

Predation of a *Rhinella major* (Anura: Bufonidae) by a Pampas Fox (*Lycalopex gymnocercus*) in the Bolivian Gran Chaco

Christopher M. Schalk¹ and Fernando Morales²

Predation by mammals, such as canids, may be an important pressure in the evolution of defensive strategies in anurans, because mammals need to meet the demands of their high metabolic rate through a high consumption rate. Thus, Greene (1997) hypothesized that endothermic predators may exert a stronger selection pressure on the evolution of ectotherm defensive strategies than ectothermic predators. However, in their review of anuran predators, Toledo et al. (2006) suggested that ectothermic predators may exert stronger selection pressure because ectothermic predators (i.e. snakes) consume anurans more frequently than mammals or birds which only consume anurans occasionally. Mammals comprise nearly 20% of the known vertebrate predators of post-metamorphic anurans and of these documented mammalian predators nearly 17% are from the family Canidae (Toledo et al., 2006). The documented predation events of canids on anurans included species from the families Bufonidae, Leptodactylidae, and Leiuperidae (Toledo et al., 2006). Herein, we document predation on a calling toad, *Rhinella major* (Bufonidae; Narvaes and Rodrigues, 2009) by a Pampas Fox (*Lycalopex gymnocercus*) in the Dry Chaco Forest of Bolivia.

Rhinella major is a moderately sized toad (mean SVL = 58.8 mm) occurring in the Chaco region of Bolivia, Paraguay, Argentina, and Brazil (Fig. 1; Narvaes and Rodrigues 2009). The Pampas Fox (*Lycalopex gymnocercus*) occurs in savannahs and grasslands in the countries of Bolivia, Paraguay, Argentina, Brazil, and Uruguay (Cuéllar and Noss, 2003; Lucherini and Luengos Vidal, 2008). *Lycalopex gymnocercus* is an omnivore, with fruits being the most frequent food items in its diet in the Argentinean Chaco but they were

documented as consumers of arthropods, mammals, birds, and reptiles (Lucherini and Luengos Vidal, 2008, Varela et al., 2008). To the best of our knowledge this is the first report of an anuran in the diet of *L. gymnocercus* (Lucherini and Luengos Vidal, 2008).

On 20th December 2010 at 22:00 h we encountered a chorus of *Rhinella major*, *Physalaemus albonotatus*, and *Ceratophrys cranwelli* in a temporary roadside pond (S19°59.616', W62°57.905') outside the Isoceño community of Yapiroa, Province Cordillera, Department of Santa Cruz, Bolivia. While there we observed a *Lycalopex gymnocercus* slowly approach a *R. major* that was calling near the pond's edge and capture it in its mouth. The fox walked approximately two meters away from the pond's edge where it began to consume the toad. As we approached we observed the anterior portion of the dead *R. major* hanging from the fox's mouth before it ran off with the toad into the surrounding forest. Approximately 20 minutes later we saw two more *L. gymnocercus* walking around the pond, but we did not witness any more predation events, as these individuals ran off into the surrounding forest when they noticed our flashlights.

Calling male frogs are more conspicuous to a variety of predators than conspecific females at a breeding site, including mammals (e.g. Lodé, 1996), aquatic insects (e.g. Toledo, 2003, Schalk, 2010), and other anurans (e.g. Schalk and Montaña, 2011). Since males are more conspicuous than females, their predation rates are often skewed (Ryan et al., 1981; Lodé, 1996). A calling *Rhinella major* can be heard from several hundred meters away (pers. obs.) and we believe the predation event occurred, because the fox located the toad through its calling. Future efforts could focus on conducting a study on the diet of *L. gymnocercus* in this region to determine if the anurans in this area are depredated regularly or only opportunistically, exploring the hypothesis that ectothermic predators exert greater selection than endothermic predators, as proposed by Toledo et al. (2006).

1 Section of Ecology and Evolutionary Biology, Department of Wildlife and Fisheries Sciences, 210 Nagle Hall, Texas A&M University, College Station, TX 77843-2258, USA.

2 Universidad Autonomía Gabriel Rene Moreno, Facultad de Ciencias Agrícolas, Carrera de Biología y Ciencias Ambientales, Santa Cruz, Bolivia.

*Corresponding author; e-mail: cschalk@tamu.edu



Figure 1. A typical male *Rhinella major* calling along the edge of a temporary pond in the community of Yapiroa, Provincia Cordillera, Departamento Santa Cruz, Bolivia. Photo by C.M. Schalk.

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