

released at the point of capture. Voucher photographs were deposited in the collection of East Stroudsburg University of Pennsylvania (ESUP#A00261). The proportions of the specimen were normal to later stage larvae found regionally, which typically transform from June to August (White and White 2002. Amphibian and Reptiles of Delmarva. Tidewater Publishers, Centerville, Maryland. 288 pp.). The total length of the specimen was 122 mm (47 mm SVL), and no external characters indicated that the larva was paedogenetic (Whiteman et al. 1998, *op. cit.*). The larva had a white and translucent venter and a reduced cloaca with no swelling. The absence of any cloacal swelling and darkening during the breeding season eliminated the possibility of the specimen being a mature male paedomorph. Female

*A. tigrinum* occasionally have no noticeable cloacal swelling. However, no ova were apparent through the partially translucent venter and the trunk was thin, suggesting that the specimen was not a mature female paedomorph. A gravid, normal (metamorphic) adult female was captured from the same pool in the basin, but no males or egg masses were observed in any of the pools despite nearby sites containing both eggs and adult salamanders. Unusually high densities of *Lithobates clamitans* (Green Frog) tadpoles were also observed in the pools, as well as several *A. opacum* (Marbled Salamander) larvae and an adult female *Chrysemys picta picta* (Eastern Painted Turtle).

We thank William Pitts, Karena DiLeo, and Larissa Smith for providing information about New Jersey *A. tigrinum* populations, and Thomas C. LaDuke for collections support.

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**CRYPTOBRANCHUS ALLEGANIENSIS ALLEGANIENSIS (Eastern Hellbender). LARVAL DISPLACEMENT DUE TO FLOOD-**

**ING.** Amphibians may be prone to increased displacement due to high flow events, or flooding, which are potential sources of mortality for stream-dwelling larvae and juveniles (Petranka 1984. Copeia 4:862–868). While downstream dispersal of stream salamanders has been documented following floods (Segev 2014. Freshw. Sci. 33:950–957), less is known to what extent stranding of juveniles in temporary small, isolated pools may impact survivorship. Flooding may negatively impact aquatic gilled larvae if displacement distance is far from the stream edge, if individuals are unable to move over land for extended periods of time to return to their stream habitat, or if stream larvae are maladapted to these low oxygen temporary pools. Increased precipitation leading to stream flooding and high velocity water flow has been implicated as a factor in the decline of *Gyrinophilus porphyriticus* (Spring Salamander; Lowe 2012. Biol. Conserv. 145:48–53). It is unknown if *Cryptobranchus a. alleganiensis* response mechanisms to flood disturbance include taking refuge in stream-bed interstices when possible, as has been noted for *Dicamptodon tenebrosus* (Coastal Giant Salamander; Swanson et al. 1998. BioScience 48:681–689).

On 13 April 2020, after floodwaters from the South Fork of the New River (Ashe County, North Carolina, USA) began to recede, a gilled larval *C. a. alleganiensis* was observed by a local landowner, Aaron Reed, and reported to LAW on 25 September 2020. The larva was found swimming in a 27 × 3 m puddle (7.6 cm deep) covering ca. two-thirds of the width of a gravel road

and 4.5 m from the river's edge. An upstream USGS stream gauge indicated flood-level discharge of 10,500 ft<sup>3</sup>/sec on 12–13 April with the 94-yr median daily flow for that date at 450 ft<sup>3</sup>/sec (USGS National Water Information System, [http://waterdata.usgs.gov/nwis/uv/?site\\_no=03161000&PARAMETER\\_cd=00065,00060](http://waterdata.usgs.gov/nwis/uv/?site_no=03161000&PARAMETER_cd=00065,00060); 10 Oct 2020). Surrounding land use is predominantly agriculture and rural residential properties with scattered forest patches. GPS coordinates are on file with the North Carolina Wildlife Resources Commission but are withheld due to conservation concern.

The larva was carefully examined, photographed, and returned to the stream alive and apparently healthy, likely due to only being displaced temporarily by high flow and receding floodwater. Species confirmation was based on morphology and presence of gills tucked medially, head shape, coloration, and overall size. This observation is the first reported incidence of displacement of a fully aquatic, gilled *C. a. alleganiensis* larva stranded away from a river due to flooding. Although it has been reported that adult *C. a. alleganiensis* and *C. a. bishopi* (Ozark Hellbender) can overcome displacement by flood events, less is known about the effects on gilled larvae and recruitment (Nickerson et al. 2007. Salamandra 43:111–117).

We suspect high flow events may contribute to mortalities in some high gradient streams and tributaries across the range of the species when above average seasonal flooding disturbance occurs in watersheds. We recommend further study of this potential source of mortality not only in hellbenders but also in other fully aquatic, larval, stream-dwelling salamanders.

We thank Aaron Reed for submitting this observation to the North Carolina Wildlife Resources Commission and for allowing us to report it.

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**DESMOGNATHUS CONANTI (Spotted Dusky Salamander).**

**LARVAL MALFORMATION.** At 1520 h on 21 March 2018, in Bogue Chitto State Park, Washington Parish, Louisiana, USA (30.769°N, 90.157°W; WGS 84) a larval Spotted Dusky Salamander (*Desmognathus conanti*; identification confirmed by C. Beachy) possessing craniofacial (head) malformations (Fig. 1) was found along the edge of a freshwater seep-fed stream. JNB. and CVG discovered this individual moving along the sediment near the edge of the stream bank. Its snout was more pointed than is typical for this species and although the eye sockets were visible the eye-balls themselves were not apparent on either side of the head. No scars or facial wounds were evident that would indicate eye-ball loss due to injury to either side of the head.

To our knowledge, this is the first published reference to bilateral anophthalmia (missing eyes) or microphthalmia (very small eyes) in the genus *Desmognathus* (Meteyer 2000. Field Guide to Malformations of Frogs and Toads with Radiographic Interpretations. Biological Science Report, U.S. Geological Survey, Madison, Wisconsin. 20 pp.). *Desmognathus conanti* are frequently encountered at this locality but this is the only individual exhibiting bilateral anophthalmia or microphthalmia that we have observed here or from ecologically similar sites. This stream at Bogue Chitto State Park had been monitored over the course of two years (2016–2018) as part of a study of the life