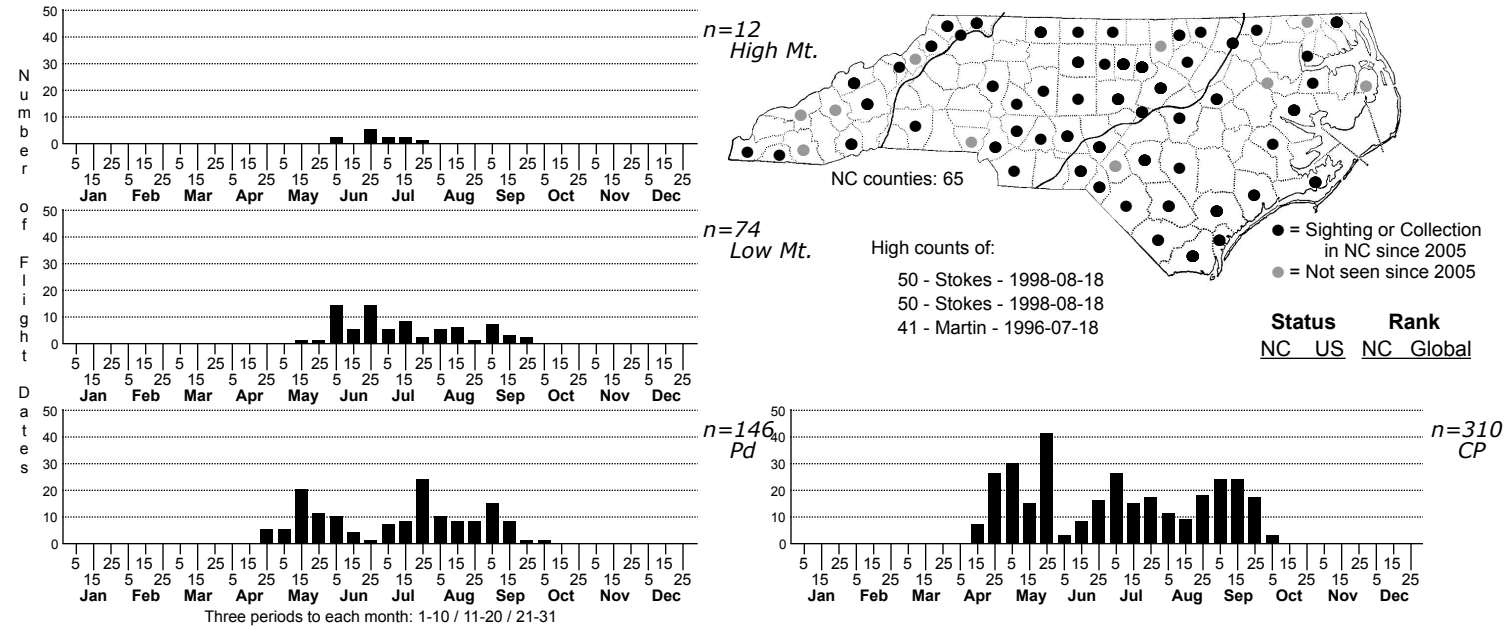
Hypagyrtis esther Esther Moth



FAMILY: Geometridae SUBFAMILY: Ennominae TRIBE: Bistonini
TAXONOMIC_COMMENTS: This New World genus contains 7 species, 1 neotropical and 6 from North America, three of which occur in North Carolina (piniata may also be possibly present in the mountains -- Wagner et al., 2001). This genus shows a large range of variation, however, and its taxonomy still appears to be unsettled. Forbes (1948) stated that "the species or forms of this genus are completely confused and show no satisfactory differences in genitalia -- they may be merely races and strains, but breeding from known foods will be needed to make sure." Much of the variation is contained within Hypagyrtis unipunctata but there are forms believed to belong to that species that are highly similar to those of esther.

FIELD GUIDE DESCRIPTIONS: Covell (1984)
ONLINE PHOTOS:
TECHNICAL DESCRIPTION, ADULTS: Forbes (1948)
TECHNICAL DESCRIPTION, IMMATURE STAGES: Wagner (2005; but possibly refers more directly to H. piniata)

ID COMMENTS: We follow the description given in Forbes (1948) that Hypagyrtis esther is distinguished by its even dark violet-brown ground color out to the subterminal line, followed by a rusty brown shade in the subterminal area. The antemedian and postmedian are both dark with the postmedian waved and most distinct; the postmedian is concave in its lower portion and meets the inner margin at a right angle. The subterminal pale spot typical of the genus is typically single and oval. Although not explicitly stated by Forbes, there is no indication of sexual dimorphism with respect to coloration and markings. Males are smaller and have proportionately shorter wings and are easily recognized by their pectinate antennae; the margins of the females are more scalloped.

Hypagyrtis brendae is similarly dark but grayer, and has a similar rusty subterminal shading, but has a more conspicuous if diffuse median line. In brendae, the postmedian converges with the median towards the inner margin, with both lines following a straighter, more oblique course than the postmedian in esther (Heitzman, 1974). Covell (1984) states that there are melanic forms of unipunctata, which may resemble esther, but we have not seen any description of forms of esther that are buff, yellow-brown, or pale luteous colored as described by Forbes (1948) for the various forms now lumped as unipunctata, or the pepper-and-salt colored forms that he described for H. piniata and one form of unipunctata. Unfortunately, this genus does not appear to show any genitalic characters that can be used to distinguish the species (Forbes, 1948). Barcoding and other DNA analysis will probably be needed to resolve these issues. Until then, we recognize esther solely based on its dark, violet-brown median and basal areas and exclude buff or other more lightly colored or mottled forms.

DISTRIBUTION: Due to possible confusion with either an undescribed sibling of esther or with a form of piniata, the true distribtution of esther is unclear in North Carolina. Forbes (1948) indicated that he only knew of specimens of H. esther from the Pine Barrens of New Jersey and the Coastal Plain of North Carolina. Wagner's (2005) account is also based on the assumption that esther is more likely to occur in the Coastal Plain and barrens communities and piniata more likely in the Mountains. Barcoding and additional host plant analysis is needed to clarify the situation.

FLIGHT COMMENT: While the species has been recorded throughout the growing season, there are probably three distinct broods in the Coastal Plain, two broods in the Piedmont and Low Mountains, and a single brood in the High Mountains. Second and third brood specimens are much smaller and somewhat different in maculation from the first brood.

HABITAT: In the Coastal Plain, we have records from habitats dominated by all three of the major pine species in that region: Longleaf Pine-dominated Savannas, Flatwoods, and Sandhills; Pond Pine Woodlands; and Loblolly-dominated Coastal Fringe Evergreen and Bottomland communities. In the eastern Piedmont, we have records from Xeric Hardpan Barrens where Short-leaf Pine and Virginia Pine are both common.

FOOD: Larvae are stenophagous, feeding on pines (Wagner, 2005). In North Carolina, larvae have been reared from Loblolly Pine (Pinus taeda). Since H. esther is found in parts of the state outside the range of Loblolly, other pines must be used, though the specific species are unknown.

OBSERVATION_METHODS: Adults have short, non-functional mouthparts (Forbes, 1948); consequently, they do not come to bait or show up at flowers. They appear to come fairly well to blacklights with a maximum of 41 captured in a single trap.

NATURAL HERITAGE PROGRAM RANKS: G5 SNR [S5]

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

COMMENTS: Occupies a wide range of pine-containing habitats and probably feeds on a variety of pine species, including the widely planted Loblolly. Appears to be secure in the state, although more needs to be learned about its taxonomic status and true distribution in the state.