

Do female *Brettus cingulatus* (Araneae: Salticidae: Spartaeini) feed their young?

David E. Hill¹ and Abhijith A. P. C.²

¹ 213 Wild Horse Creek Drive, Simpsonville SC 29680, USA, *email* platycryptus@yahoo.com

² Indraprastha Organic Farm, Kalalwadi Village, Udboor Post, Mysuru-570008, Karnataka, India, *email* abhiapc@gmail.com

Abstract. Nesting female *Brettus cingulatus* deposit a layer of silk fibers and tufts over their eggs. After their young hatch (as first instars), they remain in this nest and emerge at a later date as fully developed second instars. Soon after hatching, almost all of the silk fibers and white flecks, and eggshell fragments, disappear from the nest. At the same time the young accumulate dark pigment in the prosoma and opisthosoma. Although we cannot rule out the possibility that the female removes or feeds on these materials, the rapid change in the appearance of first instars suggests that they provide a protein-rich diet for the young. Similar nests of spartaeines of the related genus *Neobrettus tibialis* appear to function in the same manner.

Key words. jumping spider, maternal care, *Neobrettus*

The nests of spartaeine jumping spiders of the genera *Brettus* Thorell 1895 and *Neobrettus* Wanless 1984 are comprised of a thin layer of silk fibers flecked with white flecks that appear to be silk, covering a flat cluster of eggs deposited on the surface of a leaf (Figures 1-2; Ahmed et al. 2018; Abhijith & Hill 2019; Banerjee, Caleb & Hill 2019; Harshith & Hill 2020). After the young of these spiders hatch (as first instars), almost all of the silk lines, tufts, egg shell fragments to second instar) rapidly disappear from the nest.



Figure 1. Brooding female *Brettus cingulatus* Thorell 1895. **1**, Guarding recently deposited cluster of eggs covered with silk fibers and white flecks. **2**, Ten days later, guarding hatchlings (first instar). Larger white flecks represent eggshell fragments. **3**, Three days later. Almost all silk, white flecks, and eggshell fragments are gone, and except for their legs, the first instar young are now pigmented. Photographs by Abhijith A. P. C. at his Indraprastha Organic Farm, Kalalwadi Village, Karnataka, India. For comparison see Abhijith & Hill (2019) for photographs of the emergent second instar young.



Figure 2. Three brooding *Brettus cingulatus* females. **1**, Female guarding recently deposited eggs. **2**, Female with first instar young, still with little pigmentation of the opisthosoma. Note that almost all covering silk, white flecks, and eggshell fragments were absent at this stage. **3**, Later first instar young with full pigmentation of the prosoma and opisthosoma, as well as pigmentation of each femur I. The female (not shown) was still guarding the brood at this stage. Photographs by Arundathi Sambayya taken at Bhimanakone, Sangara taluk, Shimoga District, Karnataka, India.

The rapid removal of covering silk, white flecks, and eggshell fragments after hatching, as well as the rapid development of dark pigment (prosoma, opisthosoma, femur I) by the young soon after hatching, suggests that these materials were eaten by the young. We have not yet observed this feeding directly, and it remains a possibility that the brooding female removed or fed on these materials.

Araneid spiders are known to feed on their own silk, a material that is rich in amino acids (Peakall 1971; Blackledge, Kuntner & Agnarsson 2011). Analysis of the silk deposited by the female *Brettus cingulatus*, and the distinctive white flecks that these spiders incorporate into their nests, might reveal a special composition with both amino acids and other nutrients. The white flecks may contribute to concealment of the brood, but their primary importance might be as food for the young.

In an extreme example of this kind of maternal care, the salticid *Myrmarachne magna* Saitō 1933 was recently found to feed its young in the nest with secretions (*milk*, possibly evolved from trophic eggs) from the epigastric groove of the female (Chen et al. 2018; Dong, Quan & Chen 2019). Young *M. magna* grew from 0.9 to 3.5 mm in length during their first 20 days in the nest. For this ant mimic, this may represent a special adaptation to support the young until they reach a size where they can successfully join the adults as they mimic local ants.

However we have little evidence that other salticids provide anything other than protection to their broods. For example, *Lyssomanes viridis* females cover their eggs with fine stands of silk but no white flecks, and there is no sign that either this silk or the eggshells of emergent young are removed from the nest as the young mature and molt into emergent second instars (Figure 3).

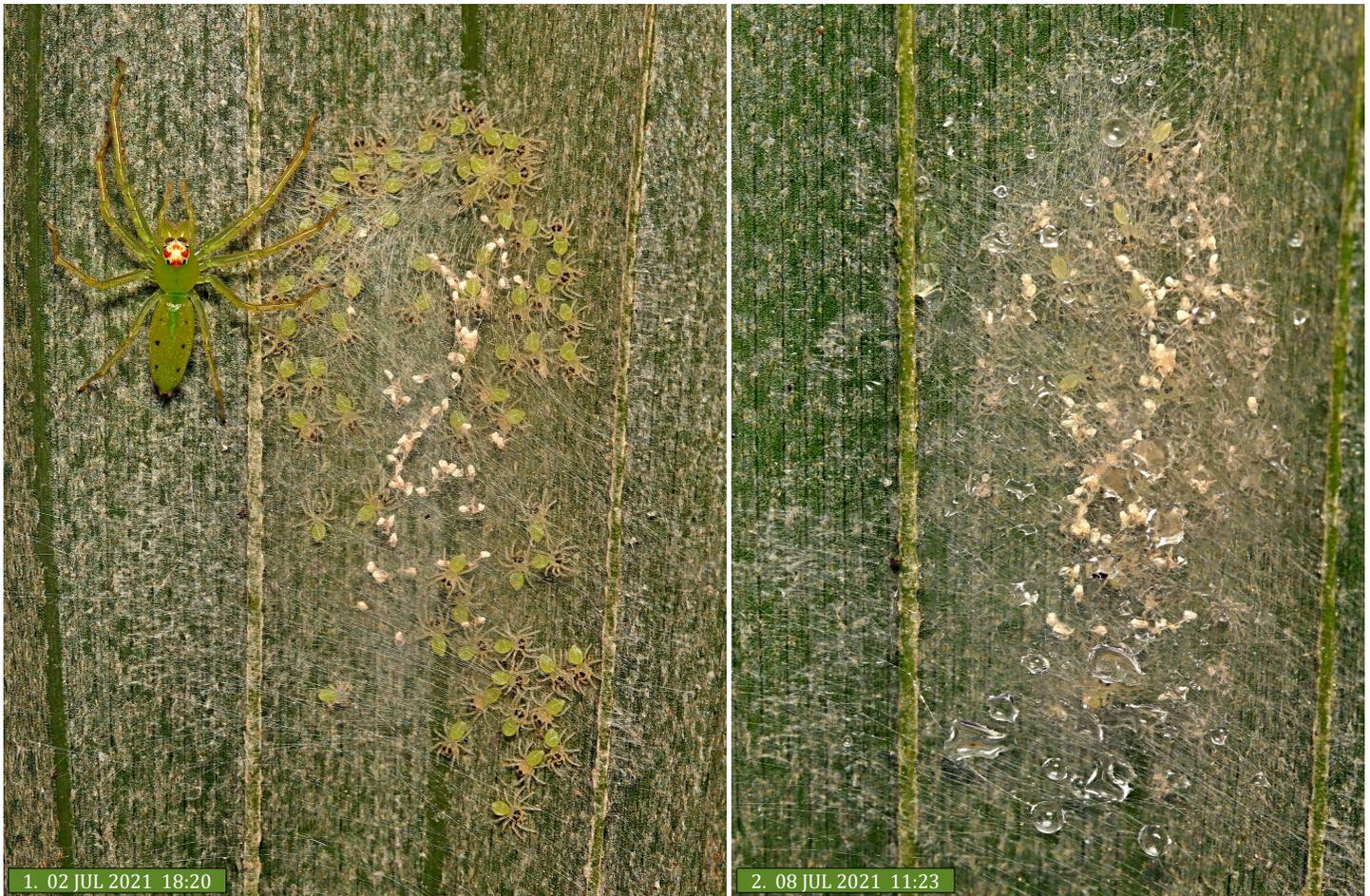


Figure 3. Brood of *Lyssomanes viridis* (Walckenaer 1837) on the underside of a palmetto leaf in Greenville County, South Carolina. **1**, Female (upper left) tending her brood. Note bright white eggshell remnants in the nest. By the next day (3 JUL) the female left this brood. **2**, Six days later, after most of the young had left the nest. Water droplets in the silk were the result of a heavy downpour on the previous night. Note that virtually none of the silk or eggshell fragments had been removed. Photographs by David E. Hill.

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