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COMUNICAÇÃO BREVE

INFLUENCE OF YOUTUBE™ ON CONSUMPTION OF *Leptodactylus macrosternum*, MIRANDA-RIBEIRO, 1926 (AMPHIBIA: ANURA) IN THE STATE OF RONDÔNIA, SOUTHWERSTERN AMAZON

A INFLUÊNCIA DO YOUTUBE NO CONSUMO DE Leptodactylus macrosternum, MIRANDA-RIBEIRO, 1926 (AMPHIBIA: ANURA) NO ESTADO DE RONDÔNIA, SUDOESTE DA AMAZÔNIA

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Abstract:

The consumption of anurans is almost non-existent in the Brazilian Amazon, and the objective of this study was to describe the consumption of white-lipped frogs (*Leptodactylus macrosternum*) influenced by YouTube™ videos in the Brazilian Amazon. The consumption records were made in the rural community of Cujubim Grande, belonging to the municipality of Porto Velho, Rondônia state. The interviewee stated that she started consuming the white-lipped frog after watching videos on YouTube™. Her closest family members do not consume white-lipped frog due to aversion to the group and the availability of other animal protein sources. This demonstrates how videos on an online platform contribute to changing dietary habits of the rural populations in the Amazon.

Keywords: Anura; Brazil; Interviews; Streaming.

Resumo:

O consumo de anuros é quase inexistente na Amazônia brasileira, e o objetivo deste

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estudo foi descrever o consumo do rã-manteiga (*Leptodactylus macrosternum*) influenciado pelos vídeos do YouTube™ na Amazônia brasileira. O registro do consumo foi feito na comunidade rural de Cujubim Grande, pertencente ao município de Porto Velho, estado de Rondônia. A entrevistada declarou que começou a consumir a rã-manteiga após assistir a vídeos no YouTube™. Os familiares mais próximos não consomem a rã-manteiga devido à aversão ao grupo e à disponibilidade de outras fontes de proteína animal. Isto demonstra como vídeos em uma plataforma online podem contribuir para mudar os hábitos alimentares das populações rurais na Amazônia.

Palavras-chave: Anuro; Brasil; Entrevistas; Fluxo de mídia.

1. Introduction

The rise of different social media platforms and the popularization of internet created a space for the exchange of information on different aspects of wildlife. These spaces allow the propagation of legal and illegal activities (EL BIZRI et al., 2015; SHIFFMAN et al., 2017; FERRAZ et al., 2019a), and can also influence consumption patterns of different foods such as amphibians. Frog farming in Brazil has great growth potential as new breeding methods are being studied and new species are being described in terms of trade for consumption (SOUSA and MALTAROLO, 2019), along with the abundant of information on breeding on YouTube™ (RIBEIRO and TOLEDO, 2022). However, amphibians are not commonly consumed by hunters and bushmeat consumers in the Amazon.

Studies conducted in the region highlight mammals, birds, and reptiles as elements in the hunting spectrum by both consumers, subsistence hunters, and urban hunters (VAN VLIET et al., 2015; RAMOS et al., 2020; SENA et al., 2021). The non-consumption of the anurans may be associated with different issues, such as availability of species from other groups, absence of this feeding habit, transmission of diseases, and frog toxicity (OLIVEIRA et al., 2021; PAZINATO et al., 2021). Previous studies conducted in Rondônia state indicate the use mainly mammals and birds (BELFORT et al., 2020; RAMOS et al., 2020; OLIVEIRA et al., 2022). The first record of amphibian consumption in the state was made by Oliveira et al. (2021), who recorded the consumption of *Leptodactylus macrosternum* by immigrants from the state of Espírito Santo. However, no records of amphibian consumption by residents born in the region could be found.

The present manuscript aims to describe the consumption of *L. macrosternum* by a native-born resident of the state of Rondônia, Southwestern Amazon, influenced by YouTube™ videos.

2. Material and Methods

The Cujubim lake is located in the northern region of Rondônia, on the lower course of the Madeira River, 0.7 kilometers from the river bank, belonging to the Cujubim Grande village, about 70 kilometers from the center of Porto Velho, capital of Rondônia state (8°35.040'S - 63°41.465'W). The main source of income of the inhabitants of the locality is horticulture and fishing, and to a lesser extent manioc flour and cattle raising. The phytophysiognomy of the region around the lake is of Alluvial Open Ombrophilous

Forest. The rest of the area is categorized as Lowland Open Ombrophilous Forest, with some marsh and lowland regions, which are more flood prone (Figure 1). Data collection was divided into two parts and conducted using the semi-structured interview method. The first part included the following socioeconomic information assessment: age, birth place, parents' place of birth, time length living there, income, and education. The second part involved posing a question about the consumption of amphibians and recording the provided answers. To identify the species, the interviewee was shown high quality photos of *Leptodactylus macrosternum*, *Rhinella marina*, *Boana boans*, and *Boana raniceps*. Subsequently, the closest family members over the age of 18 were interviewed to assess their acceptance of amphibian consumption and their perception of the interviewee's eating habits. The collected material was compared with that deposited in the herpetofauna collection of the Federal University of Rondônia, and a specialist confirmed the species.

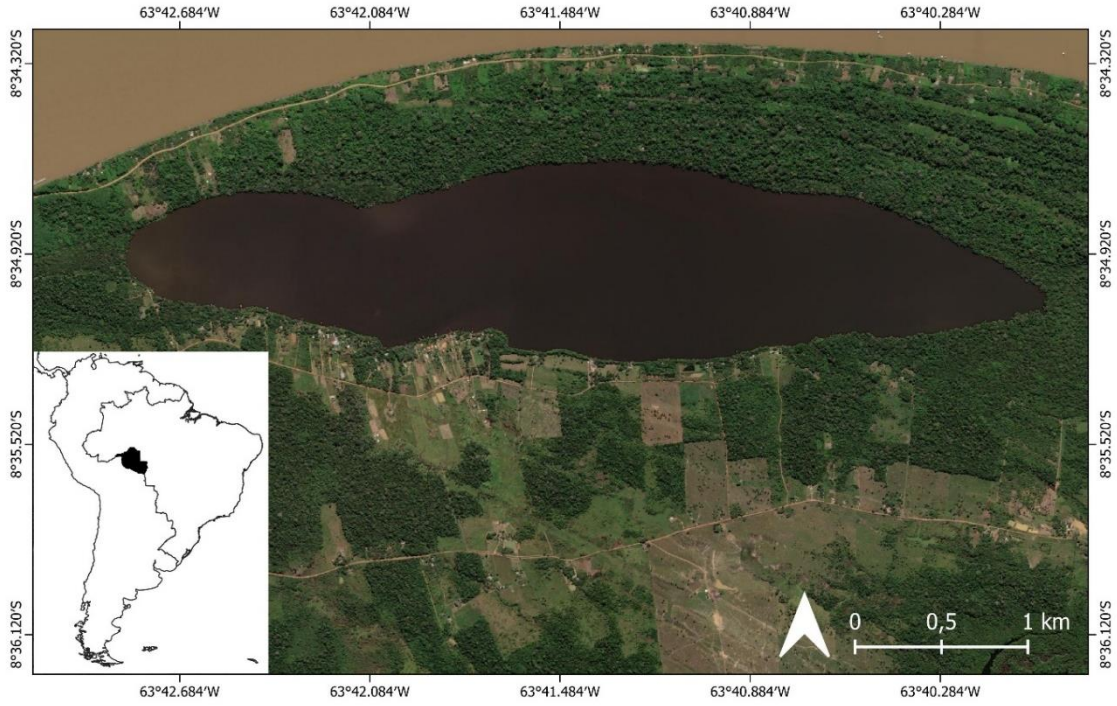

Figure 1: Map of study region, the Village of Cujubim Grande and the lake of Cujubim. Elaboration: Marcela Alvares Oliveira.

The Ethics Committee of the Federal University of Rondônia under opinion number 4.068.703 approved the study. The responses of household members about anuran consumption were clustered according to similarity and the relative frequency of each cluster was evaluated.

3. Results

The interviewee is currently 19 years old and is a third-generation rural dweller and a fourth-generation state dweller. She has incomplete basic education, knows how to read and write well, and was born in a nearby settlement, the Nova Aliança Settlement Project. By the time of the research, she lived in a house with her parents-in-law, two underage brothers-in-law, and her husband. Part of the source of animal protein consumed by the family comes from hunting and fishing, and the interviewee herself is an active hunter

and has been consuming the meat of wild animals since childhood.

The interviewee reported that she watched videos on YouTube™ in 2016 about the legalized breeding, cleaning, and preparation of frogs for consumption, as well as the illegal capture of free-living animals. After watching the videos and the frog species, the interviewee found out that one species occurring in the region was very similar. To make sure that it was the same species, and that consumption would be safe, she captured an individual and compared it with those shown in the videos and in an identification guide distributed by the Santo Antônio Hydroelectric Power Plant (MARÇAL et al., 2011) (Figure 2). Based on the similarity between the individuals and scientific names, the interviewee determined that the species found was edible. Subsequently, the interviewee collected other individuals, cleaned, and fried them. Since then, the white-lipped frog is only eaten during the rainy season, as they are more plentiful.

Figure 2: Juvenile individual of the species *Leptodactylus macrosternum* captured from the study area. Photo: Marcela Alvares Oliveira.

When asked about its status as a game species, the interviewee argumented that the white-lipped frog is not considered a game animal and is not caught using traditional hunting equipment and techniques, such as rifles or traps. During the interview, details about the biology and ecology of the species were provided by interviewee. They are found mainly in the areas along the shores of the Cujubim lake and near horticulture plantations, especially in open areas. During dry season, white-lipped frogs are rarer. However, at the beginning of the rainy season they start to become more abundant and larger in size, and can be found in groups in temporary pools. For this reason, white-

lipped frogs are mainly consumed by the interviewee at the peak of the rainy season (January, February, and March in the region).

No member of the family reported consuming white-lipped frog. When questioned about the consumption by their relative, all were categorical in informing that they sustain that frogs are not animals for consumption, considering the great variety in game animals available in the locality. All reacted with aversion to the possibility of consuming white-lipped frog, stating that they are disgusting (100%), are poisonous animals (85.71%), and that their urine can blind people (57.14%).

4. Discussion

Our study is the first to record the consumption of *L. macrosternum* by a native Amazonian hunter, demonstrating that the ingestion of non-traditional game species in the Amazon can be influenced by freely available streaming platforms already installed on most current communicative devices. Possibly, this is a one-off behavior in the community, due to the availability of other wild protein sources and the related repulsion towards anurans in general.

Regarding the statement that the species is not a game animal due to the non-use of traditional hunting techniques in the Amazon (ALVES et al., 2018), this may be a bias in hunting studies, as research using the interview method enquire about the more traditional game species (e.g., DAMACENO et al., 2018). The information on the perception of biology and ecology of the species is similar to that found by Oliveira et al. (2021), in line with that observed in the literature about the species (CAMURUGI et al., 2017), highlighting the importance of local ecological knowledge on aspects related to their environment.

Creators of digital content for YouTube™ have had a great influence on their target audience, stimulating diverse behaviors (FERRAZ et al., 2019b). The YouTube™ streaming platform is becoming a prominent tool for sharing different forms of interaction between humans and wild animals (OTSUKA and YAMAKOSHI, 2020) and the widespread illegal hunting and capturing of animals (EL BIZRI et al., 2015) may alter hunting behavior and consumption of wild animals. Social medias enable different types of interactions and access to information, positively contributing to changes in diet and eating behavior (MCGLOIN and ESLAMI, 2015). There is a clear need for studies focused on the influence of these elements on the hunting and consumption of wild animals.

Anurans (frogs, toads, and tree frogs) are generally perceived negatively by different populations, often strengthened by myths and appearance of the group's representatives (PROKOP and RANDLER, 2018), being considered non-charismatic (BERNARDE, 2018). In general, there is higher levels of aversion towards species of the Bufonidae family (LIMA et al., 2020), fostering the repulsion relationship between other members of the family nucleus (FRYNTA et al., 2019; OLIVEIRA et al., 2021). Not only availability and traditional hunting, but also their appearance and potential harmfulness can influence the acceptability of wild animal consumption.

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References

ALVES, R. R. N. et al. The importance of hunting in human societies. In: ALVES, R. R. N.; ALBUQUERQUE, U. P. (Eds.). **Ethnozoology**: animals in our lives. Cambridge: Academic Press, 2018. p. 95-118.

BELFORT, M. J. S. et al. Perception of subsistence hunters in Lower Madeira on the impact of the Santo Antônio Hydroelectric Power Plant. **Revista Brasileira de Ciências da Amazônia**, Rolim de Moura, v. 9, n. 3, p. 16-25, 2020. Available from: https://periodicos.unir.br/index.php/rolimdemoura/article/view/4879. Accessed on: 12 dez. 2021.

BERNARDE, P. S. Animais "não carismáticos" e a Educação Ambiental. **South American Journal of Basic Education, Technical and Technological**, Rio Branco, v. 5, n. 1, p. 1-7, 2018. Available from: https://periodicos.ufac.br/index.php/SAJEBTT/article/view/1674. Accessed on: 13 dez. 2021.

CAMURUGI, F. et al. Reproduction, sexual dimorphism, and diet of *Leptodactylus chaquensis* (Anura, Leptodactylidae) in northeastern Brazil. **Herpetological Conservation and Biology**, v. 12, n. 2, p. 498-508, 2017. Available from: http://www.herpconbio.org/Volume_12/Issue_2/Camurugi_etal_2017.pdf. Accessed on: 13 dez. 2021.

DAMACENO, A. B.; ORTEGA, G. P.; TURCI, L. C. B. Uso da caça de subsistência no assentamento Santa Luzia, Cruzeiro do Sul, Acre. **PUBVET**, v. 13, n. 2, p. 1-8, 2018. Available from: https://www.pubvet.com.br/artigo/5507/uso-da-caccedila-de-subsistecircncia-no-assentamento-santa-luzia-cruzeiro-do-sul-acre#:~:text=Cerca%20de%20163%20animais%20s%C3%A3o,o%20veado%20(Mazama%20sp.). Accessed on: 12 dez. 2021.

EL BIZRI, H. R. et al. The thrill of the chase: uncovering illegal sport hunting in Brazil through YouTube™ posts. **Ecology and Society**, v. 20, n. 3, p. 30, 2015. Available from: http://dx.doi.org/10.5751/ES-07882-200330. Accessed on: 14 dez. 2021.

FERRAZ, J. D. et al. Descarte de peixes ornamentais em águas continentais brasileiras registrados no Youtube™: ausência de informação ou crime ambiental deliberado? **Revista Brasileira de Zoociências**, Juiz de Fora, v. 20, n. 2, p. 1-20, 2019a. Available from: http://dx.doi.org/10.34019/2596-3325.2019.v20.26202. Accessed on: 12 dez. 2021.

FERRAZ, J. D. et al. Incentivo a pesca esportiva de tucunaré *Cichla* Bloch & Schineider, 1801 no Lago Igapó, Londrina, Paraná: ameaça a comunidade aquática nativa e aos habitantes da cidade? **Boletim Sociedade Brasileira de Ictiologia**, v. 128, p. 19-25, 2019b. Available from: https://www.researchgate.net/publication/332471570_Incentivo_a_pesca_esportiva_de_Tucunare_Cichla_Bloch_Schneider_1801_no_Lago_Igapo_Londrina_Parana_ameaca_a_comunidade_aquatica_nativa_e_aos_habitantes_da_cidade. Accessed on: 28 dez. 2021.

FRYNTA, D. et al. Human evaluation of amphibian species: a comparison of disgust and beauty. **The Science of Nature**, v. 106, n. 7, p. 1-19, 2019. Available from: www.10.1007/s00114-019-1635-8. Accessed on: 30 nov. 2021.

LIMA, J. S.; DOS SANTOS, C. M. A.; DOS SANTOS, C. K. A. Utilização da etnozoologia e educação ambiental para desvendar a concepção das crianças em relação aos anfíbios anuros. **Diversitas Journal**, v. 5, n. 2, p. 814-823, 2020. Available from: https://doi.org/10.17648/diversitas-journal-v5i2-726. Accessed on: 05 dez. 2021.

MARÇAL, A. S.; GOMES, I. B. S. R.; CORAGEM, J. T. **UHE Santo Antônio**: guia das espécies de fauna resgatada. São Paulo: Scriba Comunicação Corporativa, 2011, 328 p.

MCGLOIN, A. F.; ESLAMI, S. Digital and social media opportunities for dietary behaviour change. **Proceedings of the Nutrition Society**, v. 74, n. 2, p. 139-148, 2015. Available from: https://doi.org/10.1017/S0029665114001505. Accessed on: 29 nov. 2021.

OTSUKA, R.; YAMAKOSHI, G. Analyzing the popularity of YouTube videos that violate mountain gorilla tourism regulations. **PloS one**, v. 15, n. 5, p. e0232085, 2020. Available from: https://doi.org/10.1371/journal.pone.0232085. Accessed on: 29 dez. 2021.

OLIVEIRA, M. A. et al. The consumption of the White-lipped Frog (*Leptodactylus macrosternum* Leptodactylidae Anura) in the state of Rondônia in the Brazilian Amazon. **Biotemas**, Florianópolis, v. 34, n. 3, p. 1-5, 2021. Available from: https://doi.org/10.5007/2175-7925.2021e80161. Accessed on: 21 dez. 2021.

OLIVEIRA, M. A. et al. Freelisting as a suitable method to estimate the composition and harvest rates of hunted species in tropical forests. **Ethnobiology and Conservation**, v. 11, n. 2022, p. 8, 2022. Available from: https://doi.org/10.15451/ec2022-03-11.08-1-9. Accessed on: 05 jan. 2021.

PAZINATO, D. M. M. et al. Conhecimento etnoherpetológico no município de Caçapava do Sul, sul do Brasil. **Revista de Ciências Ambientais**, Canoas, v. 15, n. 1, p. 1-12, 2021. Available from: http://dx.doi.org/10.18316/rca.v15i1.6077. Accessed on: 12 fev. 2022.

PROKOP, P.; RANDLER, C. Biological predispositions and individual differences in human attitudes toward animals. In: ALVES, R. R. N.; ALBUQUERQUE, U. P. (Eds.). **Ethnozoology**: animals in our lives. Cambridge: Academic Press, 2018. p. 447-466.

RAMOS, C. G. S. et al. Hunting in a community of waste pickers of recyclable materials in Rondônia, Brazil. **Revista Brasileira de Ciências da Amazônia**, Rolim de Moura, v. 9, n. 3, p. 4-15, 2020. Available from: https://periodicos.unir.br/index.php/rolimdemoura/article/view/4842/0. Accessed on: 05 jan. 2022.

RIBEIRO, L. P.; TOLEDO, L. F. An overview of the Brazilian frog farming. **Aquaculture**, v. 548, n. 2, p. 737623, 2022. Available from: https://doi.org/10.1016/j.aquaculture.2021.737623. Accessed on: 23 fev. 2022.

SENA, R. F. et al. Uso da fauna e flora por comunidades quilombolas do arquipélago do Marajó, Pará. **Ethnoscientia-Brazilian Journal of Ethnobiology and Ethnoecology**, v. 6, n. 3, p. 98-115, 2021. Available from: http://dx.doi.org/10.18542/ethnoscientia.v6i3.10502. Accessed on: 04 jan. 2022.

SHIFFMAN, D. S. et al. Fishing practices and representations of shark conservation issues among users of a land-based shark angling online forum. **Fisheries Research**, v. 196, p.

13-26, 2017. Available from: https://doi.org/10.1016/j.fishres.2017.07.031. Accessed on: 12 fev. 2022.

SOUSA, R. G. C.; MALTAROLO, R. C. Distribuição geográfica e caracterização da produção de rã-touro *Lithobates catesbeianus* no estado de Rondônia (Brasil). **Desafios**, Palmas, v. 6, n. 1, p. 45-53, 2019. Available from: https://sistemas.uft.edu.br/periodicos/index.php/desafios/article/view/4450/14988. Accessed on: 03 fev. 2022.

VAN VLIET, N. et al. Ride, shoot, and call: wildlife use among contemporary urban hunters in Três Fronteiras, Brazilian Amazon. **Ecology and Society**, v. 20, n. 3, p. 8, 2015. Available from: http://dx.doi.org/10.5751/ES-07506-200308. Accessed on: 18 dez. 2021.

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