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A jumping spider feeding on an earthworm

Lucian K. Ross[1]

[1]6303 Tarnow, Detroit, MI 48210-1558 USA, email lkr@mail.org

Abstract

An adult female *Platycryptus undatus* (Salticidae) was observed feeding on an earthworm (Oligochaeta). According to the literature, earthworm-feeding has been reported to occur in at least 11 different families. However, spiders that have been reported to feed on earthworms are generally larger species dwelling at or near ground level in grasslands and forests. Smaller spider species have also been reported to feed on earthworms. This is the first report of earthworm-feeding by a member of the cursorial family Salticidae.

Key words: spiders, Salticidae, *Platycryptus undatus*, earthworm-feeding, Oligochaeta

The majority of spider species are obligate predators upon a wide variety of primarily living arthropod prey (Nentwig 1987). While the primary prey of spiders includes mostly insects and other arachnids, feeding on non-arthropod prey has occasionally been reported (Cokendolpher 1977, Formanowicz et al. 1981, Corey 1988, Foelix 1996, Reagan 1996, Roberts et al. 1999, Armas 2000, Nyffeler et al. 2001, Fischer et al. 2006). Additionally, some species have been reported to feed by scavenging upon dead prey and feeding upon web silk, shed exuviae, pollen, and several exotic forms of food in captivity including bananas and sausages (for references see Jackson et al. 2001). Recently, a small East African species was demonstrated to feed indirectly on vertebrate blood by choosing female mosquitoes that are engorged from recent blood meals (Jackson et al. 2005).

Jumping spiders (Araneae: Salticidae) are highly visual, predaceous cursorial spiders that capture prey, primarily insects, via sit-and-wait and active foraging tactics such as stalking and leaping rather than with a prey capture web (Forster 1977, Hoefler et al. 2006). The salticid genus *Platycryptus* Hill 1979, currently contains four species within the subfamily Marpissinae (Edwards 2005, Platnick 2008). In Michigan, *Platycryptus undatus* (Clerk 1757) is the only representative of the genus. The primarily synanthropic *P. undatus* is a large (11–13 mm), cryptically patterned species common on dead and living standing trees, fence posts, wooden fences, and buildings. In southeastern Michigan (Wolff 1982, Sierwald et al. 2005), this species is commonly found moving over the exterior surfaces of houses, garages, storage sheds, and wooden privacy fences in urban areas searching for prey during daylight hours, from late May to mid-September. In urban areas of southeastern Michigan, the most commonly observed prey types that are captured by *P. undatus* are various dipterans (e.g. *Musca domestica* Linnaeus 1758), immature field crickets (*Gryllus* spp.), and to a lesser extent, other cursorial hunting spiders (e.g. *Salticus scenicus* (Clerk 1757)). Dipterans appear to comprise the bulk of prey captured by *P. undatus* in urban areas of Monroe and Wayne Counties, southeastern Michigan.

However, during a three-day period of constant moderate to heavy rainfall (13–15 September 2008), on 15 September 2008 ~04:30 PM EST, a 12 mm female specimen of *P. undatus* was observed perched on a protected section of the lower exterior wall of the author's home, 10 mm above the surface of a concrete walkway, feeding on a small 30 mm earthworm (Oligochaeta, most likely the common garden worm *Aporrectodea caliginosa* (Savigny 1826)). The spider simultaneously used its pedipalps, and anterior walking legs I to grasp and securely hold one-third of the body of the earthworm above the surface of the walkway, while the remainder of the earthworm's body struggled upon the walkway. The intensity of rainfall and low light levels prohibited using a camera or video camera to photograph or record this occurrence but both specimens were collected and placed in the private collection of the author.

Nyffeler et al. (2001) reported that earthworm-feeding in spiders is probably a rarity; the authors reported earthworm predation in only eight araneomorph and three mygalomorph families. In the wild, earthworms appear to be generally utilized as prey by larger (14–35 mm) spiders (e.g. *Ancylomedes rufus* (Walckenaer 1837)). In captivity, earthworms are a commonly accepted prey by a wide-range of theraphosid species (Nyffeler et al 2001, pers. obs.). However, Nyffeler et al (2001) also reported earthworm predation by smaller (6–8 mm) spiders (e.g. *Amaurobius fenestralis* (Stroem 1768)).

Due to their abundance and high protein content (~60–70%, dry weight) (McDonald 1983, Lee 1985), earthworms are probably utilized by larger spiders as an ecologically significant addition to their diets (Nyffeler et al. 2001). However, as spiders typically prefer prey nearer their own body size (Nentwig & Wissel 1986), smaller spiders and salticids probably only utilize earthworms as opportunistically-acquired prey by hungry spiders during

periods of low prey availability (e.g. consecutive days of rainfall). As spiders are generalist predators that accept a broad range of prey that optimizes survivability during times of hardship (reduction in prey availability), earthworms probably provide an abundant, easy-to-capture, highly-profitable, ready source of protein and dietary nutrients for a wide variety of surface and near-surface active spiders of many families.

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