

## Predation on *Platycryptus undatus* (De Geer 1778) by *Parasteatoda tepidariorum* (C. L. Koch 1841) (Araneae: Salticidae, Theridiidae)

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Edwards (1977) reported personal observations of the capture of *Platycryptus undatus* (De Geer 1778) (reported as *Metacyrba undatus*, see Hill 1979) by *Parasteatoda tepidariorum* (C. L. Koch, 1841) (formerly *Achaearanea tepidariorum*, see Saaristo 2006). The author also reported observing a subadult *Phidippus otiosus* stalking a female *P. tepidariorum*. However, the *P. otiosus* was unable to penetrate the web of *P. tepidariorum*.

Predation upon salticids by *P. tepidariorum* is probably a random occurrence and probably the result of a hungry salticid targeting the theridiid, jumping and missing its intended target, becoming entangled in the cobweb of the theridiid, and subsequently being captured and consumed. *Platycryptus undatus* is occasionally found in the webs of *P. tepidariorum* in several regions of southeastern Michigan.

*Parasteatoda tepidariorum* is a common synanthropic theridiid spider with an extensive cosmopolitan distribution. In southeastern Michigan, it is commonly found in close association with humans and man made structures, and is a common resident in homes, garages, and tool sheds. *Platycryptus undatus* is a large species of cursorial jumping spider frequently found on the exterior surfaces of man made structures, wooden privacy fences and yard furniture, and to a lesser extent, dead and living standing trees. Unlike *P. tepidariorum*, that may occur in high densities in garages and unoccupied houses, *P. undatus* are solitary cursorial spiders that typically occur in very low densities in most synanthropic habitats.

The web of *Parasteatoda tepidariorum* is a loosely-constructed, three-dimensional framework of silk strands with no definitive pattern (Walcott 1963, Eberhard 1972). An average web may contain from 200 to 500 or more strands with a mean length of 20 cm per strand and an average diameter of 3 microns (Walcott 1963). During the day, *P. tepidariorum* generally positions itself near or at the edge of the web. When prey becomes entangled in the web, vibrations of the struggling prey are transmitted through the strands of web to the waiting spider. Once prey is detected, the spider advances to the prey and quickly wraps it in silk.

On three different occasions during examination of prey contents of webs of *P. tepidariorum*, the web-encased remains of adult (~11–12 mm) *P. undatus* were found. Two of the observations occurred within the same

abandoned garage in southwestern Detroit, Wayne County, Michigan, during the first week of July 2007. The webs of two female *P. tepidariorum* (7.0–7.5 mm) were constructed under the ledge of a broken garage window. This location allowed both flying and walking prey to enter the interior of the structure. A mature maple tree and abundant bushes and ample tall herbaceous plants growing within 1 m of the broken window reduced the risk of high winds and rainfall affecting the spiders or their webs. The third observation occurred within a partially enclosed wooden produce stand in southern Monroe, Monroe County, Michigan, in August 2006. The web of a large (~8.0–8.5 mm) *P. tepidariorum* was constructed in a rear corner of the produce stand approximately 1 m above the floor. The poorly-wrapped remains of a small (~7.0–7.5 mm) *P. undatus* were suspended in the web near the rear wall of the produce stand.

*Parasteatoda tepidariorum* has several distinct advantages that serve to reduce the risk of predation by larger salticids, but at the same time allow it to effectively capture these large cursorial predators. First, *P. tepidariorum* has been reported to be capable of overpowering and consuming large prey including vertebrates (Gertsch 1979). Vibratory receptors in the legs of *P. tepidariorum* are sensitive to both direct vibratory signals and air-borne sounds (Walcott & Van der Kloot 1959, Walcott 1963). Lastly, the tangled cobweb of *P. tepidariorum* functions not only as an effective prey-capture device but also as an effective anti-predator device against many potential arthropod predators, including large salticids such as *Platycryptus undatus*.

### References

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