

## NATURAL HISTORY NOTES

Instructions for contributors to Natural History Notes appear in Volume 37, Number 1 (March 2006).

### CAUDATA

**PLETHODON HUBRICHTI** (Peaks of Otter Salamander). **REPRODUCTION.** On 26 May 2005, while conducting a mark-recapture study in the contact zone for *Plethodon hubrichti* and *P. cinereus*, we discovered a *P. hubrichti* egg cluster under a rock imbedded in the soil. This is the first time a nest has been seen for this species (Petranka 1998. Salamanders of the United States and Canada. Smithsonian Inst. Press, Washington, D.C. 587 pp.). Our study site (10 m × 10 m) is located near Onion Mountain, Bedford County, Virginia (USA). The egg cluster was attached to the top of a small cavity in the soil beneath the rock. Ten eggs were visible (2–3 additional eggs were likely in the center of the cluster but could not be seen without disturbing it) and the diameter of each of three eggs was 5.5 mm. Because the site was examined previously on 20 May 2005, it is likely the eggs were laid between 20–26 May. A brooding female was found attending the eggs during the initial and three subsequent site visits. She consistently retreated deeper into the crevice upon removal of the cover rock. On 7 July 2005, embryos with clearly visible eyes were moving within the eggs. Hatchlings were discovered clustered around the remains of the egg mass during a site check on 30 July 2005. Additional neonates were seen (N = 12) elsewhere on our site on 19 August 2005. It is likely that other nests were located either under large rocks that we could not move or below ground, since a total of 79 adult *P. hubrichti* had been marked on our site that year. The egg number and size, as well as the behavior of the brooding female, are similar to those noted for *P. cinereus* (Petranka, *op. cit.*). All neonates observed in this and another long-term study on timbering impacts (Reichenbach and Sattler, pers. obs., N = 126) were noted to be dark brownish-gray in coloring, bearing no distinct marks or color spots. This is in contrast to the description in Petranka (*op. cit.*), which states “hatchlings have a distinct dorsal stripe consisting of reddish spots.” We have also noted that the characteristic brassy flecking on the dorsum of this species appears when the animals are ca. 25 mm SVL.

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### ANURA

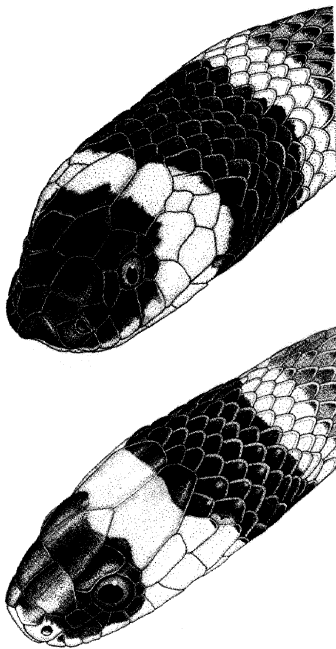
**ATELOPUS VARIUS** (Variable Harlequin Frog) and **ATELOPUS ZETEKI** (Panamanian Golden Frog). **ECTOPARASITES.** *Atelopus varius* and *Atelopus zeteki* are critically endangered (IUCN, Conservation International, and NatureServe. 2004. Global Amphibian Assessment. www.globalamphibians.org 4 April 2005) species known from premontane and lower montane wet forests and rainforests of the Atlantic and Pacific versants of the cordilleras of Costa Rica and Panama (Savage 2002. The Amphibians and Reptiles of Costa Rica. Univ. Chicago Press, Chicago, Illinois. 934 pp.; Dunn 1933. Occas. Pap. Boston Soc. Nat.

volves using a dilute L-Cysteine solution. Drain water from the assembly until it is just covering the grate. Then add about 100 ml of 2% L-Cysteine (CAS #52-90-4, ASTM 1991). Gently stir or rotate the assembly (60 rpm on a rotary shaker). Embryos will fall from the grate into the bottom of the assembly in 20–60 minutes. Embryos will still have an inner jelly coat present. These embryos can be removed to a flask and dejellied using normal FETAX procedures except the time will be much shorter.

We recommend this technique to researchers for housing *Xenopus* during oviposition. The quantity and quality of eggs collected using this method is as good as with any of the standardized techniques, but without the problems outlined above. This method will recover 100% of eggs laid with little difficulty. There is little opportunity for adults to damage the eggs once they are laid, and this method provides a safe housing arrangement for adults during this period. This method might also be useful with other species of amphibians, especially those that lay dispersed eggs clutches.

### LITERATURE CITED

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Upper: *Micrurus diastema* (UMRC 84-5), 657 mm SVL. México: Yucatán. Lower: *Urotheca elapoides* (USNM 319777), 230 mm SVL. Belize: Columbia Forest Reserve. Illustrations by Julian C. Lee.

Hist. 8:65–79). Here we report the first observations of parasitism of *A. varius* and *A. zeteki* by ticks of the genus *Amblyomma*.

During monitoring studies of *A. zeteki* and *A. varius* in the Provinces of Panamá and Coclé, ticks of the genus *Amblyomma* were observed parasitizing two female *A. zeteki* and one male and one female *A. varius*. These frogs were also observed to have numerous circular, raised scars on the venter, and less often on the dorsum, presumably due to previous tick infestation. An additional five females and one male *A. zeteki* were observed with similar scars but were not harboring ticks at the time. Three of these ticks were identified by RGR as larval (2) and nymphal (1) life stages of the genus *Amblyomma*. However, as none of these ticks were adult, identification to species was not possible and these specimens shall hereafter be referred to as *Amblyomma* sp.

The observations of ticks on *A. zeteki* were made by CLR and NEK in December 2004 and January 2005 (early dry season) during peak breeding activity, when the sex ratio was strongly male biased (ca. 1.8:1, CLR unpubl. data). However, of the seven frogs of this population observed with ticks and/or tick scars, six were female, indicating that the incidence of ectoparasitism by *Amblyomma* sp. on *A. zeteki* is likely higher for females than for males. This pattern could be produced if females and males are associated with different microhabitats outside the breeding season, or have different home ranges, or if females are longer lived than males and thus are exposed to ticks over a longer period of time. However, we have insufficient data to properly test these hypotheses. In contrast, in observations of two individual *A. varius* made by EJG in December 2002, one was male (four ticks on venter) and the other was female (35 ticks over all surfaces of the body). We have no information on sex ratio or the prevalence of scars at this site although scarred individuals were seen. It should be noted that many Neotropical amblyommines, especially the ubiquitous *Amblyomma cajennense*, are extremely abundant as immatures during the dry season, when a great range of hosts may be frequently and heavily attacked (Fairchild et al. 1966. *In* Wenzel and Tipton [eds.], *Ectoparasites of Panama*, pp. 167–219. Field Mus. Nat. Hist., Chicago, Illinois). Also, preimaginal tick populations are typically overdispersed (clumped), so that the odds of encountering them are not the same for all members of a host population (Robbins et al. 1998. *J. Parasitol.* 84:1303–1305).

The presence of numerous (up to 50) scars, presumably from previous infestation, on individual frogs suggests that ectoparasitism by *Amblyomma* sp. does not always cause mortality in *A. varius* and *A. zeteki*. However, six of the nine tick-infested and/or scarred frogs, when compared to a regression of weight against length (SVL), hereafter body condition, were found to be among the lowest 10% of the expected body condition distribution for their respective populations, indicating that tick infestation may carry a fitness cost for these frogs. The two other females and one male were among the middle 50% in body condition; however, these three individuals were also the smallest in body size (and therefore likely the youngest) and less extensively scarred than the other four females, which could account for their relatively good health.

Amphibian hosts of both ticks are chiefly true toads of the genus *Bufo*, especially the widely introduced Cane Toad, *B. marinus*, although *A. dissimile* has been collected from *B. fustiger* and *B. schneideri* (Cerny 1967. *Wiad. Parazyt.* 13: 533–537; Walton 1946.

*J. Parasitol.* 32 [sect. 2, supp.]:18–19), while *A. rotundatum* has been reported from *B. arenarum* and *B. granulatus* (Díaz-Ungria 1957. *Rev. Sanid. Asist. Soc.* 22:457–467). *Atelopus* spp. are also members of the Bufonidae, but to our knowledge, this is the first report of parasitism by ticks of the genus *Amblyomma* on another bufonid genus.

We thank the Autoridad Nacional del Ambiente (ANAM) of Panama for permission to study *A. varius* and *A. zeteki* as well as the Smithsonian Tropical Research Institute (STRI) in Panama for logistical support. This work was completed with applicable federal and international permits and in compliance with guidelines of the Institutional Animal Care and Use Committee (IACUC #8831, University of Michigan).

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**BUFO A. AMERICANUS** (Eastern American Toad). **LEUCISM**. Leucism is an autosomal recessive gene mutation in which animals lack functional melanophores and xanthophores and possess minimal iridophores. The skin appears solid white with no pattern, but pigmentation is retained in the eyes (Bechtel 1995. *Reptile and Amphibian Variants: Colors, Patterns, and Scales*. Krieger Publ. Co., Malabar, Florida. 206 pp.). Complete albinos, partial albinos, and leucistic specimens have been observed for many species of North American amphibians and reptiles (Brame 1962. *Abhandl. Und Ber. für Naturk. Und Vorgesch.* 11:65–81; Drykacz 1981. *SSAR Herpetol. Circ.* 11. 31 pp.; Harris 1970. *Bull. Maryland Herpetol. Soc.* 6:21–27; Hensley 1959. *Publ. Mus. Michigan St. Univ.* 1, 159 pp.).

A leucistic adult female *Bufo a. americanus* (SVL 61 mm) was discovered in a partially wooded area near Sylva, Jackson County, North Carolina (35°22.5'N, 83°13.5'W) on 12 Oct 2004. It was subsequently transported to the Highlands Biological Station in Highlands, Macon County, North Carolina where it continues to survive in captivity. Although the eyes are dark, the skin of this individual is translucent white, and internal organs are clearly visible when it is backlit. Several photographs of this specimen were taken and are on file at HBS.

Although *B. americanus* is well-studied and widely distributed, I have found reports of abnormal pigmentation in this species only from central Kentucky (L. Hafley, pers. comm.) and northern Virginia (Bulmer 1975. *Virginia Herpetol. Soc. Bull.* 78:7). Similar appearing specimens of *B. fowleri* have been collected from Wake County, North Carolina in 1965 (NCSM 3884; Palmer and Braswell 1980. *Brimleyana* 3:49–52), and from Randolph County, North Carolina in 2005 (A. Braswell, pers. comm.), but to my knowledge this is the first record of leucism in *B. americanus* from west-