

Biodiversity Record: Apparent sexual rivalry in four-lined tree frogs

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Subjects: Four-lined tree frog, *Polypedates leucomystax* (Amphibia: Anura: Rhacophoridae).

Subjects identified by: Yu Xun Chin.

Location, date and time: Singapore Island, Bukit Timah, Dairy Farm Nature Park; 25 February 2024, around 1048 hrs.

Habitat: Secondary forest and parkland. In an artificial concrete pond with tiled sides.

Observer: Yu Xun Chin.

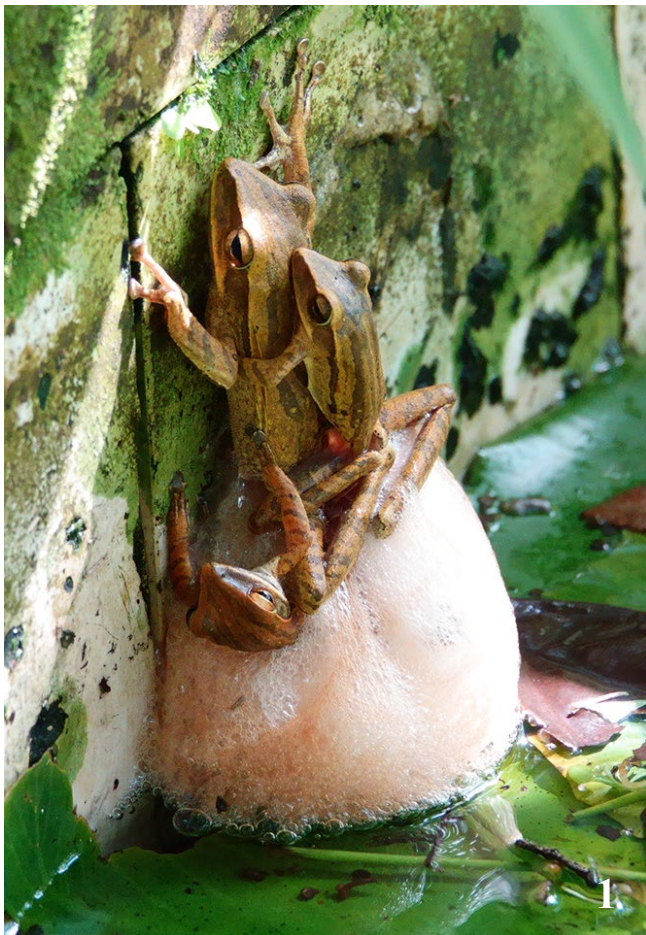


Fig. 1. Lateral view of the pair of frogs in amplexus and the male with his lower body embedded in the foam nest. Fig. 2. Dorsal view of the frogs in amplexus and lateral view of the male stuck in the foam nest (Photographs by: Yu Xun Chin).

Observation: A pair of four-lined tree frogs was found clinging to the tiled wall of a concrete pond with a nest of foam at the water's edge. They were in amplexus, the male frog gripping onto the back of the female (about 7 cm snout-vent length) with his fore feet under her arm pits (Figs. 1 & 2). They appeared to be spawning although no eggs could be seen in the nest. Both the female and the male on her back were moving their hind limbs into the nest with a kicking motion, presumably to whip up more foam and disperse eggs and sperm into the nest. On one side of the nest, another male frog could be seen motionless with his head and outstretched forelimbs sticking out of the foam. It is speculated that he was attempting to cling onto the female, but failed and had slipped into the foam nest. The observer then moved away. When he returned 10 minutes later, all three frogs were no longer at the nest.

Remarks: The featured observation suggests sexual rivalry when the number of breeding males outnumber females. Although it is common for frogs that spawn in large congregations, this seems to be rarely documented in *Polypedates leucomystax*. One such group sex involving this species was recorded by Feng & Narins (1991) at Gombak in Selangor, Peninsular Malaysia, in which three males participated in spawning with one female, and appeared to be cooperating rather than competing with each other.

In the present observation, despite the other male not being able to mount the female, or even the rival male, his cloaca was embedded inside the nest, and it seems plausible for him to be capable of contributing sperm to fertilise the eggs inside the nest. However, it appears doubtful that the second male frog was using a sneak mating tactic such as that practised by unpaired males of the confamilial *Rhacophorus schlegelii* from Japan (Fukuyama, 1991). The tactic involves unpaired males joining pairs of spawning frogs at their foam nests and contributing sperm into the nests. For the unpaired male in the present observation, it appears that his situation was accidental.

Literature cited:

- Feng AS & Narins PM (1991) Unusual mating behavior of Malaysian treefrogs, *Polypedates leucomystax*. *Naturwissenschaften*, 78: 362–365.
- Fukuyama K (1991) Spawning behaviour and male mating tactics of a foam-nesting treefrog, *Rhacophorus schlegelii*. *Animal Behaviour*, 42: 193–199.