

FIG. 2. *Scaphiopus holbrookii* burrow depths by life stage (A) and US state (B). F = Female, M = Male, SNBA = subadult or non-breeding adult, and U = undetermined. AR = Arkansas, TN = Tennessee, and VA = Virginia. Note that the x-axis for SVL begins at 30 mm.

minimal precipitation. Arkansas and Tennessee surveys were conducted in June and July 2023 at Village Creek State Park in eastern Arkansas (35.170°N, 90.706°W; WGS 84) and Meeman-Shelby Forest State Park in western Tennessee (35.340°N, 90.041°W; WGS 84). Virginia surveys were conducted between April 2016 and May 2017 in Colonial National Historical Park in southeastern Virginia (37.229°N, 76.501°W; WGS 84). *Scaphiopus holbrookii* were located by eyeshine between 2000 h and 2200 h in Arkansas and Tennessee, and between 2000 h and 0300 h in Virginia.

Upon detecting an individual, we searched the surrounding habitat, in a roughly 60 cm radius from where it was found, for unoccupied burrow entrances (Fig. 1). This was done first visually, by scanning the ground surface, and then tactiley, by feeling the ground surface in the area for unevenness and moving leaf litter to visually detect burrow entrances. Burrow depth, which may be different from vertical depth from the surface due to the slight angle of some burrows, was measured by gently inserting a thin stick into the burrow until the end of the burrow could be felt and measuring the length of the stick with a ruler. The SVL, mass, and sex were recorded for each frog captured. In Virginia, we used the same methods as described above, except that only visual scans were used, not tactile exploration of the soil surface.

Tactile exploration was highly successful in detecting burrows. We detected and measured the burrow depths for 18 of 34 *S. holbrookii* captured in Arkansas and two of two captured in Tennessee using both visual and tactile exploration, and 109 out of >4000 *S. holbrookii* captured in Virginia using visual exploration only (Fig. 2). Overall burrow depth for all *S. holbrookii* averaged 7.9 cm ( $\pm$  0.340 cm SE; range: 4–26 cm; N = 129); with 8.9 cm ( $\pm$  0.623 cm SE; N = 42) for females, 7.9 cm ( $\pm$  0.587 cm SE; N = 39) for males, and 7.9 cm ( $\pm$  0.901 cm SE; N = 29) for subadults and non-breeding adults. Previous studies (e.g., Jansen et al. 2001. J. Herpetol. 35:141–145) have documented burrow depths of *S. holbrookii* between 5–30 cm, however, individuals have been recorded as deep as 2 m below ground at the northern end of the species range (Driver 1936. Copeia 1936:67–69).

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**SPEA HAMMONDII** (Western Spadefoot). **LEUCISM**. There is a paucity of reports on leucism in the Scaphiopodidae, and specifically for *Spea* (Ray et al. 2020. Herpetol. Rev. 51:306–307). Gibson and Sattler (2010. Catesbeiana 30:73–81) and McKnight and Ligon (2013. Herpetol. Rev. 44:131–132) reported leucism in *Scaphiopus hurterii* and *S. holbrookii*, respectively. More recently, Ray et al. (2020, *op. cit.*) documented the larvae of *Spea bombifrons* as leucistic in Yellowstone National Park. Here, we report leucism in *S. hammondii* from a large vernal pool in Madera County, California, USA.

Like many in the genus, *S. hammondii* is known to frequently utilize vernal pools and cattle stock ponds for breeding in much of its range in California and northern Baja California (Flaxington 2021. Amphibians and Reptiles of California: Field Observations, Distribution, and Natural History. Field Notes Press, Anaheim, California. 294 pp.). We conducted visual encounter and dip net surveys of several large vernal pools, that functioned as cattle stock ponds at a property in Madera County, California, in April 2023 (specific location withheld). We were able to quickly collect dozens of larvae, from among what appeared to be many hundreds or thousands of larvae present. Larvae were placed in bins for counting, species determination, and for an assessment of developmental stage. All larvae from two pools appeared typical in coloration and development. At a third pool, we noted a single individual appeared atypical in appearance, and a close investigation revealed that it appeared to be leucistic (Fig. 1).

Leucism is considered a genetic defect in that there is an observable absence of melanophores and xanthophores, and iridophores are nearly absent (Bechtel 1995. Reptile and Amphibian Variants Colors, Patterns, and Scales. Krieger Publishing Company, Malabar, Florida. 206 pp.). The resulting coloration is typically pale, white, or nearly so, with pigmented eyes (i.e., not albino). This single leucistic *S. hammondii* larva was among 100s



FIG. 1. A typical and leucistic *Spea hammondii* tadpole, collected from Madera County, California, USA, April 2023.

of typically colored larvae. Since there are no previously published accounts of leucism for this species, this suggests that leucism in *S. hammondii* is rare. Caro (2005. BioScience 55:125–136) suggested that aberrant colors are maladaptive in mammals. For a spadefoot that spends much of its adult life stage underground or foraging at night, a color variation may not incur negative consequences. As larvae, leucism may be maladaptive in that visual predators may be able to focus on a single specimen that is unable to blend into pond substrates (Endler 1978. Evol. Biol. 11:319–364). *Spea hammondii* is a declining species and was recently proposed for listing as threatened under the federal Endangered Species Act. Any confounding contributions to its decline should be recognized and, if needed, further investigated.

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**TRACHYCEPHALUS TYPHONIUS (Veined Treefrog). NECROPHILIA.** *Trachycephalus typhonius* is a hylid found in Brazil, French Guiana, Guyana, and Suriname (Frost 2024. Amphibian Species of the World: an Online Reference, Version 6.1; <https://amphibiansoftheworld.amnh.org>, 25 May 2024). *Trachycephalus typhonius* are robust, with a coloration ranging from gray to reddish-brown, with males having lateral vocal sacs located behind the jaws (Mora et al. 2022. Rev. Latinoamer. Herpetol. 5:91–97). Members of this genus are explosive breeders, commonly found in large mating aggregations around water bodies after rainfall (de Moura and Loebmann 2014. Herpetol. Bras. 3:60–61). Necrophilia is a reproductive behavior that involves sexual interactions between living males and a dead partner (either females or males) (Pintanel et al. 2021. Neotrop. Biodivers. 7:53–56). This interaction frequently occurs among anurans, especially during peak reproductive periods, when males accidentally drown females during amplexus (de Moura and Loebmann 2014, *op. cit.*).

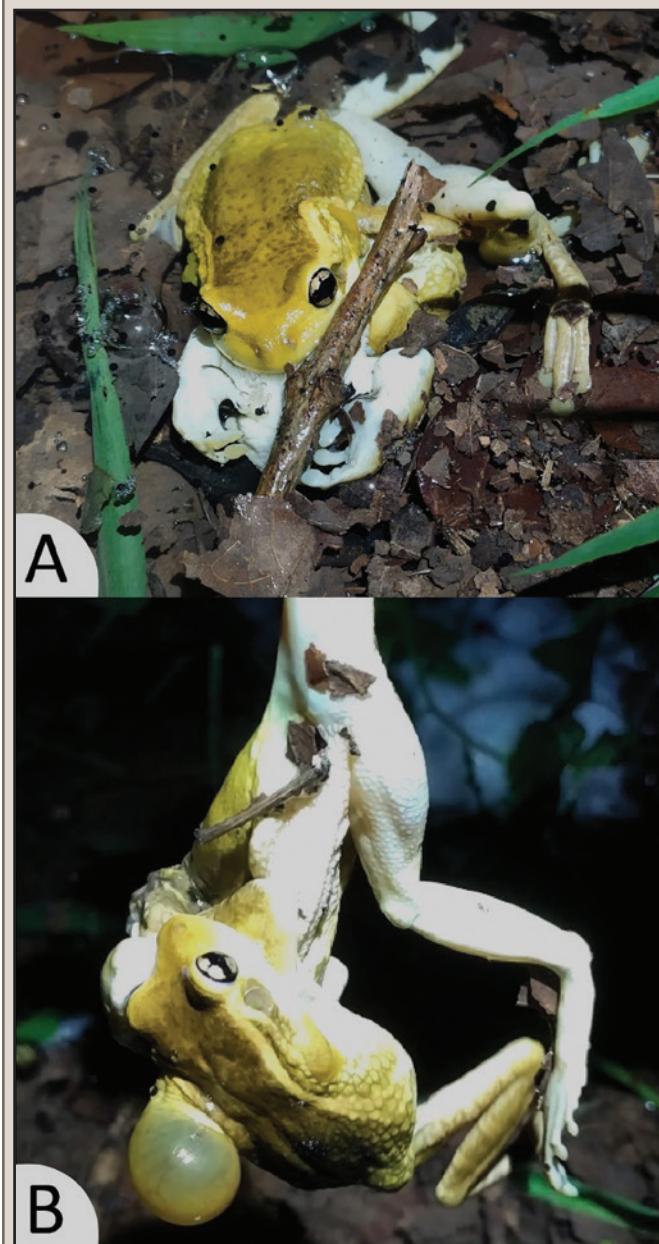


FIG. 1. A) Male and dead female *Trachycephalus typhonius* when first observed in Ceará, Brazil; B) A male *T. typhonius* vocalizing during female manipulation.

On 29 February 2024, at 0317 h, in the Municipality of Guaramiranga, Ceará, northeastern Brazil (4.22015°S, 38.95479°W; WGS 84), we observed a male *T. typhonius* in amplexus with a dead female. Both specimens were collected and housed at the Museu de História Natural do Ceará Prof. Dias da Rocha (female: MHNCE-A759; male: MHNCE-A760). During the field expedition, we visited the pond twice. On the second visit, we noticed the remains of four individuals of *T. typhonius* at the margin. One of them was a headless female, which was held tight by a living male in a ventral amplexus (Fig. 1). The male refused to release the female even under manipulation, emitting a distinct vocalization. The interaction with the observer lasted for about 90 s, after that, the male realized the observer's presence, released the female, and jumped into the water. Necrophilia in anurans is well-documented in the literature and appears to be