

*Osteopilus septentrionalis* is a sit-and-wait predator capable of eating very large prey (Meshaka 2001, *op. cit.*). The wide variety of prey items in the diet of *O. septentrionalis* indicates that it is not a specialized feeder, but Coleoptera and Blattaria are the prevailing categories of items in stomach contents (Meshaka 2001, *op. cit.*). *Anax junius* is one of the largest (60–80 mm) dragonflies in South Florida (Dunkle 1989. Dragonflies of the Florida Peninsula, Bermuda, and the Bahamas. Gainesville, Florida, Scientific Publishers. 154 pp.). The geographic range of *A. junius* overlaps with that of *O. septentrionalis*. Although it is unlikely to be preyed upon by the smaller native treefrogs, the depredated individual was ca. 122% of the predator's body length, and average body sizes of female *O. septentrionalis* exceeding 6 cm are typical of Florida populations (Meshaka 2001, *op. cit.*). Furthermore, the *O. septentrionalis* was yolking and had little fat development. Thus, it would seem that in chance encounters between these species on sultry days or near dusk, even large *A. junius* are susceptible to the depredations of *O. septentrionalis*, and in turn mature females are provided with a nutritious meal.

Submitted by **TAD M. BARTAREAU**, Florida Department of Environmental Protection, Rookery Bay National Estuarine Research Reserve, 300 Tower Road, Naples, Florida 34113-8059, USA (e-mail: Tad.Bartareau@dep.state.fl.us); and **WALTER E. MESHAKA**, State Museum of Pennsylvania, 300 North Street, Harrisburg, Pennsylvania 17120-0024, USA (e-mail: wmeshaka@state.pa.us).

#### **PLEURODEMA NEBULOSA (NCN). REPRODUCTION.**

*Pleurodema nebulosa* occurs in the arid areas of western Argentina, from Catamarca to Rio Negro (Cei 1980. Amphibians of Argentina. Monit. Zool. Ital. [NS]. Monogr. 2, 609 pp.). Herein we present the first data on the reproductive ecology of *Pleurodema nebulosa* in Argentina. Our study area was located 40 km N of San Juan City on National Route N40. This area is in the Monte Phytogeographic Province (Cabrera and Willink 1980. Biogeografía de América Latina. O.E.A. Washington, DC. 109 pp.). Dominant vegetation includes *Prosopis* sp., *Bulnesia retama*, *Solanum eleagnifolium*, *Caparis atamisquea*, *Grabousquia obtusa*, and *Tamarix gallica*.

Individual male and female *P. nebulosa* were captured by hand after heavy rains occurred in the area on 17–18 and 20 Jan 2004. Ovarian mass was determined by weighing to 0.001 g. The number of mature ova was calculated by counting a subset of the entire mass, and ova diameter was measured to 0.02 mm under a binocular magnifying glass. Testicular volume was calculated using the formula for an ellipsoid sphere (Dunham 1983. *In* Huey et al. [eds.], Lizard Ecology, pp. 261–280. Harvard Univ. Press, Cambridge, Massachusetts).

The mean number of mature ova was 547 (SD = 318.3, range = 175–962, N = 11); mean ova diameter was 0.91 mm (SD = 0.13, range = 0.74–1.2 mm, N = 11). As female size increases so does fecundity, i.e., the number of ovules produced increases ( $R^2 = 0.55$ ,  $p < 0.0059$ ). Mean testicular volume was 2.39 mm<sup>3</sup> (SD = 1.36, range = 0.55–5.8 mm<sup>3</sup>, N = 22). A positive and significant relationship exists between testicular volume and SVL ( $R^2 = 0.54$ ,  $p < 0.00005$ ) and between testicular volume and mass of the individuals ( $R^2 = 0.57$ ,  $p < 0.00002$ ).

Submitted by **EDUARDO A. SANABRIA**, **LORENA B. QUIROGA** and **JUAN C. ACOSTA**, Departamento de Biología e Instituto y Museo de Ciencias Naturales, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan, Avenida España 400 (N), Caixa Postal 5400, San Juan, Argentina; e-mail (EAS): sanabria\_eduardo@hotmail.com; e-mail (JCA): jcacosta@sinectis.com.ar.

#### **PLEURODEMA TUCUMANA (NCN). REPRODUCTION.**

*Pleurodema tucumana* is a small leptodactylid frog that occurs in northern and west-central Argentina (Lavilla et al. 2000. Categorización de los Anfibios y Reptiles de la República Argentina. Asoc. Herpetol. Arg. 97 pp.). Information on the species is restricted to preliminary data on reproduction (Perotti 1997. Rev. Chilena Hist. Nat. 70:277–288). Herein, we report the first reproductive data of the species from Chaco Phytogeographic Province, Distrito Chaco Serrano in western Argentina (Cabrera and Willink 1980. Biogeografía de América Latina. O.E.A. Washington D.C. 109 pp.).

We collected 30 *P. tucumana* (20 males and 10 females) from the Las Tumanas River (30°52'S, 67°19'W. 750 m elev.), Valle Fértil Department at 137.5 km from San Juan city during January 2000. Flora at the study site was dominated by *Schinopsis haekeana* and *Aspidosperma quebracho-blanco*. Frogs were captured by hand, preserved, and deposited in the Facultad de Ciencias Exactas, Físicas y Naturales of the Universidad Nacional de San Juan Collection (MCN-UNSJ4100-4129).

Mean SVL of males (N = 20) was 32.7 mm (range 27–35 mm; SD 1.68 mm), mean body mass was 3.34 g (1.18–4.96 g; SD 0.82 g), and mean testicular volume was 0.83 mm<sup>3</sup> (0.31–1.27 mm<sup>3</sup>; SD 1.44 mm<sup>3</sup>). SVL was not associated with testicular volume ( $r_s = -0.025$ ;  $p = 0.91$ ) nor body mass ( $r_s = 0.16$ ;  $p = 0.49$ ).

Mean SVL of gravid females (N = 10) was 37.3 mm (range 36–39 mm; SD 1.05 mm), mean body mass was 5.16 g (3.37–6.77 g; SD 1.07 g), mean mature ovum count was 993 (255–2933; SD 838), mean mature ovum diameter was 0.68 mm (0.04–0.98 mm; SD 0.37 mm), mean ovary mass was 0.33 mg (0.04–1.1 mg; SD 0.33 mg), and mean factor of ovarian size was 22.2 (0.29–34.1; SD 22.8). The mature ovum count was not correlated with SVL ( $r_s = 0.33$ ,  $p = 0.35$ ) nor body mass ( $r_s = 0.56$ ,  $p = 0.08$ ). There was a significant relationship between mature ovum diameter and mature ovum count ( $r_s = 0.74$ ,  $p = 0.01$ ). The ovary mass averaged 6.8% of the body mass in females.

The reproductive data presented herein for *P. tucumana* from Chaco serrano is similar to that from Chaco semiarid (Perotti 1997, *op. cit.*).

Submitted by **HÉCTOR JOSÉ VILLAVICENCIO\***, **CÁNOVAS MARIA GABRIELA**, and **JUAN CARLOS ACOSTA**, Departamento de Biología, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan. \*Becario CONICET. Avenida España 400 (N), Caixa Postal 5400, San Juan, Argentina (e-mail: hvillavicencio@hotmail.com and hvillavicenciomartin@yahoo.com.ar).

**RANA CATESBEIANA** (American Bullfrog). **DIET.** On 27 Aug 2006, three adult *R. catesbeiana* were collected from Big Muskego Lake (42°51.241'N, 88°07.456'W), Muskego, Waukesha County,

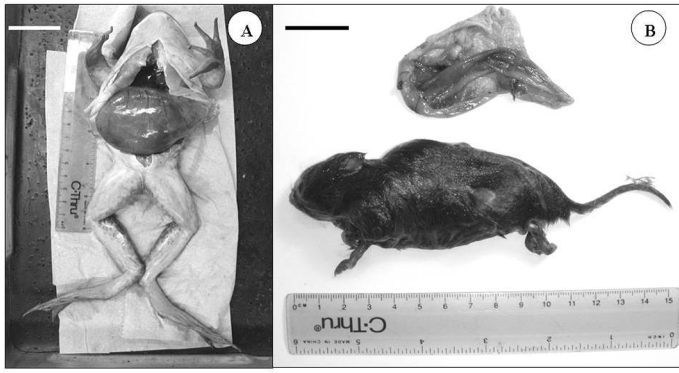


FIG. 1A. Adult male *Rana catesbeiana*; note the distended stomach. Bar = 40 mm. 1B. Adult male meadow vole, *Microtus pennsylvanicus*. Bar = 25 mm.

Wisconsin, USA. Frogs were captured by hand with the help of a headlamp (ca. 030 h). All frogs were euthanized and SVL and gape size were recorded to the nearest mm for each individual. The stomach, small intestine, and large intestine were removed, and the stomach was separated from the rest of the gastrointestinal tract. Each stomach was opened and contents examined under a dissecting microscope. A male *R. catesbeiana* (SVL 13.5 cm; gape size 5.2 cm) had a greatly distended stomach (Fig. 1a), which contained a small mammal (Fig. 1b). The two other specimens had empty stomachs.

The mammal was identified as an adult male meadow vole, *Microtus pennsylvanicus* (Jackson 1961. Mammals of Wisconsin. Univ. Wisconsin Press. 504 pp.). The vole was 11.5 cm in total length; 4.8 cm tail length; hind foot 20 mm with six plantar tubercles; was dark brown above, and somewhat paler below with short ears (length 11 mm from notch). Few reports exist on species identification of small mammals in bullfrog stomachs (Lannoo 2005. Amphibian Declines. The Conservation Status of United States Species. University of California Press, Berkeley. 1094 pp.), and no reports exist of *R. catesbeiana* feeding on small mammals in Wisconsin (Vogt 1981. Natural History of Amphibians and Reptiles of Wisconsin. Milwaukee Public Museum, and Friends of the Museum, Inc., Milwaukee, Wisconsin, 205 pp.).

We thank M. and G. Bolek for allowing access to the field site, S. Gardner, T. Haverkost, D. Tinnin, and A. Jiménez-Ruiz, Harold W. Manter Laboratory of Parasitology, Univ. Nebraska State Museum, for identification of the meadow vole, and M. Bolek for comments on the manuscript.

Submitted by **MATTHEW G. BOLEK** and **JOHN JANOVY JR.**, School of Biological Sciences, University of Nebraska—Lincoln, Lincoln, Nebraska 68588-0118, USA (e-mail: mbolek@unlserve.unl.edu).

**RANA YAVAPAIENSIS** (Lowland Leopard Frog). **REPRODUCTION.** *Rana yavapaiensis* typically exhibit a bimodal breeding season in Arizona. Most reproductive activity occurs in early spring (February–April), with a second season of lesser activity in late September and October (Sartorius and Rosen 2000. Southwest. Nat. 45:267–273). In Arizona, winter months are generally periods of relatively low activity with no reports of reproductive be-

havior (Sredl 2005. In Lannoo [ed.], Amphibian Declines: The Conservation Status of United States Species, pp. 596–599. Univ. California Press, Berkeley, California). The only documented January reproduction in *R. yavapaiensis* was at –38 m elev. in the Coachella Valley, California (Ruibal 1959. Copeia 1959:315–322; reported as *Rana pipiens*).

On 29 Dec 2005, 2115 h, at Walnut Springs, a tributary to the Verde River, Mazatzal Mountains, Maricopa County, Arizona (UTM 3750734N, 451734E, NAD 27, 1119 m elev.), JBV observed an amplexing pair of *R. yavapaiensis* and heard several adult males calling. On 6 Jan 2006, there were two freshly laid *R. yavapaiensis* egg masses in the spring pool. We believe this is the first report of reproductive activity in mid-winter (December or January) in Arizona. Walnut Springs is a thermally stable system ( $T_w = 17^\circ\text{C}$  on 29 Dec 2006) and perhaps provides a suitable microhabitat for successful winter breeding. Therefore, reproductive patterns in *R. yavapaiensis* might be more labile than previously thought, depending on local conditions.

Submitted by **JEREMY B. VOELTZ** and **THOMAS R. JONES**, Nongame Branch, Arizona Game and Fish Department, 2221 West Greenway Road, Phoenix, Arizona 85023, USA (e-mail: tjones@azgfd.gov). Current address for JBV: U.S. Fish and Wildlife Service, Arizona Fishery Resources Office, P.O. Box 39, Pinetop, Arizona 85935, USA (e-mail: jeremy\_voeltz@fws.gov).

**SMILISCA FODIENS** (Lowland Burrowing Treefrog). **DIET.** Little is known about the ecology of *Smilisca fodiens* beyond reports of its distribution (Sullivan et al. 1996. Great Basin Nat. 56:38–47), endoparasites (Goldberg et al. 1999. Great Basin Nat. 59:195–197), cocoon formation (Ruibal and Hillman 1981. J. Herpetol. 15:403–408), and metabolism (Taigen et al. 1982. Oecologia 52:49–56). To our knowledge there have been no reports on its diet. Here we report observations on the stomach contents of 15 *S. fodiens* collected during 2004 from Valle de Tacupeto, Sonora, México (28°15'20.5"N, 109°18'1.9"W; WGS 84; 435 m elev.) (see Smith et al. 2005. Bull Chicago Herpetol. Soc. 40:45–51). Of the 15 individuals, nine contained identifiable stomach contents, five contained unidentifiable stomach contents, and one had an empty stomach. Table 1 lists the prey items. Numerically and volumetrically, beetles were the most important prey, followed by orthopterans. Beetles were found in seven of the nine stomachs containing identifiable stomach contents. It seems that the diet of *S. fodiens* at this site is made up primarily of beetles.

TABLE 1. Stomach contents of *Smilisca fodiens* from Sonora, México.

Prey Type	Prey Items		Volume		Number of Stomachs
	N	(%)	mm <sup>3</sup>	(%)	
Coleoptera	17	(70.8)	3.26	(56.4)	7
Hymenoptera (ants)	4	(16.7)	1.20	(20.8)	2
Lepidoptera	1	(4.2)	0.08	(1.4)	1
Orthoptera	1	(4.2)	0.21	(3.6)	1
Odonata	1	(4.2)	1.03	(17.8)	1