REPTILES & AMPHIBIANS

Predation on an Adult Gray Treefrog, *Dryophytes versicolor* (LeConte 1825), by a Predaceous Diving Beetle (*Cybister* sp. or *Dytiscus* sp.)

Joseph S. Cannizzaro IV

Department of Biological Sciences, University of Wisconsin Milwaukee, Milwaukee, Wisconsin 53211, USA (jcannizzaroiv@gmail.com)

Predation of post-metamorphic anurans by arthropods is well documented in a variety of tropical and temperate taxa (Wells 2007). Arthropod predators of both larval and post-metamorphic frogs include spiders (Arachnida) (Nyffeler and Altig 2020), giant water bugs (Belostomatidae) (de Sousa Guedes et al. 2021), flies (Diptera) (Dehling 2010), dragonfly larvae (Odonata) (Maciel et al. 2010), army ants (*Labidus* sp.; Campos Gomides et al. 2011), Praying Mantis (*Stagmatoptera binotata*) (Costa-Campos and Cleiton Sousa 2014), and both terrestrial and aquatic beetles (*Epomis* sp., *Dystictus* sp.) (Seshardi et al. 2017; Wizen et al. 2017). These predators employ a variety of weaponry, including chemicals and venom and physical structures like stingers, sucking apparatuses, pinchers, and large mandibles, to subdue and consume anuran prey.

The Gray Treefrog (*Dryophytes versicolor*) (Fig. 1) is a robust medium-sized North American hylid with noxious unpalatable skin secretions (Dodd 2023; Cannizzaro and Höbel 2023). *Dryophytes versicolor* has highly variable dorsal coloration, the ability to change color, and a yellow-spotted thigh pattern (Kapfer and Brown 2022). The geographic distribution of *D. versicolor* is vaguely Y-shaped, extending from eastern Texas to southern Manitoba in the northwest and to Maine in the northeast (Kapfer and Brown 2022). An arboreal generalist, *D. versicolor* inhabits a variety of forested habitats including deciduous forests, urban parks, pine stands, and tree farms (Wright and Wright 1949), where it can occupy very high microhabitats (to 18 m) (Laughlin et al. 2017). An obligate woodland pond-breeder, hundreds of *D. versicolor* occupy pools during the summer breeding season (Dodd 2023). A variety of predators known to prey on larval *D. versicolor*, which are fully palatable and not chemically defended (Dodd 2023), include larval Spotted Salamanders (*Ambystoma maculatum)*, Comet Darner (dragonfly) larvae (*Anax longipes*), and spiders (Pisauridae) (Groves and Groves 1978; Relyea 2003; Dodd 2023). Dodd (2023) and others have postulated that a variety of predators that will consume post-metamorphic *D. versicolor* include snakes (*Nerodia* spp., *Thamnophis proximus*), birds, spiders (*Argiope* spp.), and mesocarnivores (*Taxidea taxus, Procyon lotor*) (Azevedo et al. 2006; Dodd 2023), but verified reports of known predators of adult *D. versicolor* are rare.

Figure 1. Gray Treefrogs (*Dryophytes versicolor*) are robust medium-sized North American hylids with highly variable dorsal coloration, the ability to change color, and a yellow-spotted thigh pattern. Photographs by Gerlinde Höbel.

Figure 2. Predation attempt on a Gray Treefrog (*Dryophytes versicolor*) by a male predaceous diving beetle (*Cybister* sp. or *Dytiscus* sp.). Photographs by J. Cannizzaro IV.

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At 2208 h on 10 May 2022, I observed an adult male predaceous diving beetle (*Cybister* sp. or *Dytiscus* sp.) attacking and feeding on a calling male *D. versicolor* (4.46 g, 40.8 mm SVL) (Fig. 2) at a woodland vernal breeding pool at the University of Wisconsin Milwaukee Field Station (43.383, -88.030; elev. 289 m asl). The beetle had lacerated the flesh around the tibiofibula of the frog leaving a deep gash.

Predaceous diving beetles (*Cybister* sp. or *Dytiscus* sp.) subdue prey by grabbing them with their mandibles and injecting digestive juices containing extremely acidic digestive enzymes that liquify flesh and bone, which the beetle will then suck (Yee 2014). To my knowledge, predaceous diving beetles (*Cybister* sp. or *Dytiscus* sp.) have never before been reported preying on post-metamorphic *D. versicolor*.

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