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**RHACOPHORUS KIO. OVIPOSITION AND NEST CONSTRUCTION.** *Rhacophorus kio* (Rhacophoridae) is an old world “flying” frog that is distributed in China, Laos, Thailand, and Vietnam (Ohler and Delorme 2006. C. R. Biol. 329:86–97). Males call from high in the forest canopy above seasonal pools and, as with other rhacophorid frogs, eggs are laid within a foam nest that is attached to vegetation overhanging the pool (Karraker 2013. Herpetologica 69:257–264). Very little is known about the reproductive ecology of *R. kio*, as the species was described relatively recently. Here we report, to our knowledge, the first observations of oviposition and nest construction in this species.

Field observations were made at the Sakaerat Environmental Research Station in northeastern Thailand (14.5090°N, 101.9537°E, WGS84) in 2011 and 2015, during which time we documented nine *R. kio* clutches, including oviposition and nest construction of two. At the study site, male *R. kio* have been documented calling in 2011 above three seasonal pools: two that were formed by the damming of different tributaries of an ephemeral stream and one by the wallowing of wild boars (*Sus scrofa*). Each pool was searched for egg masses between ca. 0330 and 0600 h each day from 19 August–12 September 2011, and occasional night searches were also carried out during rainy periods between ca. 1700 and 2300 h in August–September in 2011 and 2015. All egg masses were found at the boar wallow after heavy rains, including eight in 2011 and one in 2015 (Table 1). On two occasions, we observed *R. kio* during the process of oviposition and nest construction. At 2133 h on 12 September 2011, we found an amplexant pair of *R. kio* in the process of laying a foam nest on a single leaf (Fig. 1). Amplexus was axillary, with the female (SVL = 85 mm) kicking her hindlimbs to form the foam which contains eggs and mucus released by the female and sperm from the male (Wells 2007. The Ecology and Behavior of Amphibians. University of Chicago Press, Illinois. 1148 pp.). The male was observed kicking his hindlimbs on the surface of the egg mass a few times. At 2150 h, the male released his grip on the female and left the site of the clutch, while the female continued to kick her hindlimbs over the surface of the egg mass. At 2153 h,

the female used her hindlimbs to pull in nearby leaves, pressing the leaves against the sticky surface of the foam, and then holding the leaves in position by wrapping her body and limbs around the whole leaf and foam nest structure for two minutes. The female repeated this behavior three times, initially with leaves from the same branch as that to which the egg mass was attached, and then with leaves from a neighboring branch. The female held the newly attached leaves in position for 1–2 minutes each time, until leaves formed a rough ellipsoid covering the entire surface of the egg mass. She then held the entire structure for an



FIG. 1. Amplexant pair of *Rhacophorus kio* laying foam nest.

TABLE 1. Physical and biological features of *Rhacophorus kio* egg masses. — indicates that data were not collected.

Date	Substrate to which attached	Height above ground (cm)	Egg mass overhanging	Water depth below egg mass (cm)	No. leaves enveloping egg mass	Egg mass (L x W x D) (mm)
23 Aug 2011	Woody shrub	148	Water	78	8	—
30 Aug 2011	Woody shrub	146	Water	83	6	93 x 57 x 26
31 Aug 2011	Tree	650	Water	64	—	74 x 58 x 28
1 Sept 2011	Tree	1000	Water	82	—	—
1 Sept 2011	Tree	600	Water	61	—	—
8 Sept 2011	Woody shrub	106	Dry ground	0	8	118 x 51 x 48
12 Sept 2011	Tree	285	Water	503	9	—
12 Sept 2011	— <sup>a</sup>	—	—	—	9	—
11 Aug 2015	Tree	~ 300	Water	—	—	—

<sup>a</sup> Egg mass was found floating in the pool and was enclosed in leaves. Presumably it had broken off and fallen into the pool from a tree above.



FIG. 2. Female *Rhacophorus kio* holding leaves that were wrapped around foam nest after eggs were laid.

additional 20 minutes (Fig. 2), before leaving the nest site at 2217 h. Observations concluded after the female moved away from nest site. Similarly at 2154 h on 11 August 2015, a female *R. kio* was observed kicking her hindlimbs over the surface of a newly laid egg mass approximately 3 m above the water surface of the same boar wallow, presumably after the male frog had left. We observed the female using her hindlimbs to pull in leaves around the egg mass, attach them to the foam, and hold them in place with her body forming a structure similar to that documented in 2011.

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**RHINELLA ABEI** and **RHINELLA ICTERICA** (Yellow Cururu Toad). **HETEROSPECIFIC AMPLEXUS**. Reproduction in toads of the family Bufonidae is explosive and when the breeding season overlaps spatially and temporally between multiple species, heterospecific amplexus may occur (Sodré et al. 2014. Herpetol. Notes 7:287–288). Studies have shown that bufonid toads in



FIG. 1. Amplexus of a *Rhinella ictERICA* female by a *Rhinella abei* male.

particular have a limited capacity for recognizing conspecific females (Marco and Lizana 2002. Ethol. Ecol. Evol. 14:1–8) and males prefer larger females, which are potentially more fertile (Liao and Lu 2009. J. Ethol. 27:413–417).

On 3 October 2011, KC observed and photographed a male *R. abei* in amplexus with a larger female *R. ictERICA* (Fig. 1) in a pond in the municipality of Siderópolis, state of Santa Catarina, southern Brazil (28.3448°S, 49.2309°W, WGS84; 126 m elev.). The individuals were not captured. To our knowledge, this is the first confirmed report of heterospecific amplexus of *R. ictERICA* by *R. abei*.

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**RHINELLA MAJOR** and **RHINELLA SCHNEIDERI** (Granular and Rococo Toad). **REPRODUCTIVE BEHAVIOR**. *Rhinella major* and *R. schneideri* are two common bufonids that occur sympatrically in the Chaco ecoregion of Argentina, Bolivia, and Paraguay. *Rhinella major* is a moderately sized toad (maximum SVL = 81 mm; Narvaes and Rodrigues 2009. Arq. Zool. 40:1–73) while *R. schneideri* is considerably larger (maximum SVL = 210 mm; Ceí 1980. Zool. Ital. Monogr. 2:1–609). *Rhinella major* are generally found calling at the edge of temporary ponds (Schalk and Morales 2012. Herpetol. Notes 5:369–370), whereas *R. schneideri* breed in both temporary and permanent ponds (Peltzer et al. 2006. Biodiv. Cons. 15:3499–3513; Schalk and Ticona 2013. Herpetol. Rev. 44:299–300).

Interspecific amplexus has been reported multiple times in anurans (e.g., Pearl et al. 2005. Am. Midl. Nat. 154:126–134; Mollov et al. 2010. Biharean Biol. 4:121–125; Medina-Rangel 2013. Herpetol. Rev. 44:123; Stynoski et al. 2013. Herpetol. Rev. 44:129–130). Herein I report interspecific amplexus between congeners of strikingly different body size. At 2225 h on 23 March 2011, I encountered a chorus of *R. major* at a temporary pond in the Isoceño community of Yapiroa, Province Cordillera, Department of Santa Cruz, Bolivia (19.6043°S, 62.5756°W, WGS84). I encountered a male *R. major* calling from on top of an adult *R. schneideri* (sex unknown) that was sitting in the water approximately 15 cm from the pond's edge (Fig. 1A). The *R. schneideri* remained motionless for approximately ten