

The habitat lies exactly on the ecotone between the Cerrado and Pantanal. We were drawn to the predation event through audible "scream-like" vocalizations emitted by the frog. This event differs from the others in that it occurred during the day, unusual behavior for the spider. At the initiation of observations, the frog was still alive and completely whole. In eight hours of feeding, only the legs of the frog remained and the spider abandoned them.

We thank Rick West for assistance in spider identification.

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**MELANOPHRYNISCUS CUPREUSCAPULARIS** (NCN). **DIET.** *Melanophryniscus cupreuscapularis* is found in areas surrounding the type locality, in northeastern Corrientes, Argentina (Frost 2004. <http://research.amnh.org/herpetology/amphibia/index.html>). The species is primarily terrestrial although during the reproductive season it is found in temporary pools in groups of up to 10 individuals. Males vocalize while hidden in vegetation or floating on the surface of the water. Diet of this species has not been reported.

Twenty individuals were collected 15 km NW of Corrientes (27°28'S, 58°50'W), Corrientes, Argentina between July 1997 and April 1999. Twelve individuals contained identifiable prey items (female: 22.08 ± 1.81 mm SVL, N = 5; males: 21.82 ± 0.76 mm SVL, N = 7). Ants were the predominant prey in number (66.2%) and volume (85.8%), although beetles were found in the highest frequency. Table 1 summarizes data obtained by analysis of the stomach content. The values of diversity (Shannon Index, using natural logarithm) and niche amplitude (Levins index) for this

TABLE 1. Prey consumed by *Melanophryniscus cupreuscapularis* (N = 12) from Corrientes, Argentina.

	N	%Total	Vol. (mm <sup>3</sup> )	% Vol.	Freq.
<b>INSECTA</b>					
Coleoptera	7	2.7	3.9	4.2	6
Hemiptera	2	0.8	1.03	1.1	2
Hymenoptera (ants)	174	66.2	80.9	85.8	5
Isoptera	2	0.8	0.7	0.7	1
Homoptera	15	5.7	1.9	2.0	3
Larva	2	0.7	0.3	0.3	2
Collembola	25	9.5	5.3	5.6	4
<b>ARACHNIDA</b>					
Araneida	1	0.4	0.04	0.04	1
Acarina	35	13.3	0.3	0.3	2
<b>TOTAL</b>	<b>263</b>	<b>100</b>	<b>94.4</b>	<b>100</b>	

species were 1.15 and 2.13.

We used a non-parametric test (Spearman Rank Correlation) for analysis of morphology and diet. We observed a positive and significant correlation between SVL and mouth width ( $r^2 = 0.68$ ;  $p = 0.015$ ); the number of prey ingested was significantly correlated with predator SVL ( $r^2 = 0.76$ ,  $p = 0.004$ ). Mouth width was not correlated with prey volume ( $r^2 = 0.063$ ,  $p = 0.84$ ).

Data from specimens examined during this study suggest *Melanophryniscus cupreuscapularis* is a generalized predator, actively foraging preferentially for ants.

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**PHRYNOHYAS VENULOSA** (Veined Treefrog). **DIET.** *Phrynohyas venulosa* has a wide distribution in Central and South America, ranging from the lowlands of Mexico to the Amazon Basin of Colombia, Ecuador, Peru, Venezuela, and Brazil; the Guianas, Brazil, Paraguay, Trinidad, and Tobago (Frost 2004. <http://research.amnh.org/herpetology/amphibia/index.html>). In Argentina, *P. venulosa* occurs in Jujuy, Salta, Formosa, Chaco, Corrientes, and Entre Ríos y Misiones (Ceñ 1980. Amphibians of Argentina. Monitore Zoologico Italiano MS). We examined the stomach contents of 20 specimens collected 15 km NW of Corrientes (27°28'S, 58°50'W), Corrientes, Argentina, between February 1994 and March 1999. Only 35% (N = 7) had identifiable stomach contents (males: 64.4 ± 16.3 mm SVL, N = 3; females: 76.6 ± 5.7 mm SVL, N = 4).

Ants were the predominant prey in number and beetles were better represented volumetrically. Table 1 summarizes data obtained by analysis of the stomach contents. The values of diversity (Shannon Index, using natural logarithm) and niche amplitude (Levins index) for this species were 1.15 and 2.08.

Due to the low number of specimens with identifiable prey we used a non-parametric test (Spearman Rank Correlation) for analysis of morphology and diet. A positive and significant correlation exists between SVL and mouth width ( $r^2 = 0.85$ ;  $p = 0.01$ ). The number of prey ingested was not correlated with predator SVL (rs

TABLE 1. Prey consumed by *Phrynohyas venulosa* (N = 7) from Corrientes, Argentina.

	N	%Total	Vol. (mm <sup>3</sup> )	% Vol.	Freq.
<b>INSECTA</b>					
Coleoptera	4	10.8	738.8	35.3	1
Hemiptera	2	5.4	428.2	20.5	2
Hymenoptera (ants)	25	67.6	96.0	4.6	3
Hymenoptera (excl. ants)	1	2.7	1.5	0.07	1
Larvae	1	2.7	88.5	4.2	1
Orthoptera	3	8.1	726.6	34.7	2
<b>ARACHNIDA</b>					
Araneida	1	2.7	11.4	0.5	1
<b>TOTAL</b>	<b>37</b>	<b>100</b>	<b>2091</b>	<b>100</b>	

= 0.05,  $p = 0.90$ ) and mouth width was not correlated with prey volume ( $r^2 = 0.53$ ,  $p = 0.21$ ).

*Phrynohyas venulosa* is an arboreal frog with low mobility. Based on diet and observed behavior of the specimens examined in this study it should be considered a generalized predator with a "sit-and-wait" strategy for obtaining prey.

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**RANA HECKSCHERI** (River Frog). **PREDATION**. Few predators have been reported for *Rana heckscheri*. Allen (1938. Copeia 1938:50), Fogarty and Hetrick (1973. Auk 90:268–280), and Brown (1979. Brimleyana 1:113–124) reported Banded Water Snakes (*Nerodia fasciata*), Cattle Egrets (*Bubulcus ibis*), and a Rainbow Snake (*Farancia e. erythrogramma*) as predators of *R. heckscheri* tadpoles. Juvenile and adult *R. heckscheri* are reported to have toxic skin secretions (Ashton and Ashton 1988. Handbook of Reptiles and Amphibians of Florida—Part Three: The Amphibians. Windward Publishing, Inc., Miami, Florida. 191 pp.; Bartlett and Bartlett 1999. A Field Guide to Florida Reptiles and Amphibians. Gulf Publishing Co., Houston, Texas. 280 pp.), and Behler and King (1985. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A. Knopf, New York, 743 pp.) reported that "water snakes and indigo snakes become violently ill" after ingesting recent metamorphs.

On 3 Sept. 2005, we observed an adult female *N. fasciata* (ca. 850 mm TL) exhibiting what might best be described as a combination of active foraging and ambush behavior in the shallows of Old Levi Mill Lake (Poinsett State Park, ca. 10.6 km WNW of Pinewood, Sumter Co., South Carolina, USA). Recently transformed juvenile *R. heckscheri* were abundant along the lake's edges, and we saw several in the snake's immediate vicinity. We observed the snake for several minutes on multiple occasions during mid-day and early afternoon, but did not see it capture prey. At 1554 h, we captured and handled the snake, and it regurgitated a juvenile *R. heckscheri* (52 mm SVL, 14.0 g). We released the snake and deposited the frog in the North Carolina State Museum of Natural Sciences (NCSM 68547). To our knowledge, this represents the first report of natural predation on non-larval *R. heckscheri*.

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#### TESTUDINES

**ACTINEMYS MARMORATA** (Pacific Pond Turtle). **SIZE**. To date the largest *Actinemys marmorata* reported was a male from Marin County, California, with a straight-line carapace length (SCL) of 223 mm and a plastron length (PL) of 193 mm (Fidencio 2005. Herpetol. Rev. 36:440). Here we report the measurements

of three large *A. marmorata* captured from California Central Valley slough habitats adjacent to the Sacramento River, near Hamilton City (California, USA). Male #1: SCL = 241 mm; PL = 216 mm; carapace width at 8th marginal (CW) = 176 mm; shell height (SH) = 90 mm; mass = 1923 g. Male #2: SCL = 226 mm; PL = 210 mm; CW = 175 mm; SH = 74 mm; mass = 1402 g. Male #3: SCL = 223; PL = 209 mm; CW = 170 mm; SH = 83 mm; mass = 1564 g. All turtles were individually marked with filed notches in the marginal scutes and released at their capture sites. These captures represent the largest *A. marmorata* yet recorded within their range. All measurements were confirmed by John S. Campbell.

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**ACTINEMYS MARMORATA** (Pacific Pond Turtle). **REFUGIA**. Pacific Pond Turtles are known to be shy and to escape quickly into deep pools when disturbed (Ernst et al. 1994. Turtles of the United States and Canada, Smithsonian Institution Press, Washington D.C. 578 pp.). They are reported to utilize undercut banks and submerged structures (i.e., rocks, logs, vegetation, etc.) as refugia (Holland 1996. Herpetol. Rev. 27:198–199; Reese and Welsh 1998. J. Wildl. Manage. 62:842–853). Holland (*op. cit.*) also reported an atypical instance of refugia use in an upland habitat. However, little else has been reported about upland or aquatic refugia by this species. Here I report the use of rodent burrows and aquatic silt loads as refugia by *A. marmorata*.

Beginning in Fall 2002, an effort was made to remove Bullfrogs (*Rana catesbeiana*) from a portion of Kellogg Creek in the Los Vaqueros watershed, in eastern Contra Costa County, ca. 57 km E of San Francisco, California (USA). Bullfrog removal was conducted to increase habitat suitability for the California Red-legged Frog (*R. draytonii*) and *A. marmorata*. Portions of the creek were isolated using sand bags and wire mesh fencing. These sections were then drained. Native fauna was removed during draining and placed in adjacent sections of creek—upstream of the area being drained.

Fifty-six *A. marmorata* were encountered during the draining phase of the project. Turtles were found free-swimming in shallow pools, attempting to move upstream or downstream, or were found buried in the bottom sediment of drained pools. On three separate days, turtles were also found within the burrows of Beaver (*Castor canadensis*) and Muskrat (*Ondatra zibethicus*) located in the bank of the creek.

We frequently observed turtles (ca. 30% of captures) utilizing bottom silt as refugia from our capture. As water levels were lowered, turtles moved to the bottom of pools where they appeared to "swim" into loose bottom silt. Although turtles were not visually detectable, they could be located by raking through the silt with both hands. Frequently turtles were found < 0.5 m into the silt. On one occasion 3 turtles were found deep (ca. 0.7–0.9 m) within an inactive earthen burrow made by a Beaver. A fourth was found ca. 0.3 m within a different Beaver burrow, and a fifth turtle was found ca. 0.3 m within a potentially active Muskrat burrow.