

H U S B A N D R Y

Lemur Tree Frog (*Hylomantis lemur*) Egg and Tadpole Development at the Bronx Zoo

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Photographs by the author.

Listed by the IUCN as critically endangered, Lemur Tree Frogs (*Hylomantis lemur*) occur predominantly in pre-montane and montane primary forests of Costa Rica and Panama (Stuart et al. 2008). Commonly found in captive collections, this nocturnal species has been bred at several institutions. In the wild, reproduction generally occurs during the rainy months of April through June (Savage 1992). Amplectant pairs deposit 15–30 eggs on the surface of leaves overhanging bodies of water and may produce multiple clutches in one night (Savage 1992, Stuart et al. 2008). As early as seven days after fertilization the eggs begin to hatch and drop into the water below (Stuart et al. 2008). Metamorphosis begins approximately 65–90 days after hatching (Stuart et al. 2008).

The Wildlife Conservation Society's Bronx Zoo maintains five adult *H. lemur* in an off-exhibit quarantine room at the World of Reptiles. On 8 August 2010, 3.2 *H. lemur* were set up in a 45.7 x 45.7 x 45.7 cm Zoo Med Naturalistic Terrarium (Zoo Med Laboratories, San Luis Obispo, California) furnished with plants, cork bark, and PVC pipes. The tank was plumbed with a bulkhead and outfitted with an automated misting system. Full-spectrum fluorescent fixtures provided ambient lighting and a single basking spot was provided with a 50-watt Eiko Solux light bulb (Eiko Ltd., Shawnee, Kansas).

In order to elicit breeding, the misting of the tank was increased from five minutes an hour to approximately 45 minutes an hour. Additionally,



Amplexus was first observed 16 days after misting was increased.



Day 1: Eggs discovered on 26 March 2011 (Gosner Stage 3).



Day 3 (Gosner Stages 15 and 18).



Day 5 (Gosner Stage 18).



Day 6 (Gosner Stage 20).



Day 9: Eggs hatched (Gosner Stages 22–24).



Day 14: Six days after hatching (Gosner Stage 25).



Day 59: Legs are visible (Gosner Stages 33–36).



Immediately prior to metamorphosis (Gosner Stage 42).



Days 75–122: Metamorphs (Gosner Stages 42–46).

a bulkhead was used to maintain 1.3 cm of water in the bottom of the tank and an extra basking spot was provided. On 22 September 2010, after a little over a month with no signs of reproduction, rain was reduced to five minutes an hour, just enough to keep the tank moist. A little over two months later, another seasonal rain cycle was initiated. Amplexus was first observed 16 days after misting was increased and continued sporadically throughout the remainder of the month. A small clutch of eggs was discovered 49 days into the rainy cycle, but unfortunately this clutch never developed. Rain was continued until 28 January 2011, 16 days after the first clutch was laid and the day after a snowstorm, when two small clutches of eggs were discovered in the enclosure. Eggs hatched eight days after they were laid. Metamorphs (or froglets) emerged 72–80 days after ovideposition, immediately following the emergence of forelimbs.

On 22 March 2011, following two days of rainy weather, one of the females was sitting in an alert posture and appeared gravid. Increased misting was started that night and three large clutches of eggs were discovered in the enclosure four days later. Eggs began hatching in nine days and developed into metamorphs anywhere between 75 and 112 days after hatching. The chronological depiction of the developmental process of *Hylomantis lemur* at the Bronx Zoo uses Gosner's (1960) table for staging the embryos.

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