



FIG. 1. Cannibalized juvenile *Cryptobranchus alleganiensis*, Transylvania Co., North Carolina.

and pers. obs.). Hellbenders are opportunistic foragers and scavengers and are attracted to food by visual, chemical, and tactile stimuli (Nickerson and Mays 1973, *op. cit.*). It is possible that cannibalism in this species is a density-dependent behavior, primarily related to population size. Denser populations may provide adults with more opportunity to find younger, smaller hellbenders during foraging activities. All reported cases of hellbender cannibalism have come from dense populations (Smith 1907, *op. cit.*; Humphries et al. 2005, *op. cit.*) or in the confines of captivity. Another possible contributing factor to hellbender cannibalism is that in denser populations less food may be available and cannibalism may increase due to fewer or more dispersed food resources. A similar explanation of this behavior has been suggested for other salamanders (Duellman and Trueb 1986. *Biology of Amphibians*. McGraw Hill, New York. 670 pp.). Our observations and reports from other field biologists working with hellbenders suggest that crayfish are less abundant in denser hellbender populations than in smaller or possibly declining hellbender populations.

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**PLETHODON CINEREUS (Eastern Red-backed Salamander).** **MORPHOLOGY.** *Plethodon cinereus* is the most common woodland salamander in the northeastern United States (Conant and Collins 1998. *A Field Guide to Reptiles and Amphibians of Eastern and Central North America*. Houghton Mifflin Co., Boston, Massachusetts. 616 pp.) This species is polymorphic, and three color variations are commonly recognized and described. The striped or “red-backed” morph is black with a deep red dorsal stripe, the unstriped or “lead-backed” morph is black and lacks a dorsal stripe, and the “erythristic” morph is red with varying degrees of dark mottling. There is also a “leucistic” morph, which is far less common across the range of *P. cinereus*. This morph has general reduction in pigmentation, but retains regular black



FIG. 1. Leucistic individuals of the Eastern Red-backed Salamander, *Plethodon cinereus*, from Geauga Co., Ohio. A) Adult female (33.9 mm SVL) observed 14 Sept 2011. B) Subadult (sex unrecorded; 25.9 mm SVL) observed 14 October 2012.

eyes and is not considered albino. Across the range of *P. cinereus*, three leucistic individuals have been reported from Maryland (Mitchell and Mazur 1998. *Northeast. Nat.* 5[4]:367–369), two individuals from Nova Scotia (Moore and Gilhen 2011. *Can. Field Nat.* 125:58–60) and Massachusetts (Lotter and Scott 1977. *Copeia* 1977:681–690; Mendyk et al. 2010 *Herpetol. Rev.* 41[2]:189–190), and one individual each from West Virginia (Pauley 1974. *The Restart* 42:104), Ontario (Rye 1991. *Can. Field Nat.* 10:573–574), New York (Mendyk et al. 2010, *op. cit.*), Quebec (Moore and Gilhen 2011, *op. cit.*), and New Brunswick (Jongsma 2012. *Herpetol. Rev.* 43[3]:460). Two leucistic individuals from Ohio were discovered on 14 Sept 2011 and 14 October 2012 at the West Woods in Russell Township, Geauga Co. The first individual, an adult female, was found under a partially decomposed hardwood log fragment and the second individual, a subadult, was found under an artificial cover object (slate floor tile). Striped and erythristic phenotypes have also been observed at this site.

These are the first two confirmed records of leucistic *P. cinereus* for Ohio and it is notable that both specimens were observed at the same locality. These individuals were not collected; however photo vouchers (Fig. 1) were deposited in the herpetology collection of the Cleveland Museum of Natural History (CMNH 14071, 14072).

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#### ANURA — FROGS

**CRAUGASTOR LATICEPS. POSSIBLE OVOVIVIPARITY.** All species of *Craugastor* (Craugastoridae) are thought to be direct developers (Hedges et al. 2008. *Zootaxa* 1737:1–182). However, we report an instance in which indirect evidence suggests that *C. laticeps* is ovoviviparous. We collected an adult female *C. laticeps* (MVZ 269388) on the ground about 1–2 h after nightfall on 25 April 2011 in the vicinity of San Isidro (15.11666°N, 88.93333°W, datum WGS 84; elev. 1350 m), Copán, Honduras. The frog was placed alone in a plastic collecting bag. The next morning, upon inspection, the female, together with 44 eggs, each of which included a froglet in an advanced stage of development (tails nearly completely resorbed, limbs well developed, etc.), but still within the egg membranes (with the exception of one, which had emerged from its still present membranes), were present in the bag (Fig. 1A).

The female measures 66 mm SVL. The oviducts of the female are highly contracted and only slightly convoluted, rather than dilated and flaccid as we had anticipated (based on the MHW's experience with recently post parturient viviparous caecilians). The ovaries are contracted and compressed dorsally. A large compacted dark gray mass of presumably undigested dirt in the terminal part of the intestine suggests that the female had been feeding; her stomach was compressed dorsally and the large coelomic space is open and evacuated.

The froglet that had emerged from its egg membrane (MVZ 269391; not illustrated owing to positional distortion) is 14.0 mm SVL. A tiny egg tooth is present; it is bifid, each side terminating as a black tip. Its tail is fully resorbed. The SVL of a froglet freed from its membrane (MVZ 269390) is 13.5 mm; that of two slightly smaller ones (included in MVZ 269389; the 42 other eggs/froglets in the clutch), still in their membranes (but with curvature accounted for) are 12.8 mm and 13.8 mm (the latter featured in Fig. 1B). These dimensions appear to approximate the SVL range for the 44 froglets. One of the two smaller froglets in membranes just mentioned has an irregularly shaped, somewhat flattened, approximately 1.8 x 1.2 mm mass of unresorbed yolk in its gut. All of the froglets appear to retain some yolk. External egg diameters range from 9.5 to 12.0 mm. All of the unemerged froglets (MVZ 269389) are in the same position in their membranes; the hind limbs are folded such that the tibio-femoral joint and feet are near the face; the forelimbs are tucked below the jaw so that the froglets are nearly round objects inside the egg membranes. As seen through the membranes at 60x, most of the froglets have resorbed their tails, but a few appeared to have a small fragment remaining and it is attached to the egg membrane. The bifid black-tipped egg tooth appears to be present in all of the froglets. The pigmentation of the froglets is quite uniform in pattern, and strongly resembles that of the adult female. They have a brown dorsum and a cream venter; the hind legs have bars of

brown on the cream ground color laterally, and the forearms have laterodorsal brown bars. The head is darker brown and more densely pigmented. All along the upper jaw, the brown pigment is interrupted by short, vertical, cream bars; there are two prominent white bars medially over each premaxilla. The bars are prominent and close together, then followed laterally by a broad brown bar. These color data demonstrate the advanced stage of development in the froglets.

The presence of the advanced, egg-membrane-bound froglets in the collecting bag a few hours after the introduction of a single adult female suggests that the species might be ovoviviparous. Furthermore, JRM has never found a clutch of *C. laticeps* eggs during his years of extensive collecting in Honduras. Given the single adult specimen and the circumstances of the discovery, however, a number of presumptions and questions require additional data to verify and resolve. For example, we assume that fertilization in the species is internal, likely by cloacal apposition as in *Eleutherodactylus coqui* (Eleutherodactylidae), although females of that species very shortly ovulate their fertilized eggs whereupon direct development ensues (Townsend et al. 1980. *Science* 212:469–471), in order for developing embryos to be retained in the oviducts of the female. We wonder whether

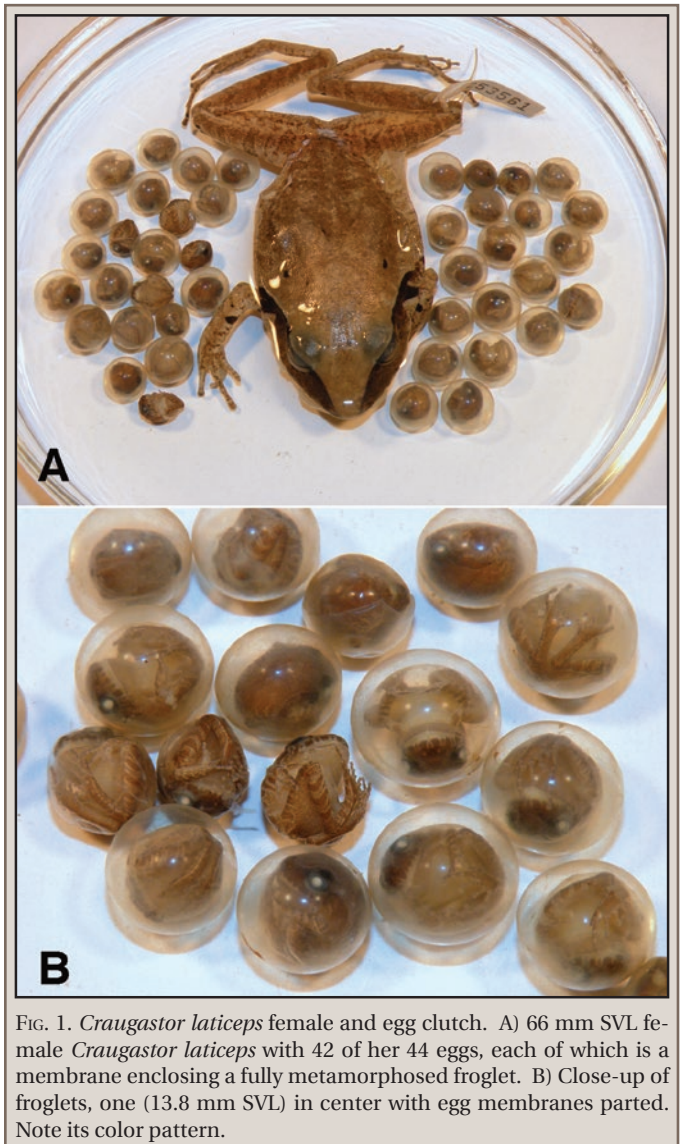


FIG. 1. *Craugastor laticeps* female and egg clutch. A) 66 mm SVL female *Craugastor laticeps* with 42 of her 44 eggs, each of which is a membrane enclosing a fully metamorphosed froglet. B) Close-up of froglets, one (13.8 mm SVL) in center with egg membranes parted. Note its color pattern.