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RESEARCH NOTE

SUBMERGENT CAPTURE OF *DOLOMEDES TRITON* (ARANEAE, PISAURIDAE) BY *ANOPLIUS DEPRESSIPES* (HYMENOPTERA, POMPILIDAE)

Wasps of the family Pompilidae prey exclusively on spiders (Evans and Yoshimoto 1962). Female pompilids generally paralyze their prey and transport it to a nest before laying a single egg on the spider. One North American member of this family that is distinguished by its unusual mode of prey transport is *Anoplius depressipes* Banks. This species is the only non-parasitic, aquatic wasp in North America (Hagen 1978). Evans (1949) accumulated several fragmentary published and unpublished observations that he attributed to this species and concluded that *A. depressipes* transports its prey across the surface film of the water and is capable of crawling into the water and running on the bottom. The only known prey of *A. depressipes* are adult female fishing spiders of the genus *Dolomedes* (Evans 1949, Evans and Yoshimoto 1962, Kurczewski and Kurczewski 1968). These spiders are capable of diving into the water and remaining submerged for more than 30 min (Carico 1973). It has remained unknown whether *A. depressipes* ever stings *Dolomedes* spiders underwater before transporting them to its nest (Hagen 1978). Despite statements by McCafferty (1981) implying submergent prey capture by *A. depressipes,* there are no published accounts confirming this type of behavior.

The purpose of this note is to record an instance of submergent prey capture by *A. depressipes* that I observed at a small, artificial pond on Powdermill Nature Reserve, 3 km S of Rector, Westmoreland County, Pennsylvania. At approximately 1425 h on 1 August 1983, I noticed a large female *Dolomedes triton* on the water surface about 1 m from the shoreline. My attention was drawn to this spider initially because its behavior seemed peculiar. It dove below the surface and held onto a submerged plant stem for no apparent reason. In retrospect, I believe that the spider had detected the presence of a nearby *A. depressipes.* The spider resurfaced within a minute or two. During the following minute I observed a pompilid wasp (later identified as *A. depressipes*) fly toward the spider from farther out over the pond. The spider undoubtedly saw the wasp, because it ran rapidly away from the wasp along the water surface for about 25 cm before diving again. This time the spider stopped amongst denser vegetation (*Potamogeton* sp.) at a depth of 15-20 cm, near the bottom of the pond. The wasp followed the spider into the water 2-3 sec later and did not seem to slow down as it broke the surface (at the same point where the spider dove). The wasp swam down on an angle directly toward the spider and stung it within 5 sec. The spider attempted to evade the wasp a second time before being stung, but barely managed to start its legs in motion, and did not progress more than 2 cm. The

wasp and paralyzed spider reappeared at the surface within 2 sec of the attack. The wasp then proceeded to drag the spider across the surface film as it flew toward an inactive muskrat (*Ondatra zibethicus*) burrow in the bank. I interrupted this behavior on several occasions as the wasp approached the shoreline in an effort to capture it. The wasp flew away each time but returned to its victim within a few minutes, and eventually was allowed to resume its behavior without further disturbance. The wasp transported the spider across the water surface a total distance of about 2 m from where the attack occurred to a point along the shoreline even with the burrow entrance. The wasp then dragged the spider backwards (by biting a hind leg) another 20 cm across grassy vegetation, mud and an exposed root, up and into the burrow, where it disappeared from sight at 1436 h. I captured the wasp at the burrow on the following afternoon, but was unable to locate the spider despite a 15 min search of the emergent portion of the burrow's interior.

Subsequently, on both 16 and 19 August 1983, I observed several large, black pompilids (presumably *A. depressipes*) walking on floating water lily (*Nymphaea odorata*) leaves in two nearby ponds. These wasps seemed to be actively searching for *Dolomedes* spiders hiding inside curled-up water lily leaves, because they moved systematically from leaf to leaf, peering into those that were curled up. At 1851 h on 29 July 1985 I observed another *A. depressipes* dragging a paralyzed *D. triton* female across the water surface. Both specimens were collected as the wasp approached the opening of a partially submerged plastic drainage pipe.

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