

In the future, it would be interesting to examine the mechanisms of inheritance behind the presence/absence of spots on *A. quercicus*, and to investigate selective pressures allowing this unspotted morph to persist in this restricted geographic area. A plain appearance would at first seem to make these toads more visible to predators in comparison with their disruptively colored brethren. However, in cryptic species, the existence of polymorphism may reduce overall detection by requiring predators to use multiple search images (Karpestam et al. 2016. *Sci. Rep.* 6:22122).

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ATELOPUS NAHUMAE (San Lorenzo Harlequin Frog) and ATELOPUS LAETISSIMUS (Santa Marta Harlequin Frog). INTERSPECIFIC AMPLEXUS. In anurans, amplexus can happen between individuals of the same sex within a species and between individuals of different species (Flores-Hernández and Martínez-Coronel. 2014. *Acta Zool. Mex.* 30:395–398; Costa-Campos et al. 2016. *Acta Zool. Mex.* 32:385–386). Interspecific amplexus usually occurs in sympatric species with overlapping breeding seasons and can decrease mating success (Ferreira et al. 2019. *Herpetol. Notes* 12:705–708; Streicher et al. 2010. *Herpetol. Rev.* 41:208; Marco and Lizana 2002. *Ethol. Ecol. Evol.* 14:1–8; Wells 2010. *The Ecology and Behavior of Amphibians*. University of Chicago Press, Chicago, Illinois. 1148 pp.). Many cases of interspecific amplexus have been reported for neotropical anurans with the Hylidae and Bufonidae having the highest number of cases described (Haddad et al. 1990. *Rev. Bras. Biol.* 50:739–744; Flores-Hernández and Martínez-Coronel 2014, *op. cit.*; Costa-Campos et al. 2016, *op. cit.*; Ferreira et al. 2019, *op. cit.*).

Here we present the first observation of interspecific amplexus between *Atelopus nahumae* and *A. laetissimus*, two endemic species from the Sierra Nevada de Santa Marta (SNSM), Colombia. We recorded interspecific amplexus between a male *A. nahumae* and a female *A. laetissimus* (Fig. 1) at 2030 h on 24 June 2019 in a cloud forest at the San Lorenzo Experimental

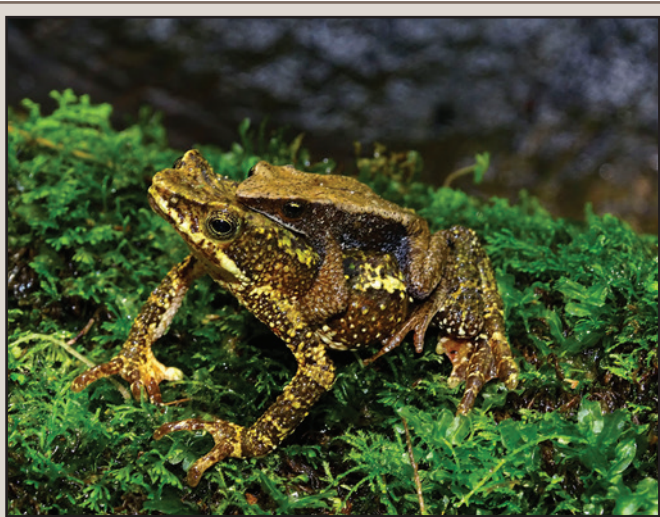


FIG. 1. Interspecific amplexus between a female *Atelopus laetissimus* (bottom) and a male *Atelopus nahumae* (top) along San Lorenzo stream in a cloud forest in the Sierra Nevada de Santa Marta, Colombia.

Station, municipality of Santa Marta, on the western slope of the SNSM (11.11527°N, 74.05096°W; WGS 84; 2100 m elev.). *Atelopus nahumae* is diurnal and *A. laetissimus* is nocturnal. *Atelopus nahumae* occurs between 1500–2800 m elev. and *A. laetissimus* occurs between 1900–2800 m elev. (Granda-Rodríguez et al. 2008. *Herpetotropicos* 4:85–86; Carvajalino-Fernández et al. 2008. *Actual. Biol.* 30:97–103; Rueda-Solano et al. 2016. *J. Therm. Biol.* 58:91–98). These species are sympatric, have similar ecological niches, and there are multiple contact zones between the forest and the stream in the SNSM, which could allow for interspecific amplexus events. Female *A. laetissimus* being amplexed by males of other species of *Atelopus* could have genetic consequences for congeners within the SNSM. Genetic studies are required to detect if interspecific amplexus could lead to hybridization or introgression of genes between species (Correa et al. 2012. *J. Herpetol.* 46:568–577). These findings could have important conservation implications for *Atelopus* populations in the SNSM.

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BUFOTES BATURAE (Batura Toad) and BUFOTES LATASTII (Ladakh Toad). ENDOPARASITES. *Bufotes baturae* and *B. latastii* are toads endemic to central Asia (Dufresnes et al. 2019. *Mol. Phylogenet. Evol.* 141:106615). *Bufotes baturae* is a triploid hybrid species between *B. turanensis* and *B. latastii* distributed from extreme northern Pakistan through northeastern Afghanistan to southeastern Tajikistan. *Bufotes latastii* is an evolutionarily old member of the genus that diverged from the *B. viridis* subgroup at least 15 million years ago (Dufresnes et al. 2019, *op. cit.*) occurring in mountain valleys of northern Pakistan and the western Ladakh of India (Litvinchuk et al. 2018. *Alytes* 36:314–327). Both species occur at high altitudes in the vicinity of shallow pools or streams in mountain valleys (Khan 2006. *Amphibians and Reptiles of Pakistan*. Krieger Publishing Company, Malabar, Florida. 311 pp.). We know of no published helminth records for *B. baturae* and hereby establish the initial helminth list for this species. We know of one published helminth report for *B. latastii*, the digenean *Lepoderma himalayii* from Srinagar, Kashmir (Jordan 1930. *Proc. Ind. Soc. Cong.* 17:246). In this note we add to the helminth list of *B. latastii*.

During field work in northern Pakistan we collected 14 adult specimens of *Bufotes* spp. in Khyber-Pakhtunkhwa and Gilgit-Baltistan Provinces. Seven specimens (six females, one male) of *B. baturae* were collected by hand on 5 September 2018 at Chitral (35.8189°N, 71.7723°E; WGS 84; 1464 m elev.), one female of *B. baturae* was collected on 8 September 2018 at Langar Valley (36.1207°N, 72.6521°E; WGS 84; 3266 m elev.), one adult male of

B. baturnae was collected at Teru on 8 September 2018 (36.1622°N, 72.8491°E; WGS 84; 2949 m elev.), and five adult specimens (three females, two males) of *B. latastii* were collected on 10 September 2018 at Besal, (35.0430°N, 73.9360°E; WGS 84; 3268 m elev.). The toads were euthanized, preserved in 96% ethanol and maintained in 70% ethanol. The body cavity was opened by a longitudinal incision and the digestive tract was removed and opened. The esophagus, stomach, and small and large intestine were examined for helminths utilizing a dissecting microscope. Five female nematodes were found (accession field number DJ7788) in one adult male *B. baturnae* from Chitral (specimen DJ7782 deposited in the Department of Zoology, Comenius University in Bratislava), two female nematodes (DJ7789) in one adult female from Chitral (DJ7784), three female nematodes (DJ7810) in one adult female *B. baturnae* from Langar Valley (DJ7803), five adult female nematodes (DJ7811) in one adult male *B. baturnae* from Teru (DJ7804), and two female nematodes (DJ7925) in one adult female *B. latastii* from Besal (DJ7819; deposited in the Pakistan Museum of Natural History, Islamabad). Parasites were placed on a glass slide in a drop of lactophenol, a coverslip was added, and identification was made from this temporary wet mount. Identification as *Aplectana akhrami* in all toads was made using Anderson et al. (2009. Keys to the Nematode Parasites of Vertebrates, Archival Volume, CAB International, Wallingford, Oxfordshire, UK. 463 pp.) and by comparison to the original description by Islam et al. (1979. Pak. J. Zool. 11:69–73). *Aplectana akhrami* is previously known only from *Duttaphrynus* (as *Bufo*) *stomaticus* from Pakistan (Islam et al., *op. cit.*). Vouchers of *A. akhrami* were deposited in the Harold W. Manter Parasitology Laboratory (HWML), The University of Nebraska, Lincoln, Nebraska, USA as *A. akhrami* in *B. baturnae* (HWML 110813) and *B. latastii* (HWML 110814). *Bufo* *baturnae* and *B. latastii* represent new host records for *A. akhrami*.

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ELEUTHERODACTYLUS BRITTONI (Grass Coqui). MICROHABITAT USE. *Eleutherodactylus brittoni* is a widely distributed frog in Puerto Rico. This species is the third smallest coqui on the island with male SVL ca. 16 mm and female SVL ca. 17 mm. This coqui has a noticeable preference for open grassy areas (Rivero 1998. Los Anfibios y Reptiles de Puerto Rico. Editorial de la Universidad de Puerto Rico, San Juan, Puerto Rico. 510 pp.; Drewry and Rand 1983. Copeia 1983:941–953). Historically, this species has been found in lower elevations but has also been reported from intermediate elevations between 183–240 m (Schwartz and Henderson 1991. Amphibians and Reptiles of the West Indies: Descriptions, Distributions, and Natural History. University of Florida Press, Gainesville, Florida. 714 pp.). As part of a study to understand microhabitat use for *E. brittoni* across different elevations, we observed this species calling from vegetation where they have never been reported. Historically, *E. brittoni* were found in microhabitats made up of forbs, ferns, and tall grasses (Drewry and Rand

1983, *op. cit.*; Ríos-López and Villanueva-Rivera 2013. Life Excit. Biol. 1:118–135). On our study sites (N = 5) a total of 35 male *E. brittoni* were found calling from a variety of species from 13 plant families. The elevations ranged from 33–835 m, with vegetation ranging from urban secondary forest to pristine mountain forest. Within a variety of microhabitats in our study, *E. brittoni* exhibited a preference for herbaceous vines from the family Convolvulaceae (23% of occupancy), sapling trees from the family Meliaceae (19% of occupancy), and juvenile plants from the family Commelinaceae (13% of occupancy). In general, all of the plants were relatively small (<1.3 m in height) which confirms the findings of Drewry and Rand (1983, *op. cit.*). More research is needed to understand the vegetation preference of *E. brittoni*, but their historical preference for ferns and grasses could have been a preference for vegetation height and not necessarily any particular group of plants. The microhabitats available for *E. brittoni* in Puerto Rico may have changed significantly in the past decade, especially after hurricane Maria (Hu and Smith 2018. Remote Sens. 10:827). Encountering these frogs in vegetation different from what has previously been reported could suggest a change in microhabitat availability forcing this species to alter its microhabitat use. Our data suggests possible clinal variation in *E. brittoni* microhabitat use, since there is a change in vegetation composition across elevations.

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ELEUTHERODACTYLUS COQUI (Common Coqui), DIET. *Eleutherodactylus coqui*, an endemic frog of Puerto Rico, is characterized as an extreme sit-and-wait predator of mainly foliage invertebrates, and occasionally litter invertebrates (Woolbright and Stewart 1987. Copeia 1987:69–75; Beard 2007. Copeia 2007:281–291). However, non-invertebrate prey found occasionally in *E. coqui* stomachs includes hatchling lizards and a juvenile *E. coqui* (Stewart and Woolbright 1996. In Reagan and Waide [eds.], The Food Web of a Tropical Rain Forest, pp 274–320. The University of Chicago Press, Chicago, Illinois). *Eleutherodactylus coqui* move less than 5 cm to capture prey and as individuals get larger, they tend to consume larger prey rather than more prey items (Woolbright and Stewart 1987, *op. cit.*; Jøglar 1998. Los Coquies de Puerto Rico: Su Historia Natural y Conservación. Editorial Universidad de Puerto Rico. San Juan, Puerto Rico. 232 pp.; Beard 2007, *op. cit.*). Here we report observations of interspecific and intraspecific predation by *E. coqui*. Both incidents were observed during routine visual encounter surveys conducted near the USDA Forest Service Sabana Field Research Station (18.3250°N, 65.7300°W; WGS 84) in the Luquillo Experimental Forest, Luquillo, Puerto Rico. Surveys were conducted as part of an ongoing field warming experiment, the Tropical Responses to Altered Climate Experiment (TRACE; Kimball et al. 2018. Ecol. Evol. 8:1932–1944), where three small (4 m diameter) experimental plots are being heated at 4°C above ambient temperature while three plots are maintained as controls.

The observation of *E. coqui* cannibalism occurred on 5 December 2018. Two *E. coqui* frogs, an adult (2.1 cm SVL, 0.67 g) and a juvenile (1.1 cm SVL, 0.12 g) were captured in a heated experimental plot. The two frogs were placed in the same plastic sampling bag and measured as part of our survey methods. The next day, 6 December 2018, we observed that the juvenile was missing, and the adult had a full abdomen. Because we are certain that both individuals were in the bag when we sealed it, and holes