture of some regions of Brazil, especially in the Northeastern coast, and changing the future of this species lies not only in a change on the population's perception that this is a conservation problem, but also on how to fix the observed contradictions between their declared concern and their actual consumption practices. This is a challenging task, but a better information flow on the *defeso* can definitively contribute.

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Original Article

# THE *DEFESO* MORATORIUM SEASON FOR THE UÇÁ CRAB (*UCIDES CORDATUS* L.): AN ANALYSIS OF PERCEPTION OF CONSUMERS AND VENDORS

**Abstract:** Uçá-crab consumption is a cultural trait in Brazil, but overexploitation threatens the species. The *defeso* is a moratorium aimed to protect the uçá - prohibiting capture/sell - but such strategy requires public support. The perception about the *defeso* among consumers/vendors in Recife – PE was analyzed indicating contradictions between declared concern and practices. Although 50% of vendors identified a decrease in supply and 88% declared concern, 50% did not know the crab’s minimum size for sell, 75% did not respect the *defeso*, and 50% had never heard about it. 76% of consumers declared concern, but 90% were not interested on crab’s origin and 53% did not know about *defeso*. People who claim to know the *defeso* defined it correctly, but 84% missed correct dates; 61% consumed crabs even during the *defeso*. Although > 95% of the public would like to know more about the *defeso*, such information is not reaching that public, weakening the strategy.

**Keywords:** moratory, environmental perception, environmental education, mangrove crab.

**Resumo:** O consumo do caranguejo-uçá é cultural no Brasil, mas a sobre-exploração compromete populações da espécie. O “defeso” visa proteger sua reprodução, proibindo captura e venda, mas só será efetivo se respeitado. A percepção sobre o defeso com 135 consumidores/vendedores de uçá em Recife □ PE foi analisada. Há contradições entre a preocupação com a espécie e as práticas de consumo. Embora 50% dos vendedores apontem queda na oferta e 88% se declarem preocupados com seu desaparecimento, 50% desconhecem o tamanho mínimo para venda, 75% vendem-no o ano todo, e 50% desconhecem o defeso. Entre consumidores, 76% declaram preocupação com seu desaparecimento, 90% não se interessam pela origem e 53% desconhecem o defeso. Quem afirma conhecê-lo o define corretamente, mas 84% erram a época, e 61% consomem uçá mesmo no defeso. Embora mais de 95% do público queira saber mais, a informação sobre o defeso não chega ao público-chave, enfraquecendo esta ferramenta. **Palavras-chave:** Consumo consciente, Defeso, Educação ambiental, Percepção ambiental.

**Resumen:** El consumo del cangrejo es cultural en Brasil, pero la sobreexplotación amenaza las poblaciones. El “defeso” intenta proteger su reproducción, prohibiendo captura y

venta, pero funcionará sólo si es respetado. Analizamos la percepción sobre el “defeso” en 135 vendedores/consumidores del cangrejo en Recife-PE. Aunque 50% de los vendedores señalan una disminución en la oferta y 88% se declaran preocupados por su desaparición, el 50% desconoce el tamaño mínimo para la venta, 75% lo venden durante todo el año, y 50% desconocen esta medida. Entre los consumidores, 76% muestra preocupación con su desaparición, 90% no les importa su origen y 53% desconocen el “defeso”. Quién afirma conocerlo, lo define correctamente, pero el 84% se equivoca en los periodos y 61% lo consumen durante el “defeso”. A pesar de que más del 95% del público quiere saber más información acerca del defeso, la información no es divulgada, debilitando esta herramienta de conservación.

**Palabras clave:** defeso, percepción ambiental, educación ambiental, cangrejo de tierra.

# APPENDIX I

## FORMULÁRIO CARANGUEJO-UÇÁ BARES E RESTAURANTES

DATA:

BAIRRO:

BAR:

ENTREVISTADOR:

1. Este estabelecimento comercializa o caranguejo uçá ou partes dele?

a.  Sim

b.  Não

2. Se sim, qual a forma de comércio?

a. Congelado inteiro

b. Caranguejo pré-cozido

c. Caranguejo vivo

d. Partes

3. Sabe a origem do animal comercializado?

a.  Sim: \_\_\_\_\_

b.  Não

4. Onde você compra o uçá?

a.  Feiras livres

b.  Direto do catador

c.  Cria o próprio

d.  De fornecedor comercial

e.  Outro: \_\_\_\_\_

5. Há quanto tempo o uçá é comercializado neste estabelecimento?

a.  > 20 anos

b.  De 10 a 20 anos

c.  De 5 a 10 anos

d.  De 2 a 5 anos

e.  < 2 anos

6. Em média, quantos animais são vendidos, por semana, no estabelecimento?

a. \_\_\_\_\_

b. Não sabe

7. Você sente alguma diferença na disponibilidade de uçá no mercado desde o início da comercialização

- a.  Sim
- b.  Não

8. Existe algum tamanho mínimo para os animais que você comercializa?

- a.  Sim
- b.  Não

9. Se sim, qual é este tamanho?

10. O estabelecimento tem preferência pela venda entre fêmeas e machos?

- a.  Fêmeas
- b.  Machos
- c.  Não tem

11. Se há preferência, porque ela ocorre?

- a.  Diferença de tamanho entre sexos
- b.  Preço de compra maior de um dos sexos
- c.  Preço de venda maior de um dos sexos
- d.  Procura pelo consumidor maior por um dos sexos
- e.  Oferta é maior para um dos sexos
- f.  Outra razão? Qual?

12. O uçá é comercializado o ano todo?

- a.  Sim
- b.  Não

13. Se não, por quê?

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14. Já ouviu falar do Período de Defeso?

- a.  Sim
- b.  Não

15. Se sim, saberia apontar a opção mais correta para a definição:

- a. O defeso é uma técnica especial de captura e preparação dos caranguejos, de forma a torná-los comercialmente mais valiosos.
- b. O defeso é o período quando a coleta e comercialização do caranguejo são incentivadas pelo Ministério da Pesca, em função da maior oferta de animais.
- c. O defeso é o período em que as atividades de coleta e comercialização do caranguejo ficam proibidas ou controladas em diversos locais do país, de acordo com a época de reprodução dos crustáceos na natureza.



d. O defeso é uma técnica de separação de áreas de coleta por populações de catadores, de forma a garantir que somente estas pessoas possam catar e vender os caranguejos.

16. Se sim, pode apontar a época?

- a.  Metade de janeiro ao começo de abril
- b.  Início de maio ao final de julho
- c.  Nos últimos 4 meses do ano
- d.  O ano todo
- e.  Toda última semana do mês

17. Se você já ouviu falar do defeso, como ficou sabendo?

- a. Foi informado pela televisão, jornal, revista ou internet
- b. Foi informado por algum órgão ambiental ou de fiscalização
- c. Foi informado por algum amigo ou colega de trabalho
- d. Através de alguma campanha específica
- e. Outra fonte. Qual?

18. Se você já ouviu falar do defeso, qual a sua atitude durante o período?

- a. Não altera sua rotina de vendas
- b. Não comercializa o uçá
- c. Declara e comercializa apenas estoques armazenados
- d. Continua vendendo, mas não exhibe o uçá abertamente

19. Você já fez alguma declaração de estoques de uçá ao IBAMA em 2013?

- a.  Sim
- b.  Não

20. O estabelecimento recebeu alguma fiscalização ambiental em 2012 (IBAMA, CPRH, CEPOMA)?

- a.  Sim, mais de uma vez
- b.  Sim, apenas uma única vez
- c.  Nenhuma

21. Você se preocupa com a possibilidade do uçá acabar na natureza?

- a.  Sim, me preocupo muito
- b.  Sim, mas isso não me preocupa bastante
- c.  Não me preocupo com isso

22. Se você se preocupa, qual a razão principal?

- a.  Financeira, pois posso perder meu ganha pão
- b.  Ecológica, pois o uçá é importante para a natureza
- c.  Cultural, pois vou deixar de vender um prato típico da minha região
- d.  Social, pois os catadores vão ficar desempregados

e. ( ) Outra. Qual?

23 - Existe alguma alternativa de substituição do uçá?

a. ( ) Sim. Qual?

b. ( ) Não existe substituição

24. Seus clientes manifestam alguma preocupação quanto a possibilidade do uçá acabar na natureza?

a. ( ) Sim, com bastante frequência

b. ( ) Sim, mas não tão frequente

c. ( ) Sim, mas raramente

d. ( ) Nunca se manifestaram

25. Gostaria de saber mais sobre o caranguejo uçá e seu período de defeso?

a. ( ) Sim

b. ( ) Não

26. O estabelecimento já recebeu alguma equipe de Educação Ambiental?

a. ( ) Sim

b. ( ) Não

## FORMULÁRIO CARANGUEJO-UÇÁ CONSUMIDOR

DATA:

BAIRRO:

BAR:

ENTREVISTADOR:

1. Com que frequência você consome caranguejo?

a. ( ) 1 vez por semana

b. ( ) No máximo 2 vezes por semana

c. ( ) Mais de 3 vezes por semana

d. ( ) No máximo uma vez por mês

2. Tem preferência por algum tipo de caranguejo?

a. ( ) Não, como qualquer um

b. ( ) Sim. Qual?

3. Sabe a origem do animal comercializado?

a. ( ) Sim: \_\_\_\_\_

b. ( ) Não

4. Existe algum tamanho mínimo para os animais que você come?

- a.  Sim
- b.  Não

5. Se sim, qual é este tamanho?

6. Você tem preferência entre fêmeas e machos?

- a.  Fêmeas
- b.  Machos
- c.  Não tem

7. Se há preferência, porque ela ocorre?

- a.  Diferença de tamanho entre sexos
- b.  Preço é diferente entre os sexos
- c.  O gosto é diferente entre os sexos
- d.  Outra razão? Qual

8. Já ouviu falar do Período de Defeso?

- a.  Sim
- b.  Não

9. Se sim, saberia apontar a opção mais correta para a definição:

- a. O defeso é uma técnica especial de captura e preparação dos caranguejos, de forma a torná-los comercialmente mais valiosos.
- b. O defeso é o período quando a coleta e comercialização do caranguejo são incentivadas pelo Ministério da Pesca.
- c. O defeso é o período em que as atividades de coleta e comercialização do caranguejo ficam proibidas ou controladas em diversos locais do país, de acordo com a época de reprodução dos crustáceos na natureza.
- d. O defeso é uma técnica de separação de áreas de coleta por populações de catadores, de forma a garantir que somente estas pessoas possam catar e vender os caranguejos.

10. Se sim, pode apontar a época?

- a.  Metade de janeiro ao começo de abril
- b.  Início de maio ao final de julho
- c.  Nos últimos 4 meses do ano
- d.  O ano todo
- e.  Toda última semana do mês

11. Se você já ouviu falar do defeso, como ficou sabendo?

- a. Foi informado pela televisão, jornal, revista ou internet
- b. Foi informado por algum órgão ambiental ou de fiscalização
- c. Foi informado por algum amigo ou colega de trabalho

- d. Através de alguma campanha específica
- e. Outra fonte. Qual?

12. Se você já ouviu falar do defeso, qual a sua atitude durante o período?

- a. Não altera sua rotina de consumo
- b. Continuo comendo, mas não o faço abertamente
- c. Só como após confirmar que era animal de estoque declarado
- d. Não come o uçá neste período

13 - Se você deixa de comer, qual alternativa de substituição você busca?

- a. ( ) Troco por outra espécie de caranguejo
- b. ( ) Troco por camarão ou peixe
- c. ( ) Troco por carne de boi, bode ou frango

14. Você se preocupa com a possibilidade do uçá acabar na natureza?

- a. ( ) Sim, me preocupo muito
- b. ( ) Sim, mas isso não me preocupa bastante
- c. ( ) Não me preocupo com isso

15. Se você se preocupa, qual a razão principal?

- a. ( ) Financeira, pois o preço vai aumentar muito
- b. ( ) Ecológica, pois o uçá é importante para a natureza
- c. ( ) Cultural, pois vou deixar de comer um prato típico da minha região
- d. ( ) Social, pois os catadores e vendedores vão ficar desempregados
- e. ( ) Outra. Qual?

16. Gostaria de saber mais sobre o caranguejo uçá e seu período de defeso?

- a. ( ) Sim. Como?
- b. ( ) Não