



FIG. 1. *Hypsiboas faber* being preyed upon by a Red-breasted Toucan (*Ramphastos dicolorus*) in southern Brazil.

bird endemic to the Atlantic Forest (Sick 1997. *Ornitologia Brasileira*. Editora Nova Fronteira, Rio de Janeiro. 912 pp.).

At 1625 h on 20 November 2015, in a semi-urban backyard (28.6593°S, 49.4695°W, WGS84; 120 m elev.), municipality of Nova Veneza, state of Santa Catarina, Brazil, we observed an adult Red-breasted Toucan preying on an adult *H. faber* (Fig. 1). Observations lasted ca. 15 min and took place after the toucan captured the frog and thus, only predator management of prey could be recorded. The toucan was pressing the frog against the branch it was perched upon and pecking it. Sometimes the toucan grabbed the frog with its talons and tried to break the legs of the frog. Consumption was not observed as the toucan was interrupted by a noise and flew away.

The role of frog predation by primarily non-carnivorous birds is still unclear in the Neotropics. It is relevant to mention that our record occurred in the breeding season for the Red-breasted Toucan in Brazil (Jesus et al. 2012. *Ornithologia* 5:19–25). In addition to isolated observations such as this, seasonal stomach content analysis may provide valuable insights on frog and bird interactions in the Neotropics.

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HYPYSIBOAS PULCHELLUS (Montevideo Treefrog). MULTIPLE AMPLEXUS. Male anuran amphibians may adopt many behavioral strategies as a way to obtain breeding pairs. The most common (and best known) are the mating calls. However, other ways that amphibian males obtain partners include the satellite male strategy, displacement of rivals, active searching for females, and polyandry (Rowe 1992. *Anim. Behav.* 44:189–202). Multiple amplexus can be common among explosive breeders, due to the short time for breeding and the high number of adults in a given



FIG. 1. Multiple amplexus in *Hypsiboas pulchellus* where three males are amplexing one female.

site (Wells 2007. *The Ecology and Behavior of Amphibians*. The University of Chicago Press, Chicago, Illinois. 1148 pp.). Nevertheless, reports of multiple amplexus in frogs with prolonged breeding seasons are scarce (dos Santos-Silva et al. 2012. *Herpetol. Notes* 5:171–172). Multiple amplexus has been recorded in several anuran families: Ranidae (Ayres 2008. *North-West. J. Zool.* 4:327–330; Trauth et al. 2000. *J. Arkansas Acad. Sci.* 54:154–156), Myobatrachidae (Roberts et al. 1999. *Anim. Behav.* 44:189–202; Byrne and Roberts 2000. *Evolution* 54:968–973), Rhacophoridae (Jennions et al. 1992. *Anim. Behav.* 44:1091–1100), Hylidae (Roberts 1994. *J. Herpetol.* 28:193–199) and Bufonidae (Verrell and McCabe 1986. *Herpetol. Bull.* 26:28–29), among others.

Hypsiboas pulchellus is one of the most common frogs inhabiting the Pampas Biome. This hylid frog is a habitat generalist and a prolonged breeder. Although males can be heard calling the entire year, amplexus has been recorded mainly in summer (Maneyro and Carreira 2012. *Guía de Anfibios del Uruguay*. Ediciones de la Fuga. Montevideo. 207 pp.). We report for the first time multiple amplexus in *H. pulchellus*. The observations were made 11 km N of Mariscal, Lavalleja Department, Uruguay. The study area is characterized by a landscape dominated by plantations of *Eucalyptus*. The only lentic breeding habitats available are temporary ponds that persist after heavy rains. Three observations of multiple amplexus were seen in this population of *H. pulchellus*. These were recorded between 2325 h and 2350 h on 20 March 2012 in two temporary ponds < 30 cm deep (34.0119°S, 54.8943°W and 34.0121°S, 54.8967°W; WGS84). In one pond, four males were trying to amplex one female. The two males that were in direct contact with the back of the female remained in position and emitted release calls, while the other two males tried to displace the former males using their forelimbs. In the other pond, there were two separate females being amplexed: one by three males (Fig. 1) and one by two males. In the latter two cases, the males' behavior was slightly

different to the first case. In these last two cases both females and males remained absolutely motionless (apparently exhausted) and the males emitted release calls. In all observed cases, male density was high and a male-biased sex ratio existed. This mating behavior had not been previously reported in *H. pulchellus*.

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KALOULA BOREALIS (Boreal Digging Toad). HABITAT USE. *Kaloula borealis* is an explosive breeding species, producing advertisement calls immediately after heavy rains (Shannon 1956. *Herpetologica* 12:22–49). This species is generally associated with wetlands when breeding (Sung et al. 2006. *J. Ecol. Environ.* 29:331–335) and with soil, in which it is able to bury itself, when not breeding. Microhylids display a wide range of habitat use, from arboreal to scansorial to fossorial. Within the genus *Kaloula*, some species are obligate forest species, with activity variations such as perching when active or exclusively occurring in tree holes (Blackburn et al. 2013. *Evolution* 67:2631–2646). Since its hind legs are adapted specifically for digging, *K. borealis* is known to display fossorial behaviors only.

At 2230 h on 10 September 2013, we observed two *K. borealis* individuals climbing trees between 2 and 3 m above ground in Paju, Republic of Korea (37.7524°N, 126.728°E, PNU95). At 0130 h on 12 June 2014, we observed another individual displaying the same behavior. All three individuals climbed Chinese Chestnut Trees (*Castanea crenata*), despite the presence of Japanese Red Pine Trees (*Pinus densiflora*) at that locality. Scansorial behavior has not been reported for the species. The tree-climbing behavior of *K. borealis* is not necessarily a pre-hibernating behavior such as seen in the *Hyla japonica* (Japanese Treefrog), because this behavior occurred during both pre-hibernation and the breeding season. The possibility of breeding was excluded as calls of *K. borealis* were not recorded in the forest at the time of sampling. The forested habitat is partially shared with *H. japonica*, and it is hypothesized that both species use tree holes in chestnut trees for foraging or sheltering, due to the high number of insect prey and shelters available (Johnson et al. 2008. *Herpetologica* 64:259–269). In addition, predation pressure may be lower high up in trees as numerous predatory snakes (*Elaphe* spp.) were observed at ground level.

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LEPTODACTYLUS CHAQUENSIS (Creole Frog). DIET. Most amphibians have a generalist diet that depends on the availability of prey in the environment (Duellman and Trueb 1994. *Biology of Amphibians*. Johns Hopkins University Press, Baltimore, 670 pp). Prey intake can be influenced by the availability of food throughout the year resulting in seasonal variation. *Leptodactylus chaquensis* is a nocturnal terrestrial species (Uetanabaro et al. 2008. *Guia de Campo dos Anuros do Pantanal Sul e Planaltos de Entorno*. Editora UFMS/UFMT. Campo Grande, Editora UFMS. 196 pp.), often found near ponds and wetlands. The species is widely distributed in South America: found in Argentina, Paraguay, Uruguay and Brazil (Duellman 1999. *In* Duellman [ed.]. *Patterns of Distribution of Amphibians*, pp. 255–327. Johns



FIG. 1. Dissected stomach of *Leptodactylus chaquensis* containing freshwater prawns (*Macrobrachium amazonicum*).

Hopkins University Press, Baltimore; Calderon et al. 2009. *Check List* 5:425–427). In general, the diet of this species is composed of insects, arachnids, crustaceans, mollusks and small vertebrates, such as rodents, frogs and fish (Duré 1999. *Herpetol. Rev.* 30:92; Piatti and Souza 2011. *Braz. J. Biol.* 71:653–661; Schaefer et al. 2006. *Herpetol. J.* 16:387–394). On 31 March 2015 a male *L. chaquensis* was collected (SVL = 85 mm; 59.5 g) in municipality of Selvíria, state of Mato Grosso do Sul, Brazil (20.3956°S, 51.3945°W, WGS84; 335 m elev.). The frog was dissected and its stomach contents examined (Fig. 1). Food items were identified to the lowest possible taxonomic category using stereomicroscopy. Each dietary item was quantified by wet weight to 0.001 g and the diet was analyzed by gravimetric index (weight %) (Hyslop 1980. *J. Fish Biol.* 17:411–429). The diet was composed of: *Macrobrachium amazonicum* - Decapoda (65.2%), Orthoptera - Acrididae (23.7%), plant fragments (7.3%), Coleoptera (2.0%), Formicidae - Hymenoptera - Vespidae (1.1%), Formicidae - Hymenoptera (0.5%). The diet was composed mainly of the crustacean *M. amazonicum*. This is the first record of *M. amazonicum* in the diet of *L. chaquensis*.

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LEPTODACTYLUS PODICIPINUS (Pointedbelly Frog). MALFORMATIONS. Limb abnormalities in anurans can be caused by trauma, mutations, predation, parasites, hybridization, exposure to chemicals contaminants and UV radiation (Lannoo 2008. *The collapse of aquatic ecosystems: malformed frogs*. University of California Press, Berkeley, 288 pp.). *Leptodactylus podicipinus* is a small-moderate sized species (adult SVL = 24–54 mm) of the *Leptodactylus melanonotus* group, occurring in Paraguay, Argentina, Bolivia, northwestern Uruguay, and central Brazil, (De Sá et al. 2014. *South Am. J. Herpetol.* 9:1–128).

At 1900 h on 10 October 2014, in a wetland in the municipality of Santana, Amapa State, Brazil (0.0363°N, 51.1625°W, WGS84, 26 m elev.), two adult male *L. podicipinus* were collected (SVL = 30 mm and 35 mm). Three types of malformations were observed