



Egg-laying Habits of Slosser's Buckmoth (Lepidoptera: Saturniidae)

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Background

Hemileuca slosseri (Fig 1) inhabits the rolling sand plains of southeastern New Mexico, northwest Texas, and southwestern Oklahoma, where the larval stages of this species feed exclusively on the leaves of *Quercus havardii*. Adults emerge in November and immediately complete their egg laying activities.

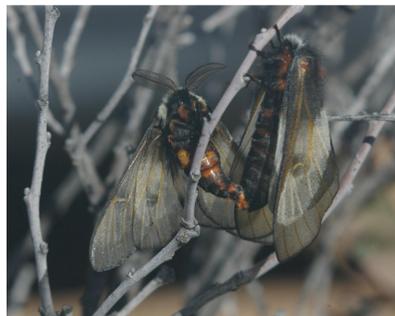


Fig 1

Hemileuca slosseri, commonly known as Slosser's buckmoth, lays its eggs in tight rings around stems of *Q. havardii* (Fig 2). This egg laying method is characteristic of species in the genus *Hemileuca*. Laying eggs in tight circular bands is thought to be an adaptation for winter egg survival. Other notable genera that exhibit this behavior are *Agapema* and *Malacosoma*.



Fig 2

Quercus havardii (Fig 3), or sand shinnery oak, occurs throughout the sand plains in New Mexico, Texas, and Oklahoma. It is deciduous and can be found growing in deep sand soils. Fully grown leaves are too tough to be eaten by the larva of *H. slosseri*. When the caterpillars emerge in the spring, they feed on the tender new leaf sprouts of their host plant and complete their growth while the leaves are still edible.



Fig 3 (2)

Observations in the field during the fall of 2013 reveal that many of the newly deposited egg rings were positioned in close proximity to existing hatched egg rings left over from the previous year.

Goal

Observe the egg laying habits of *H. slosseri* in Andrews County and determine if there is any correlation between the presence of existing hatched egg rings and the deposition of new eggs.

Methods

Following all seasonal reproductive and egg laying activities in January of 2014, a 12 by 40 meter study area was established adjacent to Hwy 115 approximately 13 km SW of Andrews, Texas. All egg rings were mapped as to location, and height above ground as well as the stem diameter of each egg ring was recorded. A total of 134 egg rings were observed on the study plot (91 hatched and 43 un-hatched).

Several trips were made to the survey site in Andrews county off Kermit Highway (Fig 4, green) to count egg rings on roadside shinnery oak and take measurements. Before being marked with twist ties, egg-bearing plants were marked with colored flags (Fig 5). The location was notorious for having large broods of Slosser's buckmoth. There was a particularly large emergence the previous year according to eyewitness accounts and hatched egg count (assuming majority of hatched egg cases are from only one year prior). Annual brood size often fluctuates, as indicated by the large disparity between the years' egg counts.



Fig 4



Fig 5

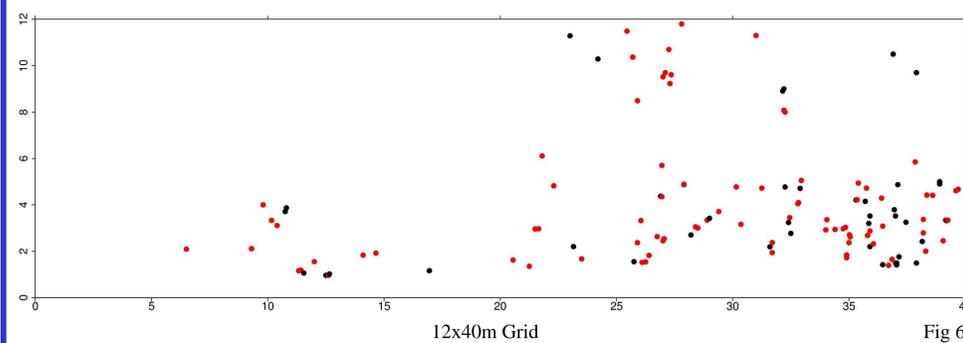


Fig 6

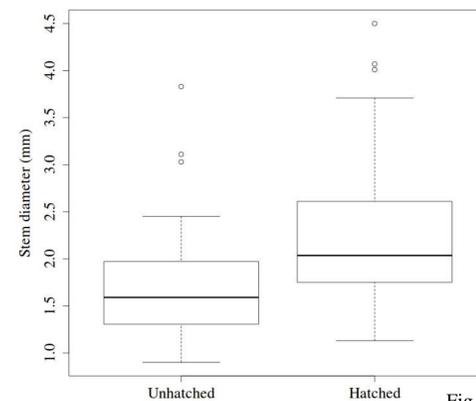


Fig 7

Egg rings from past and current years were concentrated within about 5 meters of the road. The current year's unhatched egg rings (Fig 6, black) were often found on the same plant as hatched rings from past years (Fig 6, red), indicated by overlapping dots. New eggs were found on smaller stems compared to old eggs (Fig 7) (Unhatched: 1.69 ± 0.089 mm; Hatched: 2.17 ± 0.072 mm; $P < 0.0002$) This is likely attributed to the shinnery oak's annual stem growth instead of a preference for smaller stems in the newest generation.

Results

There was no significant difference in average distance from an unhatched egg ring to a hatched egg ring or another unhatched egg ring ($P = 0.71$). Hatched egg rings were found significantly closer to other hatched egg rings than they were new eggs ($P < 0.0001$).

	Unhatched	Hatched	Average distance of hatched/unhatched eggs from other hatched/unhatched eggs was measured in meters. Standard error is shown in parenthesis.
Unhatched	0.76 (0.130)	0.70 (0.148)	
Hatched	1.15 (0.104)	0.53 (0.061)	

Table 1

The distance between hatched eggs and other hatched eggs (likely eggs from the same brood) were found closer to each other than to the new eggs (Table 1). When resources like host plants are concentrated in a small area, a population boom is shown when there is high egg density.

Conclusion

All egg cases exhibited an aggregated dispersion that appeared to follow the dispersion of the *Q. havardii*.

The hatched eggs were found closer to other hatched eggs, indicating a population boom in the previous brood that resulted in clumping. Nearest neighbor analysis supports this claim, but there does not appear to be any association between new eggs and old eggs.

Females looking for ideal egg laying sites appear to base their choice on stem diameter and host plant availability.

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