



# Hedge Apples - Brown Recluse Spiders - and Basements - OH MY!

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## Abstract

The brown recluse spider (BRS), *Loxosceles reclusa* (Gertsch & Mulaik) is a serious pest and not easily eradicated by chemical means (Sandidge & Hopwood, 2005). Common folklore has long indicated that *Maclura pomifera* (hedge apples or Osage oranges), repel spiders and insects when placed in basements (Jaoun, 1997); but data is anecdotal. We collected hedge apples in order to test whether BRS are deterred by hedge apples. Hedge apple extract appeared to ward off BRS from nesting when given a choice between nest sites that were infused or not infused.

## Purpose

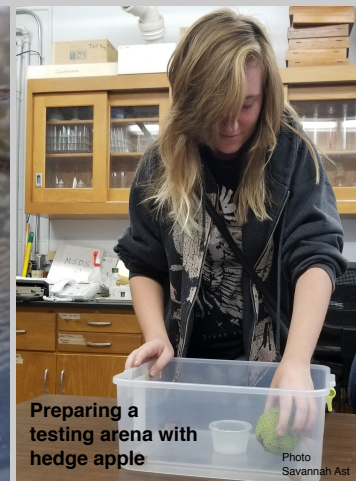
Determine legitimacy of folklore that hedge apples lessen the presence or nesting of insects and spiders.

## Questions, Hypotheses, and Predictions

**Question:** Will hedge apples dissuade BRS from cohabitating with humans in rooms where they can be deployed?

**Hypothesis:** BRS are not repelled by fresh (not dried) Osage orange hedge apples.

**Prediction:** BRS will not be repelled or dissuaded from nesting in areas containing fresh hedge apples



Arenas set up prior to 15 minute observations (left)

## Methods and Experimental Design

- BRS were put into 4oz. polystyrene cups with clear lids. Containers (12 liter with lids) used as testing arenas were washed with soap and water and air dried prior to each use.
- Five tests were conducted in three replications involving 15 randomly selected BRS.
- Each arena had four small rectangular pieces of cardboard (treated or untreated), creased in the middle to provide shelter, and placed in each corner.
- Styrofoam spacers were placed between each arena to prevent visuals interfering with one another.
- Spiders were placed in the testing arena five-minutes prior to test initiation by placing the cups upside-down in the center of the testing arena.
- Each arena was numbered to standardize replications. Arena 1 – (control), no treatment on cardboard; Arena 2 – (contact) dog toy placed next to one cardboard strip; Arena 3 –(odor/contact) treated cardboard with a hedge apple next to one of the strips; Arena 4 – (odor) treated cardboard ; and Arena 5 – (contact) hedge apple next to one strip.
- Cardboard strip infusion - hedge apple was cut in half, and the four cardboard strips were 'sandwiched' inside. Strips left in 'sandwich' for 1 minute, removed and let dry.
- Once set lights were turned off and spiders allowed to settle for five minutes, cups were removed and 15 minute observations began, monitoring reactions, movement and location.
- During the observation period, arenas, objects and spiders were not touched or moved.
- After observation, arenas were secured and placed in a darkened cabinet.
- Spiders were observed once more after 48-hours to determine final position/location.

## Conclusion

Hedge apples did not seem to be very effective repellents for brown recluse spiders. However, during the trials there were no spiders that webbed in Arena 4. Yet webbing did take place in Arena 3. Some spiders wandered very near to the hedge apples and infused cardboard and some even used them to hide. Hedge apples may repel other insects, but for the brown recluse, they appear ineffective.

## Future Directions

- Test other naturally occurring substances that have been indicated in folklore (or the internet) to help reduce pest populations, i.e. walnuts, peppermint, wintergreen etc.
- Test other insects and their reactions
- Use dried hedge apples
- Re-create natural habitats as the arenas

## References

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## Study System

- BRS are usually brown and medium sized, with an average length of 10mm (Davis et al., 2014).
- Size differences between spiders can occur because of diet and eating frequency
- Commonly known as violin or fiddle back spiders because of the dark violin shape on their carapace.
- Loxosceles*, meaning "slant legged" (Cameron, 2005), refers to the positioning of the legs while at rest (as seen above).
- Reclusa*, refers to their preference to remain hidden (Gertsch and Mulaik, 1940).
- Commonly found in south-central United States (Gertsch, 1958), BRS can be found in homes or sheds as well as in woodpiles and discarded material (Sandidge & Hopwood, 2005).
- BRS are true synanthropes because they've adapted well to living in human habitats

## Results

