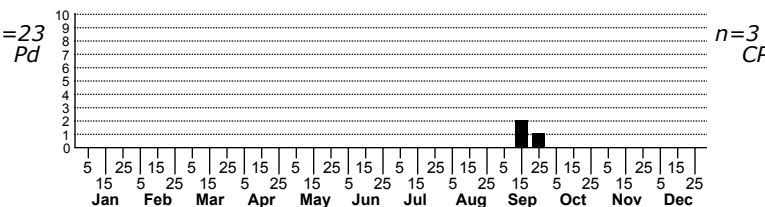
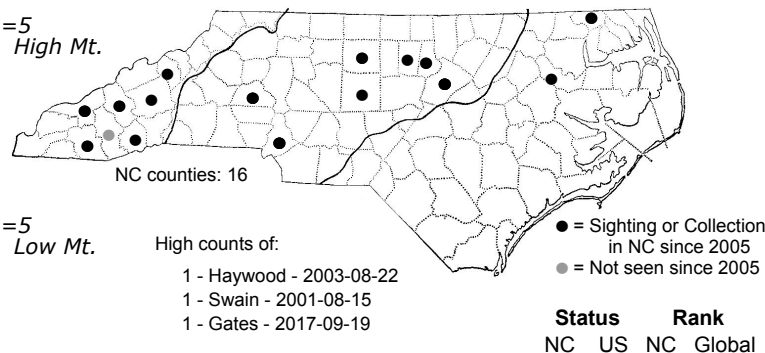
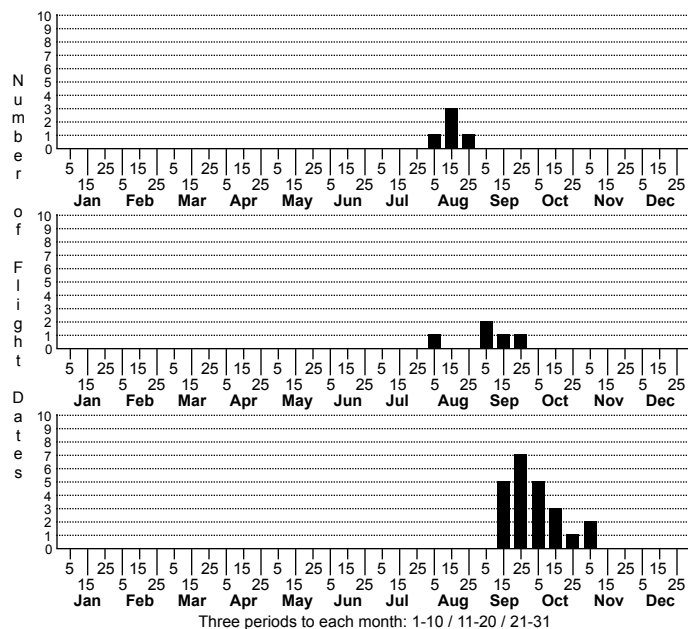


Pennisetia marginatum Raspberry Crown Borer Moth



FAMILY: Sesiidae SUBFAMILY: Tinthiinae TRIBE: Pennisetiini

TAXONOMIC COMMENTS: North America has 136 or more species in the family Sesiidae, with 37 species found in North Carolina. Many are similar in appearance to one another, and some are significant pests of commercial crops. Almost all are mimics of wasps and hornets.

FIELD GUIDE DESCRIPTIONS: Covell (1984); Beadle and Leckie (2018)

ONLINE PHOTOS:

TECHNICAL DESCRIPTION, ADULTS: Engelhardt (1946); Eichlin and Duckworth (1988)

TECHNICAL DESCRIPTION, IMMATURE STAGES:

ID COMMENTS: *Pennisetia marginatum* is a boldly-marked species that likely mimics yellow jackets. The most conspicuous marks are the black-and-yellow striped abdomen, and the reddish-brown forewing that contrasts with the blackish hindwing. The following detailed description of the male is based on the descriptions by Engelhardt (1946) and Eichlin and Duckworth (1988). The external morphology of the female deviates only slightly from that of the male.

The labial palp is yellow, while the antenna is black, bipectinate near the base, and not tufted at the tip. The head is brownish-black and the occipital fringe (collar) black. The thorax is brownish-black with bold, yellow marks. These include a small patch on the side, a thin lateral stripe below the collar, a subcircular ring from above the forewing to the metathorax, and a pair of yellow spots at the base of the forewing. The metathorax has yellow tufts on the sides and yellow hair pencils on the undersides. The abdomen varies from brown-black to black and is broadly banded with yellow on the posterior part of all segments except 1 and 2, either of which may be ringed with yellow anteriorly or unmarked. Segment 3 has a well-developed dorsal tuft with a mix of black and yellow hairs, while the anal tuft is short and rounded with a mix of black and yellow hairs. The legs are mostly yellow, but the femora and tibiae of the hindleg may or may not be marked with black outwardly. The forewing is transparent and edged broadly with ochreous-brown, with a discal mark that is of similar color. The hindwing is also transparent, but narrowly margined and fringed with brownish-black to black scales. The female is general similar, but is larger, stouter, and has a simple, strong antenna. The last one or two abdominal segments are usually entirely yellow or slightly mixed with black, and the anal tuft is inconspicuous.

DISTRIBUTION: *Pennisetia marginatum* is widespread in the US and southern Canada except in areas with arid and semi-arid climates. The range in Canada extends from British Columbia and Alberta eastward to New Brunswick, Nova Scotia and Newfoundland. In the eastern US the range extends from Maine southward to central Florida and westward to eastern Texas, eastern Oklahoma, eastern Kansas, Missouri, Illinois, Wisconsin and Minnesota. In the West, populations are mostly found in mesic habitats in California, Oregon and Washington, as well as in a few scattered localities in the central and northern Rockies. As of 2024, we have records from all three physiographic provinces, although this species appears to be rare in the Coastal Plain and restricted to the central and southern regions of the Blue Ridge.

FLIGHT COMMENT: The adults have been documented from July through November in different areas of the range, with a peak in seasonal activity typically in August and September. As of 2024, our records extend from early-August to early-November, with populations at higher elevations in the Blue Ridge flying about a month earlier than those in the Piedmont.

HABITAT: Local populations are scattered across the landscape where the host plants occur and are commonly in found in fields, along forest edges, and other disturbed habitats. The larvae can be significant pest where blackberries and raspberries are grown commercially.

FOOD: The larvae feed on various species of both native and cultivated *Rubus* species (Robinson et al., 2023; Pfeiffer, 2024). Examples include European Blackberry (*R. fruticosus*), European Red Raspberry (*R. idaeus*), Himalaya Blackberry (*R. procerus*), Evergreen Blackberry (*R. lacineatus*), Loganberry (*R. loganobaccus*), Black Raspberry (*R. occidentalis*), Thimbleberry (*R. parviflorus*), Salmonberry (*R. spectabilis*) and Pacific Blackberry (*R. ursinus*). Many of these are commercially grown, and the use of native species in the eastern US needs additional study.

OBSERVATION METHODS: The adults are often seen resting during the day on the upper surfaces of vegetation, either on or close to the host plants. They are not attracted to lights or bait, but occasionally are found nectaring on flowers. The males can be lured to traps with synthetic sex attractants.

NATURAL HERITAGE PROGRAM RANKS: GNR [S3S4]

STATE PROTECTION: Has no legal protection, although permits are required to collect it on state parks and other public lands.

COMMENTS: This species closely mimics a Yellow Jacket hornet (*Vespa* sp.). It is generally inconspicuous and only infrequently encountered in natural settings. It may be more widespread and abundant than our records suggest due to the fact that the adults are not attracted to lights.