

Phenological, Behavioral, and Biological Observations on a Giant Scale, *Neosteingelia texana* Morrison, in Blacksburg, Virginia (Homoptera: Coccinea: Margarodidae)

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According to Morrison (1928), nothing was available on the life history of *Neosteingelia texana* Morrison at that time. Because of its secretive life style, little remains known today; most of its life is spent under bark flakes of shagbark hickory (*Carya ovata*) and pecan (*Carya illinoensis*). This insect is considered a potential pest of pecan plantations in the southern United States (Miller, 1985). In addition, it is occasionally found on hackberry (*Celtis occidentalis*), maple (*Acer* sp.), ash (*Fraxinus* sp.), and sweetgum (*Liquidambar styraciflua*). It is known from Alabama, Florida, Georgia, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas and Virginia. In Virginia, adults come to the surface of the bark for a few days to mate during late September through early October. Apparently, weather conditions must be optimal for the two sexes to emerge at the same time. Other factors which may initiate the yearly appearance of this insect may be the release of an aggregate pheromone while under the bark, or the changing chemistry of the host plant sap at that time in the fall. Unfortunately, we have been unable to assess the latter two factors.

Observations were made on the emergence of this giant scale insect in 1969, 1970, and 1975, and correlated with local weather conditions. Based on these observations and the weather information, we can report that most of the insects appear on the surface of tree trunks in southwestern Virginia between 26 September and 6 October, apparently when air pressure is just over 30 millibars, at relative humidities between 55% and 70%, and at temperatures of 24° to 27° C in the sun (22° to 23° in the shade). Most insects normally emerge after 1000 EDT and remain active from noon through early afternoon, usually after a night with the minimum temperature between 10° and 16° C. Most observations

were made on old shagbark hickory trees in the Grove, across from the University President's House on the Virginia Tech Campus, where the majority of insects were found from ground level to about 7 feet (2 meters) high on the southeastern and southern side of the trunks.

The appearance of both sexes was also observed at Seashore State Park, Virginia. Here, in a warmer climate, the insects were active on the trunk of a maple tree (*Acer* sp.) on 9 October 1985. Farther south, the insects were swarming as late as 19 October (Georgia) and 31 October (Florida).

After emerging from the crevices of the trunk and from under peeling bark flakes, the females walk upward on the tree trunks and raise their abdomens in a semicircular fashion, probably to release their sex pheromones into the wind. The agile males mate repeatedly with each female. After mating, the females return under the loose bark flakes to lay their reddish-brown eggs inside cottony wax threads. This species probably needs more than one year for full development and should be studied further.

As there are no known published complete illustrations of this species, we include an illustration by the second author. Slide mounted specimens were 3.5 - 5.5 mm. in length and 1.5 - 2.0 mm. in width.

Literature

Miller, D. R. 1985. Superfamily Coccoidea. Scale Insects. Pp. 87-123. In A. T. Droz (ed.), *Insects of Eastern Forests*. U.S. Department of Agriculture Miscellaneous Publication Number 1426, Washington, D.C.

Morrison, H. 1928. A classification of the higher groups and genera of the coccid family Margarodidae. U.S. Department of Agriculture Technical Bulletin Number 52, Washington, D.C.

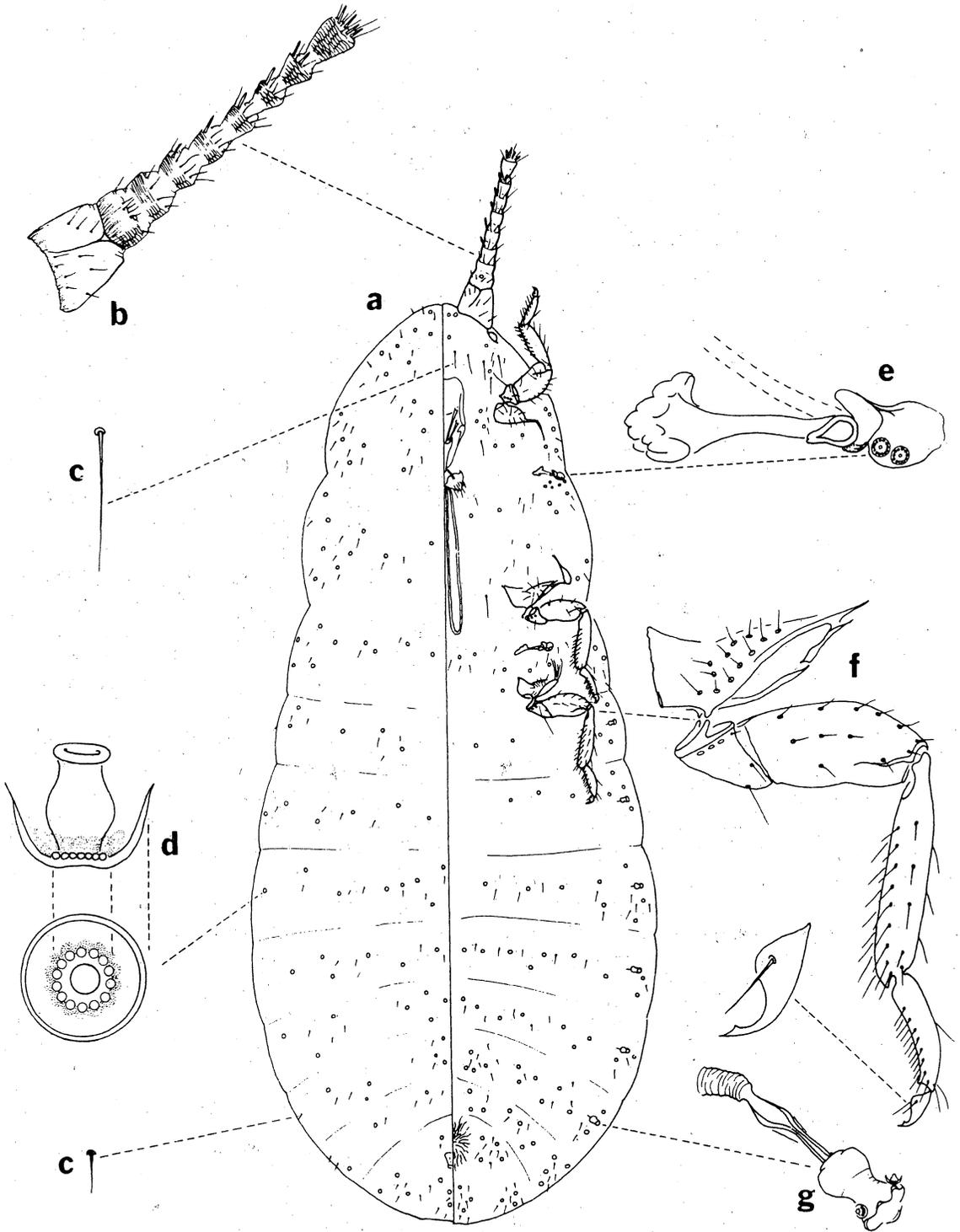


Figure 1. Adult Female *Neosteingelia texana* Morrison. (a) Dorsal (left) and ventral (right) views showing distribution of setae and pores, (b) antenna, (c) hairlike setae, (d) multilocular pore, (e) spiracle, (f) metathoracic leg, (g) abdominal spiracle.