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EURYCEA LUCIFUGA (Cave Salamander). **REPRODUCTION.** *Eurycea lucifuga* has a broad east-west distribution in limestone regions of the eastern and central United States (western Virginia to northeast Oklahoma; Hutchison 1966. Cat. Amer. Amphib. Rept. 24:1–2). Female reproductive data are available for eastern (Appalachian) populations but are sparse for western (Ozarkian) populations. Available information consists primarily of data on larval ecology from Missouri and Oklahoma (Myers 1958. Quart. J. Florida Acad. Sci. 21:125–130; Rudolph 1978. Amer. Midl. Nat. 100:141–159), and data on maturity and clutch size from Arkansas (Trauth et al. 1990. Proc. Arkansas Acad. Sci. 44:107–113).

Sanders and Plummer collected 55 female *E. lucifuga* in monthly samples from March 1977–April 1978 from two caves in Independence Co., Arkansas (Search Cave, 9.6 km N of Batesville, and Blowing Cave, 1.6 km W of Cushman), and Sanders collected 45 females in monthly samples from July 1978–October 1979 from four nearby caves on the eastern shore of Lake Barkley in Trigg Co., Kentucky (Rimcrest Cave, River Road Cave, Taylor Bluff Cave, and Taylor Bluff Annex Cave). Herein we briefly describe reproduction in female *E. lucifuga* from each locality (Sanders 1981. M.S. Thesis, Murray State Univ., Murray, Kentucky).

In Arkansas, based on the presence of yolking follicles, size at maturity was 55–58 mm SVL. Adults averaged 58.8 mm SVL (SD = 2.09; N = 15; range 55–62.5 mm). Ova increased in diameter beginning in June and reached maximum size (3.0 mm) in August–September. Oviducts increased in width beginning in June and reached maximum width (1.1 mm) in September. One specimen in September with large oviductal follicles apparently was ready to oviposit. Large empty oviducts after September suggests that oviposition occurred in October. Clutch size averaged 73.7 eggs (SD = 18.1; N = 15) and was not correlated with SVL ($r = 0.30$; $P > 0.05$). Larvae were first seen in December.

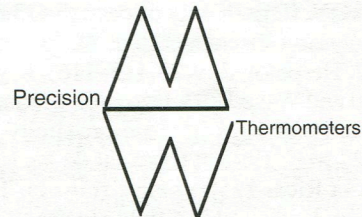
In Kentucky, size at maturity was 49–57 mm SVL. Adults averaged 56.8 mm SVL (SD = 3.86; N = 14; range 49–62.0 mm). Ova increased in diameter beginning in June and reached maximum size (2.9 mm) in July–August. Oviducts increased in width beginning in June and reached maximum width (1.2 mm) in August. One specimen in September with large oviductal follicles apparently was ready to oviposit. Large empty oviducts in eight females in September suggests that oviposition occurred in September. Clutch size averaged 75.3 eggs (SD = 33.1; N = 14) and was correlated with SVL ($r = 0.88$; $P > 0.001$). Larvae were first seen in October.

Other than a slight indication that Kentucky *E. lucifuga* may oviposit earlier in the year compared to Arkansas *E. lucifuga*, our results generally suggest that, in the reproductive attributes measured, *E. lucifuga* from the two study areas were similar to one another and to other Appalachian (Hutchison 1956. Natl. Speleol. Soc. Occas. Pap. 3:10–16; Green et al. 1967. West Virginia Acad. Sci. 39:297–304) and Ozarkian populations (Trauth et al., *op cit.*). Although reproductive attributes of a species often vary geographically in wide-ranging species, these results are concordant with

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morphological and genetic analyses that show *E. lucifuga* is undifferentiated throughout its range (Merkle and Guttman 1977. *Herpetologica* 33:313–321).

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NOTOTRITON ABSCONDENS (Cordilleran Moss Salamander).

REPRODUCTION. Eggs of only three of the 13 recognized species of *Nototriton* have been reported: *N. barbouri* (McCranie and Wilson 1992. *Herpetol. Rev.* 23:115–116), *N. guanacaste* and *N. picadoi* (Good and Wake 1993. *Herpetol. Monogr.* 7:131–159).

We found a clutch of eggs in close proximity to a female *N. abscondens* on 27 May 1994 at Cascajal de las Nubes, Province of San José, Costa Rica, 1750 m elev. (Fig. 1). The clutch contained 17 eggs which adhered in a tight cluster and were not connected by thin jelly strands. Yolk diameter of formalin-preserved eggs averaged 2.7 ± 0.2 mm. Diameter of the egg capsule averaged 4.1 ± 0.3 mm. The yolk was yellowish white. The eggs were in an early stage of embryogenesis (prior to the onset of neurulation). Two of the eggs were dead when collected and the remainder died within 72 h. The female (32 mm SVL; 73 mm TL) was found adjacent to the eggs but was not exhibiting any brooding behavior such as coiling around the eggs. The ovaries contained numerous previtellogenic ova and seven partially yolked ova (ca. 1 mm diameter). One oviduct was folded and enlarged, which is consistent with the female having recently oviposited. The eggs were identified based on their proximity to this female. However their size and structure are consistent with those of other species of *Nototriton*. Because the eggs of *N. abscondens* were found at an early developmental stage, the proximity of a female cannot be taken as a sign that brooding occurs in this species.

The clutch was found on the soil surface under a mat of liverworts ca. 1.8 m above ground on a vertical road bank. The road bank faces southwest and rises ca. 2.5 m, on top of which is dense forest. The upper part of the road bank is covered by *Gunnera* and ferns that provide shade. Other salamanders occurring at this site are *N. richardi*, *Oedipina uniformis*, *O. poelzi*, *Bolitoglossa subpalmata*, and *B. robusta*.



FIG. 1. Adult female *Nototriton abscondens* with a clutch of eggs. Photographed in the laboratory 24 h after discovery.

The clutch (MVZ 225898) and female (MVZ 225897) have been deposited in the Museum of Vertebrate Zoology, University of California, Berkeley.

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PLETHODON DORSALIS (Zigzag Salamander).

REPRODUCTION. Although nesting activity has been reported for many species of eastern *Plethodon*, we are unaware of any reports of such activity in *P. dorsalis*. On 2 August 1995 we found an aggregation of *P. dorsalis* in a series of fissures situated in the clay floor of a cave located in the Central Basin (northern Rutherford County) of middle Tennessee, USA. The fissures were located near the end of the twilight zone, ca. 20 m from the mouth of the cave. Thirty-three adult *P. dorsalis*, including seven females brooding eggs, were unearthed within a m^3 of the cave floor. Clutch size ranged from 4–7 eggs; mean clutch size was not determined because we were uncertain if all clutches were intact when unearthed.

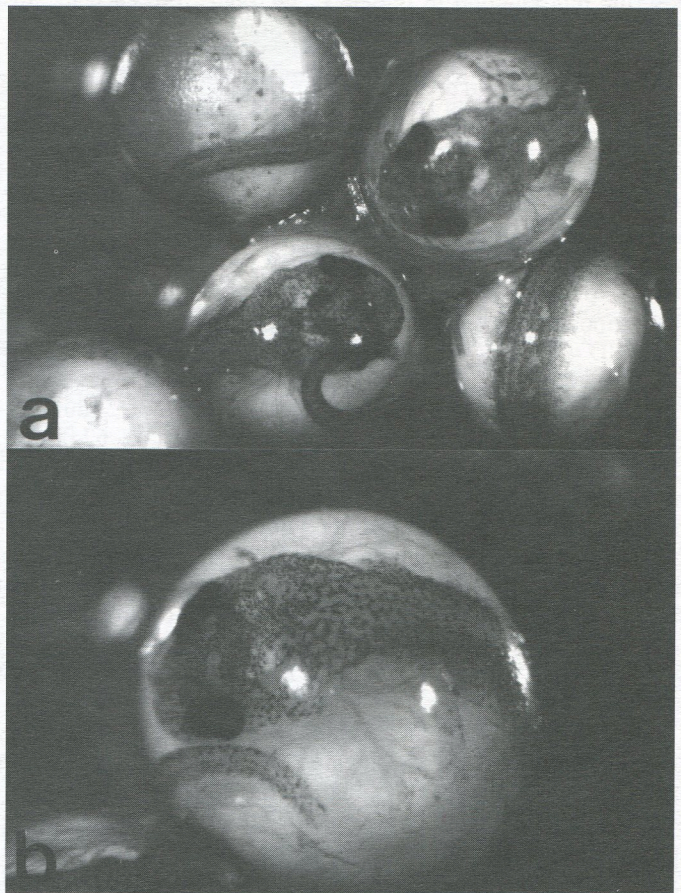


FIG. 1. Embryos of *Plethodon dorsalis* collected and photographed 2 August 1995. (A) Note body pigmentation, large yolk mass, and vascular supply to the developing gills. (B) Note faint outline of gill edge.