A case of predation by the noble false widow *Steatoda nobilis* (Thorell,1875) (Araneae: Theridiidae) on the Small milkweed bug *Lygaeus kalmii kalmii* Stål 1874 (Heteroptera: Lygaeidae)

Eduardo I. Faúndez[1], Eric R. Johnson[2] & Evelene V. Angelone[2]

[1] Laboratorio de entomología y salud pública, Instituto de la Patagonia, Universidad de Magallanes, Av. Bulnes 01855 P.O. Box 113-D, CHILE. ed.faundez@gmail.com.
[2] 145 N. Maple St, Burbank, CA 91505, USA.

Abstract: A case of predation by the noble false widow *Steatoda nobilis* on the small milkweed bug *Lygaeus kalmii kalmii* bug is reported. The observation was made in Los Angeles, California, USA. The significance of the record is discussed in the light of the aposematism and unpalatability of milkweed bugs.
Key words: Araneae, Theridiidae, *Steatoda nobilis*, Heteroptera, Lygaeidae, *Lygaeus kalmii kalmii*, predation, invasive species, USA, California.

Sobre un registro de predación de *Steatoda nobilis* (Thorell, 1875) (Araneae: Theridiidae) sobre *Lygaeus kalmii kalmii* Stål, 1874 (Heteroptera: Lygaeidae)
Resumen: Se presenta un caso de predación de la falsa viuda *Steatoda nobilis* sobre la pequeña chinche de las asclepias *Lygaeus kalmii kalmii*. La observación se realizó en Los Ángeles, California, Estados Unidos. Se discute la relevancia del registro en relación con el aposematismo y sabor desagradable de las chinches de las asclepias.
Palabras clave: Araneae, Theridiidae, *Steatoda nobilis*, Heteroptera, Lygaeidae, *Lygaeus kalmii kalmii*, predación, especie invasora, Estados Unidos, California.

Introduction

The noble false widow *Steatoda nobilis* (Thorell, 1875) is a cosmopolitan theridiid spider from Canarias and Madeira. Currently this species has successfully invaded several European countries and the United States (Melic, 1994; Vetter & Rust, 2012; Dugon *et al.,* 2017). In the last decade, *S. nobilis* reached South America including Chile, Colombia and Ecuador (Taucare-Ríos *et al.,* 2016; Faúndez *et al*., 2018). Several unpublished photographical records are also currently available from Northern Mexico.

This species has moderate medical importance as there are several bite records with symptoms duration ranging from an hour to nearly 72; but never causing deaths (Dunbar *et al*., 2018a; Faúndez & Téllez, 2016a, b; Faúndez *et al*., 2020). As a predator it has been recorded feeding on a variety of prey, from arthropods to a small vertebrate (Dugon *et al*., 2017; Dunbar *et al*., 2018b). The purpose of this contribution is to provide the first record of predation by *S. nobilis* on a milkweed bug.

Materials and methods

For identification of the spider we follow Dugon *et al*. (2017) and Faúndez *et al*. (2018). For the milkweed bug we follow Slater & Knop (1969). For observation format we follow Faúndez & Albornoz (2017). The observation was made in O'Melveny Park, Granada Hills, Los Angeles, CA, USA (Lat: 34.307931 Lon: -118.512825).

Results

On June 6th at 1:28pm. A young female of *Steatoda nobilis* was observed feeding on a small milkweed bug *Lygaeus kalmii kalmii* Stål, 1874, trapped in her web (Fig. 1). The spider left the specimen (Fig. 2) and then returned, whereupon it started to handle the bug, biting it in the pro- and mesosternal areas (Fig. 3). After sucking fluids for one to two minutes the spider left the bug, softly wrapped in silk and returned to her burrow. In the area, the bug was the only prey, and an exoskeleton of the spider was observed close (Fig. 4). This suggests that the spider was successfully feeding on the bug. On the next day (June 7th) the bug was a little bit moved, placed close to the spider burrow, with additional silk wrapping (Fig. 5).

Discussion and conclusion

Steatoda nobilis has been recorded feeding on Heteroptera, mostly Pentatomidae (Dugon *et al*., 2017). Furthermore, Chile we have seen it preying also on the Southern green stink bug *Nezara viridula* (Linnaeus, 1757); however, this is the first time it has been observed feeding on a milkweed bug (Lygaeinae). This fact is interesting for the following reason: Milkweed bugs are usually associated with the Asclepiadoideae subfamily of plants; from which they sequester cardenolides that make them unpalatable to many predators (Scudder & Duffey, 1971). Because of that they also have aposematic coloration, including strong reddish and orange patterns. Furthermore, Faúndez *et al*. (2016) observed a false widow spider, *Steatoda grossa* (C.L. Koch, 1838) making no attempt to attack a Chilean milkweed bug, *Oncopeltus miles* (Blanchard, 1852) that fell in her web. *Lygaeus kalmii* is well known to feed on asclepiadoid plants (Isman *et al*., 1977); however in situations of need it may switch to other sources (Wheeler, 1983). Therefore, the concentration of cardenolides may be lesser in the small milkweed bug than for example *Oncopeltus* spp. (Isman *et al*., 1977), which could explain how the spider can feed on it. The small size of the bug might be taken into account to explain the predation; however, prey size does not seem to be a problem for *S. nobilis*, as it already has been observed preying on a small lizard (Dunbar *et al*., 2018b). Thus, further research is needed to evaluate predation relationships on milkweed bugs and false widow spiders.



Figs. 1-5. Predation observation of *Steatoda nobilis* on *Lygaeus kalmii kalmii*. **1-4**. Observations from the first day. **5**. *L. kalmi kalmi*, placed close to the spider burrow on the next day.

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