REMUNOM
ISSN 2178-6925

Received: 20/10/2025 - **Accepted:** 28/10/2025
Vol: 19.03
DOI: 10.61164/9pt8p565
Pages: 1-8

PREDAÇÃO DE *PHYSALAEMUS BILIGONIGERUS* (ANURA: LEPTODACTYLIDAE) POR *MILVAGO CHIMACHIMA* (FALCONIFORMES: FALCONIDAE) DURANTE O CUIDADO PARENTAL

PREDATION OF *PHYSALAEMUS BILIGONIGERUS* (ANURA: LEPTODACTYLIDAE) BY *MILVAGO CHIMACHIMA* (FALCONIFORMES: FALCONIDAE) DURING PARENTAL CARE

DEPREDACIÓN DE *PHYSALAEMUS BILIGONIGERUS* (ANURA: LEPTODACTYLIDAE) POR *MILVAGO CHIMACHIMA* (FALCONIFORMES: FALCONIDAE) DURANTE EL CUIDADO PARENTAL

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Resumo

O caracará, *Milvago chimachima* (Vieillot, 1816), é uma ave de rapina amplamente distribuída na América Central e do Sul, incluindo todo o território brasileiro. Trata-se de uma espécie generalista e oportunista, com dieta variada composta por presas vivas e mortas, frutos, sementes e resíduos orgânicos. Entre suas presas registram-se invertebrados e vertebrados, como peixes, répteis, aves e anfíbios. Durante um levantamento realizado na sub-região do Pantanal de Aquidauana, Mato Grosso do Sul, foi observada, em 24 de outubro de 2025, uma interação trófica entre uma fêmea adulta de *M. chimachima* e um macho adulto de

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Physalaemus biligonigerus. A fêmea pousou em uma cerca transportando o anfíbio no bico e vocalizou até a aproximação de um indivíduo juvenil, que retirou a presa do bico da mãe e a ingeriu parcialmente. O registro ocorreu em uma área alagável com lagos em processo de seca, onde era comum observar anfíbios vocalizando ou se deslocando entre corpos d'água, aumentando sua vulnerabilidade a predadores. Durante o período reprodutivo, os machos de anfíbios acumulam lipídios que são utilizados como reserva energética, tornando-se presas altamente nutritivas. Assim, a disponibilidade e o alto valor energético dessas presas podem favorecer o sucesso alimentar de aves em fase de cuidado parental. Esse comportamento sugere que *M. chimachima* pode sincronizar o período de alimentação de filhotes com a reprodução de anfíbios, aproveitando a abundância e o valor nutricional dessas presas. Este estudo representa o primeiro registro documentado de predação de *Physalaemus biligonigerus* por *Milvago chimachima*, contribuindo para o conhecimento das interações tróficas e do comportamento alimentar dessa espécie de falconídeo.

Palavras-chave: Interação trófica; Comportamento alimentar; Predação de anfíbios.

Abstract

The Caracara, *Milvago chimachima* (Vieillot, 1816), is a bird of prey widely distributed throughout Central and South America, including the entire Brazilian territory. It is a generalist and opportunistic species, with a diverse diet composed of live and dead prey, fruits, seeds, and organic debris. Its prey includes both invertebrates and vertebrates, such as fish, reptiles, birds, and amphibians. During a survey conducted in the Pantanal subregion of Aquidauana, Mato Grosso do Sul, on October 24, 2025, a trophic interaction was observed between an adult female *M. chimachima* and an adult male Physalaemus biligonigerus. The female landed on a fence carrying the amphibian in her beak and vocalized until a juvenile *M. chimachima* approached, took the frog from the adult's beak, and partially ingested it. The observation occurred in a flooded area with lakes undergoing drying, where amphibians were commonly seen vocalizing or moving between water bodies,

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increasing their vulnerability to predators. During the breeding period, male amphibians accumulate lipids used as energy reserves, making them highly nutritious prey. Thus, the availability and high energetic value of these prey items may enhance the feeding success of birds during the parental care period. This behavior suggests that *M. chimachima* may synchronize chick-feeding activities with the reproductive season of amphibians, taking advantage of their abundance and nutritional value. This study represents the first documented record of *Physalaemus biligonigerus* predation by *Milvago chimachima*, contributing to the understanding of trophic interactions and feeding behavior in this falconid species.
Keywords: Trophic interaction; Feeding behavior; Amphibian predation.

Resumen

El caracara, *Milvago chimachima* (Vieillot, 1816), es una ave de presa ampliamente distribuida en toda América Central y del Sur, incluyendo la totalidad del territorio brasileño. Se trata de una especie generalista y oportunista, con una dieta diversa compuesta por presas vivas y muertas, frutos, semillas y restos orgánicos. Sus presas incluyen tanto invertebrados como vertebrados, entre ellos peces, reptiles, aves y anfibios. Durante un muestreo realizado en la subregión del Pantanal de Aquidauana, Mato Grosso do Sul, el 24 de octubre de 2025, se observó una interacción trófica entre una hembra adulta de *M. chimachima* y un macho adulto de Physalaemus biligonigerus. La hembra se posó sobre una cerca llevando al anfibio en el pico y vocalizó hasta que un individuo juvenil de *M. chimachima* se aproximó, tomó la presa del pico del adulto y la ingirió parcialmente. La observación tuvo lugar en un área inundable con lagos en proceso de desecación, donde era común observar anfibios vocalizando o desplazándose entre cuerpos de agua, lo que aumentaba su vulnerabilidad frente a los depredadores. Durante el período reproductivo, los machos de anfibios acumulan lípidos que utilizan como reserva energética, convirtiéndose en presas altamente nutritivas. Por lo tanto, la disponibilidad y el alto valor energético de estas presas pueden favorecer el éxito alimentario de las aves durante el cuidado parental. Este comportamiento sugiere que *M. chimachima* podría sincronizar la alimentación de sus crías con la

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temporada reproductiva de los anfibios, aprovechando su abundancia y valor nutricional. Este estudio representa el primer registro documentado de depredación de *Physalaemus biligonigerus* por *Milvago chimachima*, contribuyendo al conocimiento de las interacciones tróficas y del comportamiento alimentario de esta especie de falcónido.

Palabras clave: Interacción trófica; Comportamiento alimentario; Depredación de anfibios.

1. Introdução

The Carrion Hawk, *Milvago chimachima* (Vieillot, 1816), is a bird of prey widely distributed in Central and South America, ranging from Costa Rica to northern Argentina, including all of Brazil (BirdLife International, 2016; Bierregaard et al., 2020). This species is frequently observed in open environments such as pastures, cultivated fields, roadsides, forested areas, and water banks, as well as in urban environments, where it has been recorded breeding (De La Ossa et al., 2010). It is characterized as a generalist and opportunistic hunter, with an extremely heterogeneous diet that includes live and dead prey, as well as resources of plant origin, such as fruits, corn seeds, and organic debris, including horse manure and household garbage (Bierregaard et al., 2020; De La Ossa et al., 2010; Sick, 1997).

Their food items also include ticks from livestock and wild mammals, caterpillars, termites, crustaceans (such as crabs), as well as various vertebrates such as fish, tadpoles, adult amphibians, reptiles, and other birds (Bierregaard et al., 2020; De La Ossa et al., 2010; Sick, 1997). Neotropical frogs of the genus Physalaemus Fitzinger, 1826, currently comprise 45 species distributed throughout Central and South America (Frost, 2025). Among these species, *Physalaemus biligonigerus* occurs in Brazil, Uruguay, and Argentina (Langone, 1994; Lavilla et al., 2010; IUCN, 2025).

2. Results and discussion

The recording occurred in the Pantanal Sub-Region of Aquidauana, Rio Negro region (Silva & Abdon, 1998), in the municipality of Aquidauana, Mato Grosso do Sul, at 1 p.m. on October 24, 2025, when we observed an adult female

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M. chimachima landing on a fence carrying an adult male *P. biligonigerus* in its beak. The female landed and vocalized until a juvenile *M. chimachima* approached and took the frog from the adult female's beak (Figure 1).

The baby, upon taking the frog from its mother's beak, immediately ingested the frog in a fractional form. (Figure 2 and 3). The area where the recording was made was surrounded by lakes that were experiencing reduced water levels due to the dry season. It was common to see frogs vocalizing in the wetlands and/or species transitioning from one lake to another during the day and night, facilitating foraging for birds and other predators.

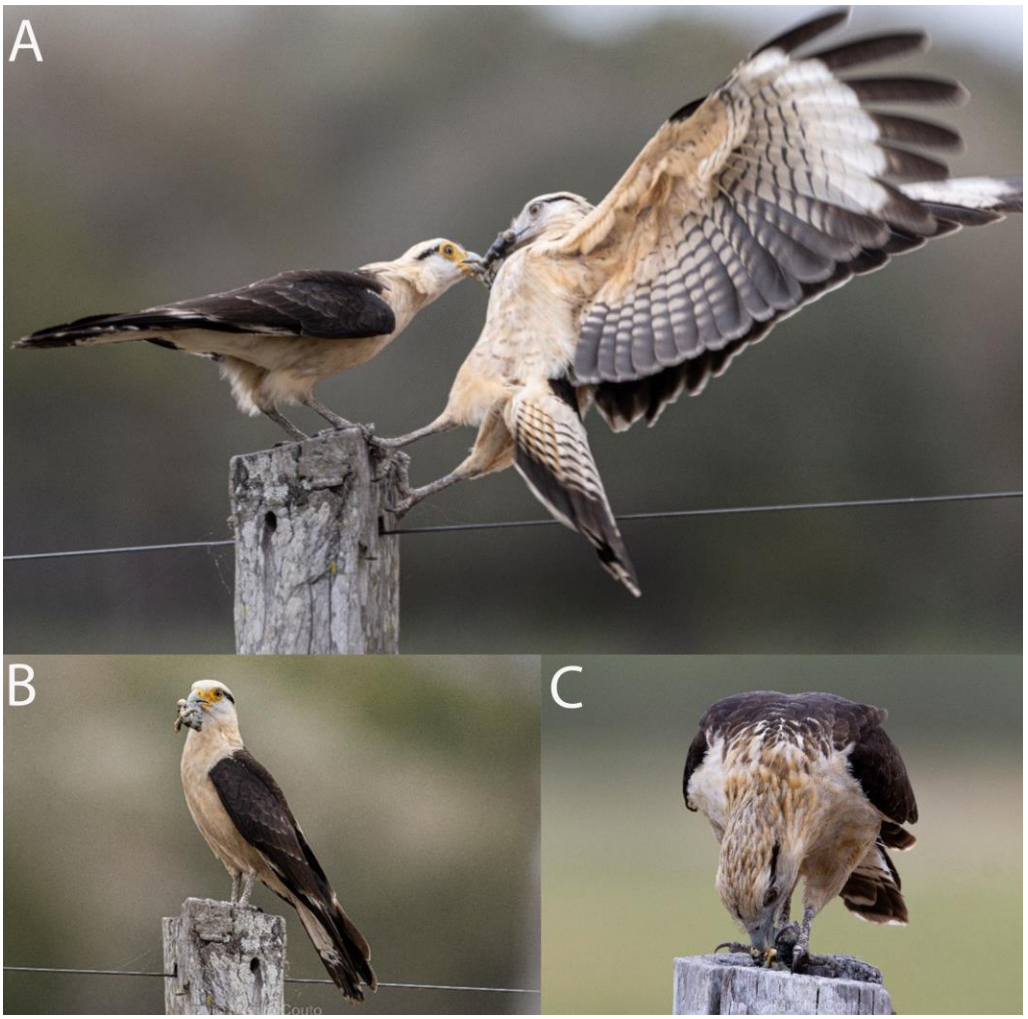


Figure 1.A - *Milvago chimachima* female delivering an adult *Physalaemus biligonigerus* male to an offspring. B and C - *Milvago chimachima* chick feeding on an adult *Physalaemus biligonigerus*.

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Amphibians store lipids before the breeding season, especially males, which feed very little during this period and rely on their fat reserves for reproduction (Usinger et al, 1991).

With hundreds of amphibians vocalizing to attract females during the breeding season, the bird can take advantage of the abundance of available frogs. In addition to the ease of locating frogs through their vocalizations, which attract females, these frogs provide an excellent resource for birds during the parental care period, characterized by minimal defensive risk from frogs, high lipid content due to the breeding season, and abundance resulting from rainy weather. Lipids, along with proteins and carbohydrates, are excellent sources of energy (Faria et al, 2002), representing a highly nutritious resource for chicks, especially at this stage when they require more protein and energy for feather growth. It is well established that several species synchronize their period of parental care with the reproductive season of their prey or with the rainy season, which coincides with increased availability and/or higher nutritional quality of food resources (Oda et al., 2009; Silva et al., 1998).

This work reports the first trophic interaction between *Physalaemus biligonigerus* and *Milvago chimachima*.

3. Conclusion

This study provides the first documented record of predation of *Physalaemus biligonigerus* by *Milvago chimachima*, expanding the known trophic interactions and dietary spectrum of this falconid species. The observed event highlights the opportunistic and adaptive foraging behavior of *M. chimachima*, which appears to exploit amphibian availability during their reproductive period, a time when prey are abundant, nutritionally rich, and easily detectable through vocalizations. Such synchronization between the breeding season of amphibians and the parental care phase of the bird may represent an ecological strategy that optimizes energy intake for chick development. These observations contribute valuable insights into the feeding ecology of *M. chimachima* and emphasize the importance of behavioral flexibility in maintaining its success across diverse Neotropical environments.

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Further studies on its trophic ecology may help elucidate how seasonal resource dynamics influence the reproductive success and population stability of this generalist raptor.

4. Acknowledgments

We would like to thank Pantanal Consultoria Ambiental for funding the field sampling and SACC thanks the CNPQ. We thank Teodoro, J.R. for confirming the species.

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