

# First record of a northern zigzag salamander *Plethodon dorsalis* predated by a cave orb-weaving spider

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Nowadays, arthropods are recognised as common vertebrate predators worldwide, especially of amphibians and reptiles (Nyffeler & Gibbons, 2022). *Plethodon dorsalis* is a ground dwelling salamander that is observed occasionally using caves for refuge, feeding and/or reproduction (Mohr, 1952; Holmann, 1955; Bausmann & Whitaker, 1987). The cave orb-weaving spider *Meta ovalis* (Gertsch, 1933) is usually observed in caves, in the twilight to dark zone, also under logs and anthropogenic environments, always associated with darkness (Gertsch, 1933; Rector, 2009).

On 12 October 2024, during a speleo-herpetological survey of Beauty cave in Mitchell, Indiana (38.7332, -86.3699; WGS 84, approx. 208 m a.s.l.), a juvenile northern zigzag salamander (approx. 16 mm SVL) was observed tangled in the web of a cave orb-weaving spider *Meta* cf. *ovalis* (Fig. 1). At the time of the observation, the spider was upon the dead body of the captured salamander. Located in the dark zone of the cave (approx. 25 m from the nearest entrance), the spider and its prey were observed for 10 minutes, at 3 m from the web to avoid major disturbance. In addition, from 5 to 30 m inside that gallery, I observed 11 *P. dorsalis* (eight juveniles and three adults) all close to the walls. Individuals of *M. cf. ovalis* were also very numerous in the cave. No specimen was handled or collected, and only photos were taken.

The European cave salamander *Speleomantes italicus* has been observed as the prey of a co-generic spider, *Meta menardi* (Pastorelli & Laghi, 2007). A few interactions between salamanders and spiders have been recorded in the United States that have been interpreted as defensive/offensive behaviour (Bradley & Eason, 2017; Hickerson et al., 2018), but actual predation has not been reported previously. It has been suggested that a large part of the diet of *P. dorsalis* consists of spiders (Holmann, 1955). Cross-predation is common between arthropods and vertebrates worldwide, especially between amphibians and arachnids (McCromick & Polis, 1982). In this respect, I suggest that in North America, cross-predation may occur between salamanders (e.g. *P. dorsalis*, *Plethodon glutinosus*, *Eurycea lucifuga*, *Eurycea longicaudata*, etc.) and arthropods that share caves, crevices and their surroundings either temporarily or permanently. Further studies are needed to elucidate the predation-prey relationships between amphibians and invertebrates in the oligotrophic environment of caves.



**Figure 1.** Juvenile *Plethodon dorsalis* tangled in the orb-weaved web, inset is a close up of the salamander

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