

were to determine: 1) habitat use of *A. patagoniclls* in areas with abundant macrophytes, and 2) the distribution of *A. patagoniclls* at different depths in the lagoon.

This study was carried out during January, February, and April 2005 at a permanent lagoon, Laguna Verde, in Laguna Blanca National Park (39.00777°S, 70.38527°W; WGS 84, elev. 1250 m). The lagoon has a 17 ha surface and a 1.70 km perimeter, and constitutes an aquatic ecosystem with high abundance and diversity of aquatic birds including Andean Flamingo, Black-necked Swan, and grebes. These birds depend on the macrophyte vegetation (largely *M. quitense*) for food and nesting. The predation by grebes of larval and postmetamorphic *A. patagonicus* in the deeper vegetated area has been reported (Cuello et al. 2005. *Herpetol. Rev.* 36:298).

Frogs were captured with aquatic funnel traps (11 cm diameter, 30 cm long), one plastic funnel and a rubber band (Smith and Retting 1996. *Herpetol. Rev.* 27: 190-191) placed at three different depths: surface (20 cm), middle (70 cm) and maximum depth (ca. 350-450 cm), in vegetated and non-vegetated areas. Fifteen traps were set for 12 h during the night during Jan, Feb, and April at three different depths. Amphibian larvae and postmetamorphic individuals were collected; the tadpole stage (Gosner 1960. *Herpetologica* 16: 183-190) and postmetamorphic body length were recorded. All individuals were returned unharmed to the original place of capture.

Ateolgnathlls patagoniclls was found at all water depths sampled. During the study we captured 85 *A. patagonicus*: 83 tadpoles (stage 28-39), one juvenile, and one "aquatic form" female. The captures were more abundant in vegetated areas ($N = 74$; mean/per trap = 3.5 ± 1.49) than in non-vegetated areas ($N = 11$; mean/per trap = 0.45 ± 0.15). Significant differences were found in the number of individuals by strata (Kruskal-Wallis, $H_2 = 7.14$, $P = 0.0281$). The difference was between the deeper and the middle strata (Dunn's test, $p < 0.05$). No differences were found in the number of individuals captured per month (Kruskal-Wallis, $H_2 = 1.99$, $P = 0.370$). The "aquatic form" female (body length = 4.5 cm) was found at 4.5 m in an area with a high abundance of *M. qlitense*.

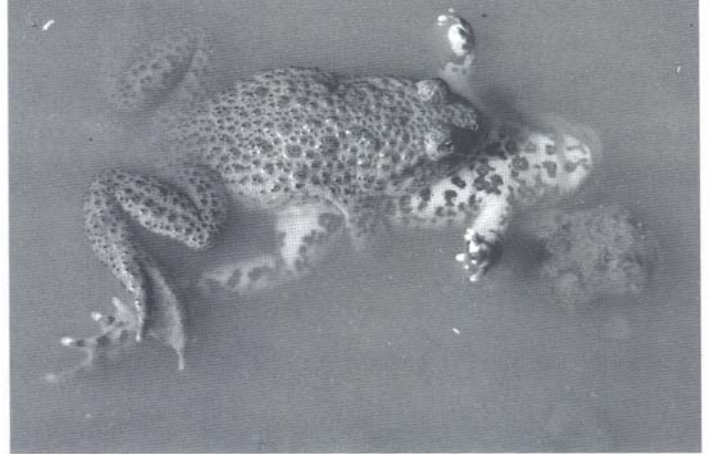
Our preliminary results show that larval and postmetamorphic *A. patagoniclls* select deeper areas of the lagoon. The larger captures in deeper zones characterized by presence of aquatic vegetation suggest that the frog prefers *M. qlitense* as refuge and/or as foraging habitats. According to our results, the resulting extinction of *A. patagoniclls* at Laguna Blanca would be associated with the disappearance of *M. qlitense* and also by the predation pressure and competition imposed by the presence of introduced fishes (Cuello et al. 2006. *Phyllomedusa* 5[1]:67-76; Cuello and Perotti, unpubl. data).

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BOMBINA VARIEGATA (Yellow Fire-bellied Toad). MATING BEHAVIOR. Various authors have provided evidence for male toads attempting to amplex male conspecifics (Marco et al. 1998. *Anim. Behav.* 55[6]:1631-1635; Marco and Lizana 2002. *Ethol.*

FIG. 1. Male *Bombina variegata* in amplexus with deceased female conspecific. Bukovec Mountains. Slovakia.

Eco! Evo! 14: 1-8), as well as for interspecific amplexus (Brown 1977. *J. Herpetol.* 11:92-94; Reading 1984. *J. Zool. (Lond.)* 203:95-101; Marco and Lizana 2002, *op. cit.*) and even for amplexus between males and inanimate elastic objects of similar size to a female toad (Ishii and Itoh 1992. *Gen. Compo Endocr.* 86:36-42). However,



evidence for males amplexing dead females is sparse. Herein I report the first record of a male *Bombina variegata* amplexing a dead female.

On 10 June 2008 at ca. 1630 h, I observed a male *Bombina variegata* in amplexus with a dead female conspecific in a wheel-rut temporary pond in the Bukovec Mountains, northeastern Slovakia (49.0872°N, 22.4086°E; WGS 84; 680 m elev.). The amplexus was inguinal, typical for the family Bombinatoridae, however the female was upside down, with the male on the female's belly rather than on her back (Fig. 1). The amplexus was observed for 5 minutes, during which time the male was immobile. When disturbed (slight pushes on the back), it swam away with difficulty for a total distance of ca. 30 cm without releasing the female. The pair was then separated and the female examined. The female's tongue was protruding out of its mouth, but no external damage was apparent and the cause of death was not determined. Although it is possible that death occurred during amplexus, this seems unlikely given the position of the female, suggesting that the male clasped the already-dead female.

This observation provides additional evidence suggesting that male *B. variegata* do not assess females carefully before clasping them, occasionally making obvious mistakes. The benefits of being first to encounter a female probably outweigh the costs of this type of error.

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BUFO DEBILIS (Green Toad). BREEDING HABITAT SELECTION. Breeding site selection in *Bufo debilis* is poorly understood beyond the general knowledge that they use temporary, fish less water sources including desert playas, earthen stock tanks, and any other depressions that will temporarily hold water. Herein, I report

breeding pond selection by *B. debilis* in southwestern rangelands as modified by livestock use.

I made observations of *B. debilis* calling at ephemeral pools in an arid southwestern desert in southern New Mexico, west of Las Cruces. The survey area was in the Chihuahuan Desert on Bureau of Land Management grazing allotment 3013. During the monsoon season, approximately July 1 through late August, I surveyed earthen livestock tanks and desert playas for breeding amphibians. I conducted amphibian vocalization surveys between 2200 and 0200 h in areas that received rain that day or the previous day. Most available breeding sites on these allotments are livestock watering tanks that dry up on a yearly basis and were dry in the spring of 2007. I did not find *B. debilis* at tanks that received heavy livestock use as measured by the cover of livestock feces within 10 m of the earthen tank high water line. However, while surveying at three of these heavily used tanks I detected *B. debilis* calling from small ephemeral sites located remotely from the tank. Upon investigation, I found *B. debilis* males calling from seven small pools of water associated with washes or erosion sites created by wildlife and cattle trails. As described below, these small wetlands desiccated much more quickly than the larger tanks, but they may not have received as much livestock use as the larger tanks.

The first earthen cattle tank, Marijuana Tank contained no calling amphibians on 21 July 2007 or on any other survey day (32.40060°N, 107.1543°W; WGS 84: elev. 1402 m) (30 x 40 x 1.25 m deep). The tank water, measured with a Hydrolab MS 5 (Hach Environmental), had pH 7.42, 41.2% dissolved oxygen (DO), turbidity of 125 NTU, salinity 0.14 ppt, and conductivity of 0.2973 mS/cm. This tank retained water into the fall. Three temporary sites close to the tank had calling amphibians including *B. debilis*. The first small wetland close to Marijuana Tank had ca. 20 calling *B. debilis* males (071) (32.40148°N, 107.12139°W;

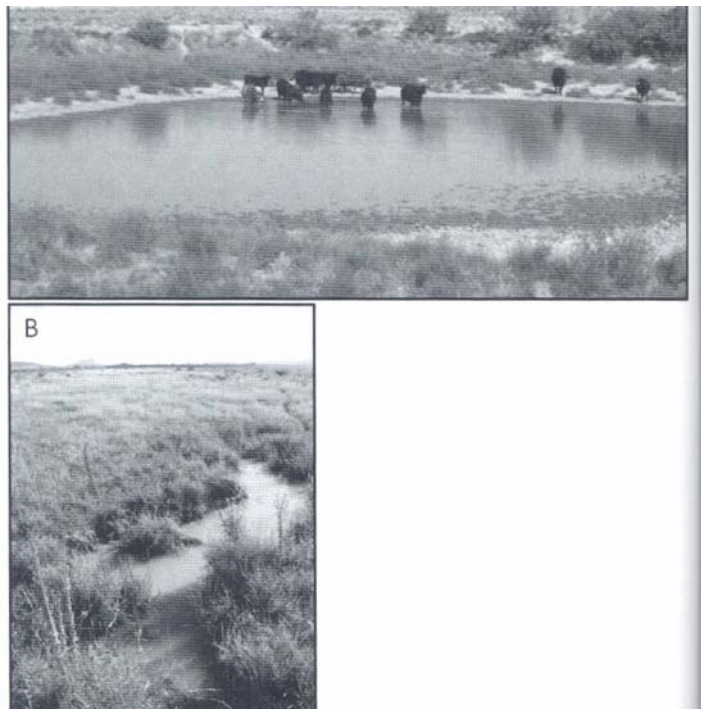
WGS 84: elev. 1408 m) (1 x 3 x 0.75 m deep). The wetland had pH 8.41, 23.3% DO, turbidity of 1969 NTU, salinity of 0.06 ppt, and conductivity of 0.1424 mS/cm, and retained water past 15 Aug 2007. The second small wetland close to Marijuana Tank had ca. 5 calling males (072) (32.40060°N, 107.11987°W; WGS 84: elev. 1407 m) (3 x 4 x 1.0 m deep). The wetland had a pH 8.43, 23.0% DO, turbidity of 1899 NTU, salinity of 0.06 ppt, and conductivity of 0.1424 mS/cm, and dried before 15 August 2007. The third site close to Marijuana Tank had ca. 50 calling males (073) (32.40203°N, 107.11522°W; WGS 84: elev. 1401 m) (2 x 4.5 x 1.25 m deep). The wetland had a pH 8.56, 21.8% DO, turbidity of 1463 NTU, salinity of 0.07 ppt, and conductivity of 0.1645 mS/cm, and was almost completely dry by 15 August 2007.

The second earthen cattle tank was unnamed, contained no calling amphibians on 21 July 2007 or on any other survey day and retained water past September 2007 (32.39798°N, 107.11569°W; WGS 84: elev. 1419 m) (15 x 20 x 1.25 m deep). I did not record measurements of water quality at this set of wetlands. Two small temporary water bodies close to the tank had calling amphibians including *B. debilis*. The first small wetland close to the unnamed tank had ca. 5 calling males and retained water until late August (74/82) (32.41933°N, 107.09922°W; WGS 84: elev. 1432 m) (1 x 4 x 1 m deep). The second water body close to the unnamed tank had 4 calling males and dried by 15 August 2007 (070) (32.41933°N, 107.09922°W; WGS 84: elev. 1432 m) (1 x 3 x 0.75 m deep).

The third cattle tank, North Kimbel, contained no calling am-

A

FIG. 1. Calling *Bufo debilis* were not detected at (A) North Kimbel livestock



tank, which receives heavy livestock use; however, male *B. debilis* were calling from (B), a small ephemeral wetland created by erosion in a wildlife and livestock trail. These sites are 283 m apart, west of Las Cruces, New Mexico, USA.

phibians on 29 July 2007 or on any other survey date (32.33181°N, 107.07601°W; WGS 84: elev. 1396 m) (60 x 30 x 2.0 m deep) (Fig. 1 A). The tank water had a pH 8.62, 76.3% DO, turbidity of 1316 NTU, salinity of 0.17 ppt, and conductivity of 0.3535, and retained water past September 2007. Two temporary water bodies close to the tank had calling amphibians including *B. debilis*. The first site close to North Kimbel Tank had ca. 40 calling males (077) (32.33132°N, 107.07897°W; WGS 84: elev. 1394 m) (1 x 4 x 1.0 m deep) (Fig. 1 B). The wetland had a pH 7.71, 20.2% DO, turbidity of 2447 NTU, salinity of 0.08 ppt, and conductivity of 0.1882 mS/cm, and was dry by 16 August 2007. The second wetland close to North Kimbel Tank had ca. 20 calling males (079) (32.33132°N, 107.07885°W; WGS 84: elev. 1395 m) (1 x 3 x 1.0 m deep). The water had a pH 7.68, 24.7% DO, turbidity of 2945 NTU, salinity 0.08 ppt, and conductivity of 0.1858 mS/cm, and dried before 15 August 2007.

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BUFO FOWLERI (Fowler's Toad). DIET. It is well known that larval toads will consume injured, dead (Heinen and Abdella 2005, *Am. Midl. Nat.* 153:338-347), and live conspecifics (Bragg 1964, *Herpetologica* 20: 17-24; Fox 2008, *Herpetol. Rev.* 39: 151-154).