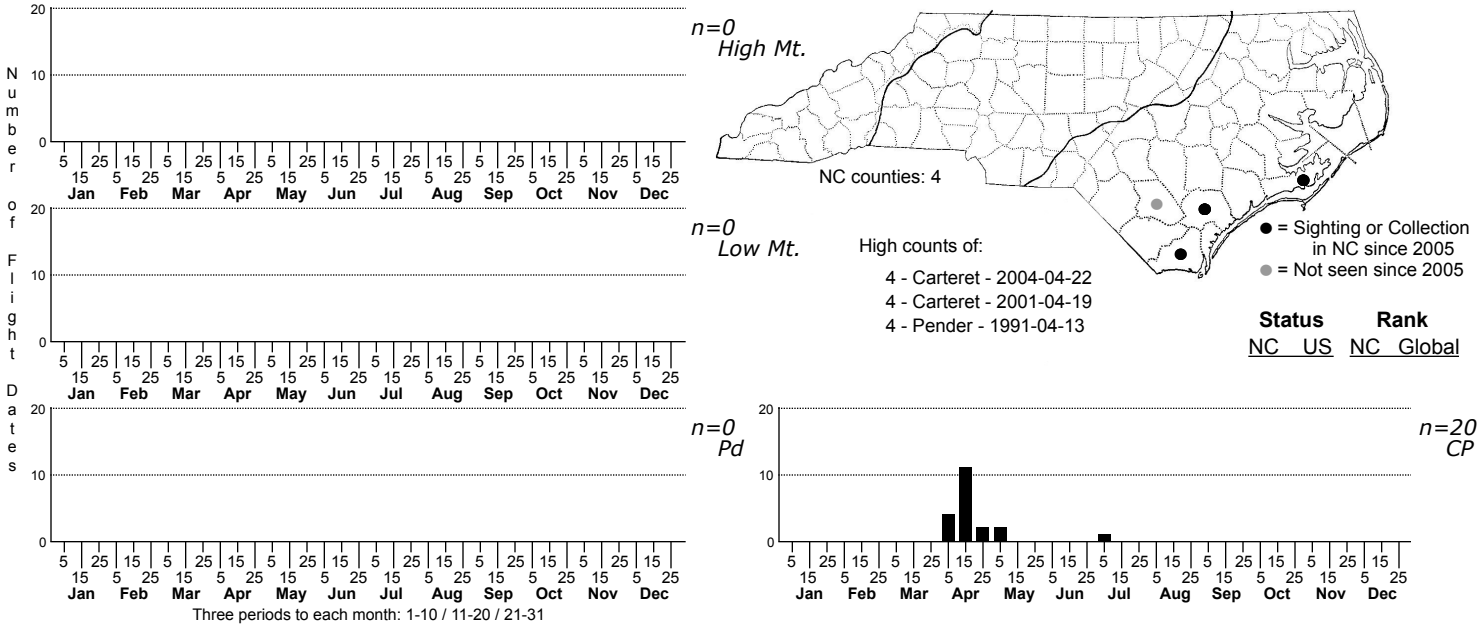
Hemipachnobia subporphyrea Venus Flytrap Cutworm Moth



FAMILY: Noctuidae SUBFAMILY: Noctuinae TRIBE: Noctuini
TAXONOMIC_COMMENTS: Hemipachnobia is a North American genus composed of two species, both of which have been recorded in eastern North Carolina. The genus Hemipachnobia was defined by McDunnough in 1929, with H. monochromatea designated as the type species (McDunnough, 1929; Lafontaine, 1998). Although Smith (1891) tentatively listed subporphyrea as a synonym of monochromatea, other authors treated the two species as belonging to separate genera until relatively recently (Hall and Sullivan, 2000).

FIELD GUIDE DESCRIPTIONS: Not included in either field guide
ONLINE PHOTOS:
TECHNICAL DESCRIPTION, ADULTS: Lafontaine (1998); Hall and Sullivan (2000)
TECHNICAL DESCRIPTION, IMMATURE STAGES: Hall and Sullivan (2004); Wagner et al. (2011)

ID COMMENTS: Hemipachnobia subporphyrea is a medium-sized, purplish to reddish brown Noctuid. Head and thorax are concolorous with the ground color of the forewings, which varies from a wine-red shade (a sub-purple", as implied by the species name) to a somewhat rustier shade similar to that of H. monochromatea. Variable amounts of grayish or fuscous scales are mixed in with those of the ground color and there is also a variable but lesser amount of white scaling, both on the wings and thorax. The fuscous scales tend to be most prominent along the veins and in some specimens form conspicuous gray lines. The only obvious markings on the forewings of either species of Hemipachnobia are the antemedian and postmedian lines of the forewings; other spots and lines are completely obsolete,including the orbicular and reniform spots that are usually prominent in Noctuids. The antemedian and postmedian are composed of scales that are either only slightly darker than the ground color, or are a distinctly darker, more fuscous shade than the ground color. Both lines tend to be bordered by white scales, which precede the antemedian and follow the postmedian. In some specimens, the lines are indicated primarily by the white scales (Hall and Sullivan, 2000). Lafontaine (1998) stated that the postmedian is less serrated in monochromatea than in subporphyrea, but in several specimens examined by Hall and Sullivan (2000), the postmedian was as even, or more so, in subporphyrea than in monochromatea. Apart from size, which appears to be consistently different between the two species, other features of the wing patterns overlap at least in some specimens, and we recommend that their identities be established through dissection of the males. Within the range of H. subporphyrea, only a few other spring-flying moths are even remotely similar. Cerastis tenebrifera, which flies about a month earlier in the spring than H. subporphyrea, has bipectinate antennae in the males but is a much deeper maroon than Hemipachnobia and has conspicuous, pale orbicular and reniform spots. Trichosilia manifesta, which flies at the same time as H. subporphyrea, also has bipectinate antennae in the males and has a reddish color phase that resembles Hemipachnobia to some extent. The dark orbicular and solid reniform spots possessed by this moth, however, easily distinguish it from Hemipachnobia, as do the distinctive traits of the tribe Agrotini, to which this species belongs.

DISTRIBUTION: In North Carolina, H. subporypyrea appears to be confined to the Outer Coastal Plain; efforts to find it in the Fall-line Sandhills at Fort Bragg, where the westernmost populations of Venus Flytrap occur, were unsuccessful.

FLIGHT COMMENT: Hemipachnobia subporphyrea is univoltine: adults have been captured as early as March 24 and worn specimens have been taken as late as May 9. The majority of records are from mid-April (Hall and Sullivan, 2000).

HABITAT: All of our records come from Longleaf Pine savannas and flatwoods. All but one come from sites where populations of Venus Flytraps exist and the one exception came from an area where flytraps may have existed at the time of the capture -- a specimen of Photedes carterae was collected at the same site and it feeds solely on Pinebarrens Reedgrass, a species that is usually found in close association with flytraps.

FOOD: Aubrey Shaw (pers. comm. to SPH) found larvae feeding on cultivated flytraps growing under semi-natural conditions on his farm in Bladen County and near where he had originally collected his plants. Although he occasionally found larvae on his plants as early as the 1970's, the caterpillars were particularly numerous in 1986 and did extensive damage to his plants. Two larvae he collected were given to David Stephan for determination (D. Stephan, pers. comm.). Stephan subsequently reared both larvae to adulthood, feeding them solely on flytraps. In the rearing study conducted by Hall and Sullivan (2004), larvae were successfully fed on sundews -- the host plant of H. monochromatea -- and later instar larvae did well feeding on Vaccinium crassifolium, a procumbent heath that grows abundantly at sites where H. subporphyrea has been recorded. In this regard, H. subporphyrea may show a switch in host plants similar to that observed in H. monochromatea, which Hooker (1919) observed to switch from using sundews in the earlier instars to cranberry in the later stages. Larvae of H. subporphyrea have been observed in the wild solely in association with flytraps, and it is not known if they feed naturally on either sundews or Vaccinium crassifolium. However, no populations of the moth have yet been found at sites where only sundews are present, at least in North Carolina.

OBSERVATION_METHODS: Adults come at least sparingly to blacklights but efforts to collect it using bait have not worked so far. Larvae have now been observed on flytraps on a number of occasions by Laurie Hamon (NC NHP) and others. Although requiring a fairly intensive survey effort, these observations can be made over a longer period of time than is true for the adults and potentially offer an effective way to both discover new population or to monitor those already documented. The feeding damage produced by the larvae is fairly distinctive and offers at least a preliminary indication that a populations exists at a particular site.

NATURAL HERITAGE PROGRAM RANKS: G1 S1?

STATE PROTECTION: Listed as Significantly Rare by the Natural Heritage Program. That designation, however, does not confer any legal protection, although permits are required to collect it on state parks and other public lands.

COMMENTS: This species appears to be extremely rare globally, not having been collected between the late 1700s and 1974, when a population was rediscovered in North Carolina. Since then, populations have been recorded at only five more sites in North Carolina and only one has been found outside of this state, by John Glaser in Maryland in 1998. Until Glaser's discovery outside the range of Venus Flytraps and the discovery by Hall and Sullivan (2004) that North Carolina larvae could also feed on sundews, the association between subporphyrea and Dionaea muscipula seemed very strong and provided a good explanation for the rarity of this species: flytraps do not naturally occur beyond a 100 mile radius of Wilmington, NC and their distribution has been greatly fragmented and reduced with the destruction of Longleaf Pine savannas. Even within surviving areas of natural habitat, the combination of fire suppression and poaching has eliminated many populations of this plant, as well as, presumably, populations of the moth -- at least one population discovered in the early 1990s appears to have been extirpated due fire suppression. On the other hand, the moth does not appear to survive through a fire; in areas that have been burned on an annual basis -- even where supporting very large populations of the flytraps -- no Hemipachnobia have been found even after intensive sampling efforts. Like many moths associated with fire-maintained savanna habitats, H. subporphyrea is likely to depend on a metapopulation strategy to survive disturbances to its habitats. With flytrap populations becoming increasingly small and isolated, that strategy is becoming increasingly hard to follow. If it were actually using sundews in addition to flytraps, it would have a greater chance of survival. However, we have yet to find any populations of this moth in North Carolina where only sundews exist and no flytraps. Although there is still much to be learned about this species, it currently appears to be one of our most endangered species.