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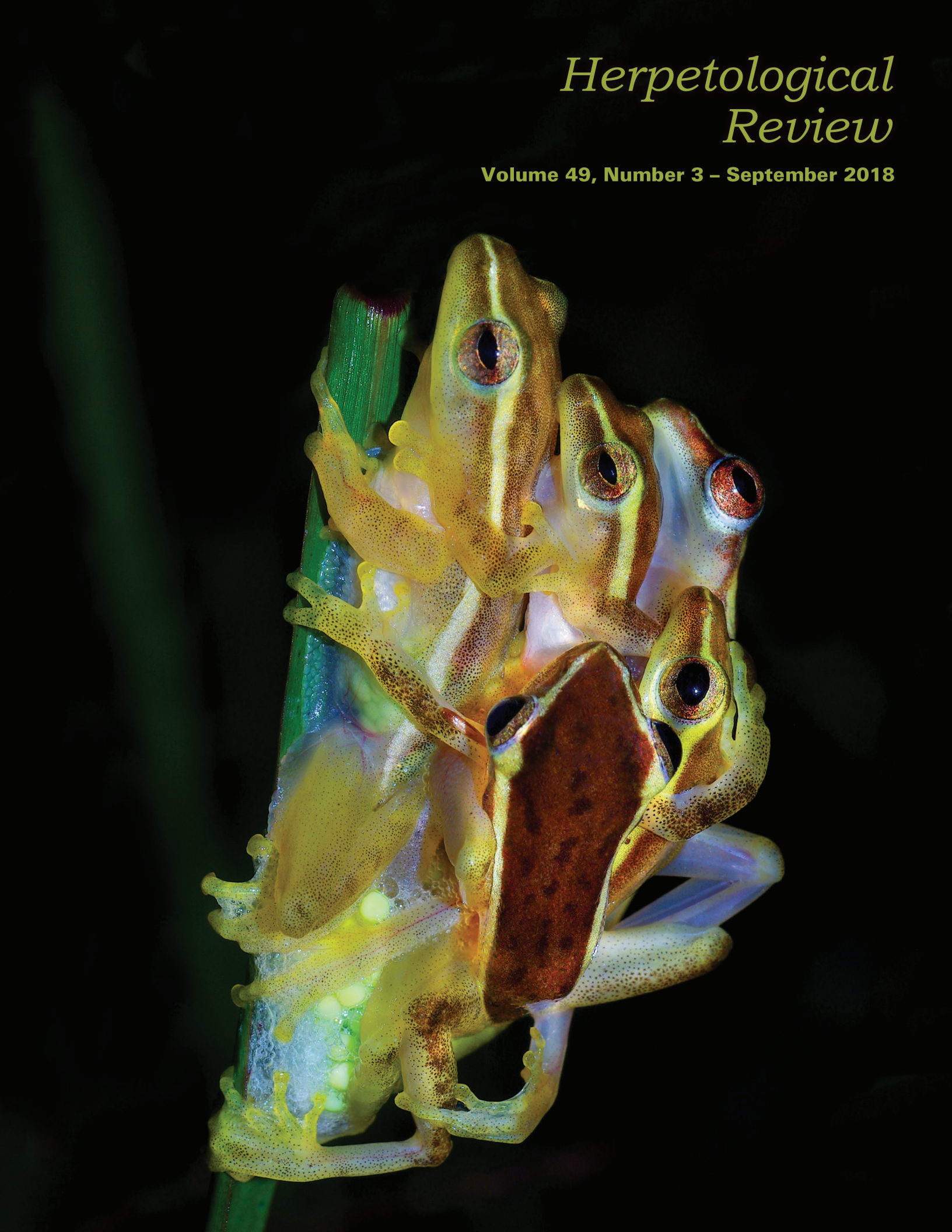

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***ELACHISTOCLEIS CESARII* (Oval Frog). DEFENSIVE BEHAVIOR.** Frogs present several strategies to avoid predation (Duellman and Trueb 1994. Biology of Amphibians. The John Hopkins University Press, Baltimore, Maryland. 670 pp.). One of these defensive strategies, known as "body-tilting" consists of inflating and tilting the body toward the predator displaying its glands, cutaneous secretions, or aposematic coloration (Toledo et al. 2011. Ethol. Ecol. Evol. 23:1–25). For the genus *Elachistocleis*, this behavior was previously observed in *E. erythrogaster* (Kwet and Solé 2002. Herpetol. Rev. 33:45) and *E. ovalis* (Kokubum and Menin 2002. Herpetol. Rev. 33:198). We report here for the first time body tilting defensive behavior performed by *E. cesarii*, a species native to Brazil (Caramaschi 2010. Bol. Mus. Nac. Rio de Janeiro. 527:1–30). Around 2200 h in August 2014, in the municipality of Guapó, Goiás, Brazil (16.87596°S, 49.45314°W, WGS 84; 1021m elev.), an individual of *E. cesarii* was found vocalizing in a swampy environment associated with a Cerrado phytophysiognomy known as "Vereda." After manipulation the frog inflated and elevated its body exposing its inguinal and femoral characteristic coloration (Fig. 1). The individual remained inflated and elevated for approximately two minutes. We also observed that the individual shifted its position as we moved, and thus oriented the display in our direction.

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FIG. 1. Defensive behavior of *Elachistocleis cesarii* recorded in the municipality of Guapó, Goiás State, Brazil.

***FEIHYLA HANSENAE* (Hansen's Bush Frog). MULTIMALE AMPLEXUS.** *Feihyla hansenae* (Rhacophoridae) is a nocturnal treefrog that breeds in temporary ponds in Thailand and parts of Cambodia during the rainy season (Taylor 1962. Univ. Kansas Sci. Bull. 43:526–529; Aowphol et al. 2013. Zootaxa 3702:101–123). Males attract females by calling from emergent vegetation or vegetation at the edge of the pond. After forming an amplectic pair, females will move around the vicinity and select the final location for oviposition (S. Poo, pers. obs.). Eggs are deposited in hemispherical gelatinous masses attached to vegetation overhanging the pond. Once the last egg is laid, males leave, while females remain, finish constructing the egg mass, and provide parental care by maintaining egg hydration (Poo and Bickford 2013. Ethology 119:671–679) and deterring egg predators (Poo et al. 2016. Biol. J. Linn. Soc. 118:901–910) until the eggs hatch and fall into the pond below. Here we report the first record of multiple males forming an amplectic group with a single female in this species.

On 18 September 2015 between 2100 and 2200 h, we observed four *F. hansenae* males attempting to mate with one *F. hansenae* female (Fig. 1) at a seasonal pond at the Sakaerat Environmental Research Station in northeastern Thailand (14.5090°N, 101.9537°E; WGS 84). When first observed, the female was in the process of laying eggs and constructing the gelatinous egg mass, with eggs visible both in the female's abdomen and on the grass blade beneath the female's vent. Of the four males, one male (Male 1) was in the normal, axillary amplectic position with the female, holding on to the female's dorsum (Fig. 1). The second male (Male 2) was positioned to the right dorsolateral side of Male 1 (Fig. 1). The third male (Male 3) was positioned dorsal inferiorly to Male 1 (Fig. 1). Finally, the fourth male (Male 4) was positioned laterally to the left of Male 1 and had all four limbs extended to wrap around the female, Male 1, and Male 3 (Fig. 1). Vents of all males were positioned in close proximity to the vent of the female, and the female continued to lay eggs and construct the egg mass by kicking up gel and foam with her hindlimbs. Males made slight movements with their limbs and body without changing their relative position to each other within the amplectic group. Seven minutes after observation started, Male 4 left the group by moving to the opposite side of the grass blade (relative to the female) for one minute, then jumping away (all observations rounded to the nearest minute). Similarly, one minute later, Male 3 moved to the opposite side of the grass blade, paused for one minute, and then jumped away. After Male 3 left, Male 2 repositioned itself to the dorsal side of Male 1, forming amplexus with Male 1. Male 1 and Male 2 maintained their positions until the last egg was laid. Eight minutes later, both Male 1 and Male 2 exited amplexus and moved to the opposite side of the grass. Male 1 paused for two minutes before jumping away, while Male 2 stayed for another minute before jumping away. The female remained at the oviposition site and continued to construct the egg mass with its hindlimbs.

We observed another multimale amplectic group nearby (~3 m away) at the same time, with two males attempting to mate with one female. One male was in the normal, axillary amplectic position with the female and was using its hindlimbs to kick or

FIG. 1. Female *Feihyla hansenae* laying eggs while in amplexus with four males.

push the second male away. The second male was positioned laterally to the amplectic pair with one arm on the female and another on the side of the grass blade. The vents of both males were positioned in close proximity to the female vent, and the female was in the process of laying its eggs. No further observations were made for this amplectic group.

Our observations of multimale amplexus occurred in a year where the onset of rainfall and accumulation of pond water was delayed in comparison to past years. At the time our observations were made (mid-September), water depth in the pond was less than 0.5 m compared to the average of 2.5 m in 2010–2013 (range = 1–5 m). The delay in heavy rain may have increased pressures on males to secure mates before the end of the breeding season. In comparison, multimale amplexus was not observed in over 200 night surveys performed in July–Oct from 2010 to 2013. To our knowledge, this is the first report of multimale amplexus in an arboreal-breeding species with a gelatinous egg clutch. Polyandrous behavior has been observed in the congeneric foam-nesting species *C. xerampelina* and *C. rufescens* (Coe 1974. J. Zool. 172:13–34; Jennions et al. 1992. Anim. Behav. 44:1091–1100), and in two other foam-nesting genera, *Polypedates*, and *Rhacophorus*, within the Rhacophoridae (Jennions and Passmore 1993. Biol. J. Linn. Soc. 50:211–220). In comparison, multimale amplexus appears to be more common in African rhacophorids compared to their Asian counterparts.

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***LITHOBATES CATESBEIANUS* (American Bullfrog). DIET.** *Lithobates catesbeianus* is highly aquatic and occurs across North America in many types of mesic habitats (Bury and Whelan 1984. USFWS Resource Publication 155:1–26; Dodd 2013. Frogs of the United States and Canada, Volume 2. The Johns Hopkins University Press, Baltimore, Maryland. 982 pp.). Numerous studies have examined the diet of *L. catesbeianus*, which includes many invertebrate and vertebrate species. Herpetofauna in the diet includes salamanders, lizards, frogs, and a few snakes. At least seven species of snakes are known in the diet of *L. catesbeianus*: *Crotalus atrox*, *Lampropeltis getula*, *Rena dulcis*, *Micrurus fulvius*, *Nerodia* sp., *Thamnophis eques*, and *T. sauritus*; Dodd 2013, *op. cit.*). Prey size often is proportional to body size (Bruneau and Magnin 1980. Can. J. Zool. 58:175–183), so adult bullfrogs consume a larger variety of prey items of greater sizes.

Here, we report the first record of *L. catesbeianus* consuming a *Pituophis catenifer sayi* (Bullsnake). An adult *L. catesbeianus* (ca. 16.5 cm SVL) was captured in late August or early September 2015 on Hackberry Lake, Valentine National Wildlife Refuge, Cherry County, Nebraska (42.56153°N, 100.67891°W; WGS 84). A dietary study of *L. catesbeianus* from the refuge did not document snakes in the diet (Lingenfelter et al. 2014. J. N. Am. Herpetol. 2014:81–86). *Pituophis catenifer sayi* is distributed largely west of the Mississippi River from southern Alberta and Saskatchewan into Mexico and west of the Rocky Mountains (Ernst and Ernst 2003. Snakes of the United States and Canada. Smithsonian Books, Washington, D.C. 668 pp.). The total length of the predated *P. c. sayi* was ca. 40 cm, a size corresponding to a hatchling. Known predators of this snake species include mid-sized mammals and predatory birds, but previously, no species of frog has been documented to predate *P. catenifer* (Ernst and Ernst 2003, *op. cit.*).

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***LITHOBATES SYLVATICUS* (Wood Frog). PREDATION.** *Lithobates sylvaticus* has the most extensive native range of any North American anuran and is common throughout this range (Martof and Humphries 1959. Am. Midl. Nat. 61:350–389). Typical avian predators of adult *L. sylvaticus* include wading birds, raptors, and ducks (Dodd Jr. 2013. Frogs of the United States and Canada Vol. 2. John Hopkins University Press, Baltimore, Maryland. 982 pp.). In June 2014 we witnessed an adult *Sterna paradisaea* (Arctic Tern) circling overhead and diving into a shallow, ephemeral wetland in the tundra and emerging with a single *L. sylvaticus* individual in its beak before flying away. This event occurred in Churchill, Manitoba, Canada, just a few kilometers inland from Hudson Bay (58.72919°N, 93.76882°W; WGS 84). This is the first record of *S. paradisaea*, a seabird, reported as predator of *L. sylvaticus*.

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