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PREDATION OF MARBLED SALAMANDER (*AMBYSTOMA OPACUM* [GRAVENHORST]) EGGS BY THE MILLIPED *UROBLANIULUS JERSEYI* (CAUSEY) --- Millipedes (class Diplopoda) are detritivores, feeding mainly on leaf litter and other forms of decomposing plant material. They have not hitherto been implicated in predation of amphibians or their eggs, although Schubart (1947) mentioned that a specimen of *Heterotyge*

*araguayensis* (Schubart) (family Spirostreptidae) devoured an unidentified Brazilian hydrid with which it had been confined overnight. It is unknown if the frog was killed by the conditions of its confinement or by defensive allomones produced by the milliped. It is therefore of interest to record our observations of apparent predation of amphibian eggs by millipeds in Virginia.

On 7 October 1987 six adult *Ambystoma opacum* were found guarding their egg clusters in the Maple Flats region of the George Washington National Forest, 13 km S of Stuarts Draft, Augusta County, Virginia. All were found under decaying logs in dry vernal ponds. The soil under the logs was moist and the salamanders were found in depressions with their eggs. In two of the nests we found several individuals of the milliped genus *Uroblaniulus* crawling among the eggs. Five millipeds were found in one clutch and three in another. All eggs, attending females, and millipeds were collected for subsequent examination.

Each egg was examined closely for indications of punctures and mutilation, however, none were found. We were also unable to see actual predation in the field. The stomachs of the six females contained only one beetle larva, earthworm remains, and what appeared to be a salamander egg, but no millipeds. This suggests that *Uroblaniulus jerseyi* may enjoy some immunity from predation by these females. Adult marbled salamanders are predators of a variety of invertebrates (Surface, 1913; Bishop, 1941) but millipeds have not yet been reported in their diets.

Carnivory is an exceptional lifestyle among millipeds. The literature on this subject was reviewed by Hoffman & Payne (1969) who documented only twelve published references while adding several observations from personal experience. Most of the known cases involve species belonging to the two related orders Julida and Spirostreptida and probably reflect only facultative carnivory. Among Nearctic forms, several members of the endemic family Parajulidae (order Julida) were referenced by Hoffman & Payne (1969). Two are notable. An undescribed genus and species from southern Georgia was found feeding in numbers on the flesh of a decomposing deer head. An unidentifiable species of the parajulid genus *Uroblaniulus* was found attacking the pupa of a sawfly in central Virginia (Morris et al., 1963). Pending revision of *Uroblaniulus* the name *U. jerseyi* (Causey, 1950) may be used to designate this milliped. It seems to be the same species that was found among the salamander eggs as described above, suggesting a preferential rather than opportunistic interest in animal tissue as a food resource. It may be worthy of note that only females were found

with the sawfly pupa and salamander eggs. Are males of this species not carnivorous? Do the imperatives of egg production have any influence on milliped feeding habits or does the apparent sex bias simply reflect some obscure parameter like collection bias?

Invertebrate predators of *Ambystoma opacum* eggs have not been previously documented. Thus, this paper presents the first observations of putative predation on the eggs of this species by parajulid millipeds. It also describes one of the possible predicted costs of the terrestrial-breeding strategy employed by this salamander (Jackson et al., 1989).

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THE WATER STRIDER *LIMNOPORUS DISSORTIS* (DRAKE & HARRIS) (GERRIDAE) ADDED TO THE HETEROPTERON FAUNA OF VIRGINIA — On 6 June 1996, Steven M. Roble (Virginia Division of Natural Heritage) collected a variety of aquatic insects at the Buck Run beaver ponds, at the Locust Springs Recreation Area in extreme northwestern Highland County, Virginia. Among the more interesting species obtained by Dr. Roble are two specimens of a water strider (*Limnoporus dissortis* [Drake & Harris, 1930]) which although widespread in northeastern North America has apparently not been unequivocally documented to occur south of Maryland and West Virginia. The species was not encountered during intensive collecting for aquatic bugs by Marvin L. Bobb (1947-1950) although he took several thousand gerrids of other species in Virginia. In his 1974 treatment of the aquatic and semiaquatic taxa, Dr. Bobb did not list *dissortis* even as a possible resident of the state, as he did for species in various other families.

In Bobb's key to the Virginia species of *Gerris*, *dissortis* will identify as *Gerris canaliculatus*, from which, and all other local gerrids, *dissortis* is at once distinguished by the orange-brown dorsum, with two prominent square black spots on anterior third of the pronotum and a narrow pale middorsal line evident at both ends of the thoracic region.

In earlier work, up to the time of Blatchley's 1926 manual of eastern Heteroptera, the species was considered to be the North American component of the widespread Palearctic species *Gerris rufoscutellatus* Latreille. In 1930, having completed a careful review of the situation, Drake & Harris proposed the new name *Gerris dissortis* for the Nearctic population which they could distinguish from *rufoscutellatus* by subtle differences in structure. More recently, the