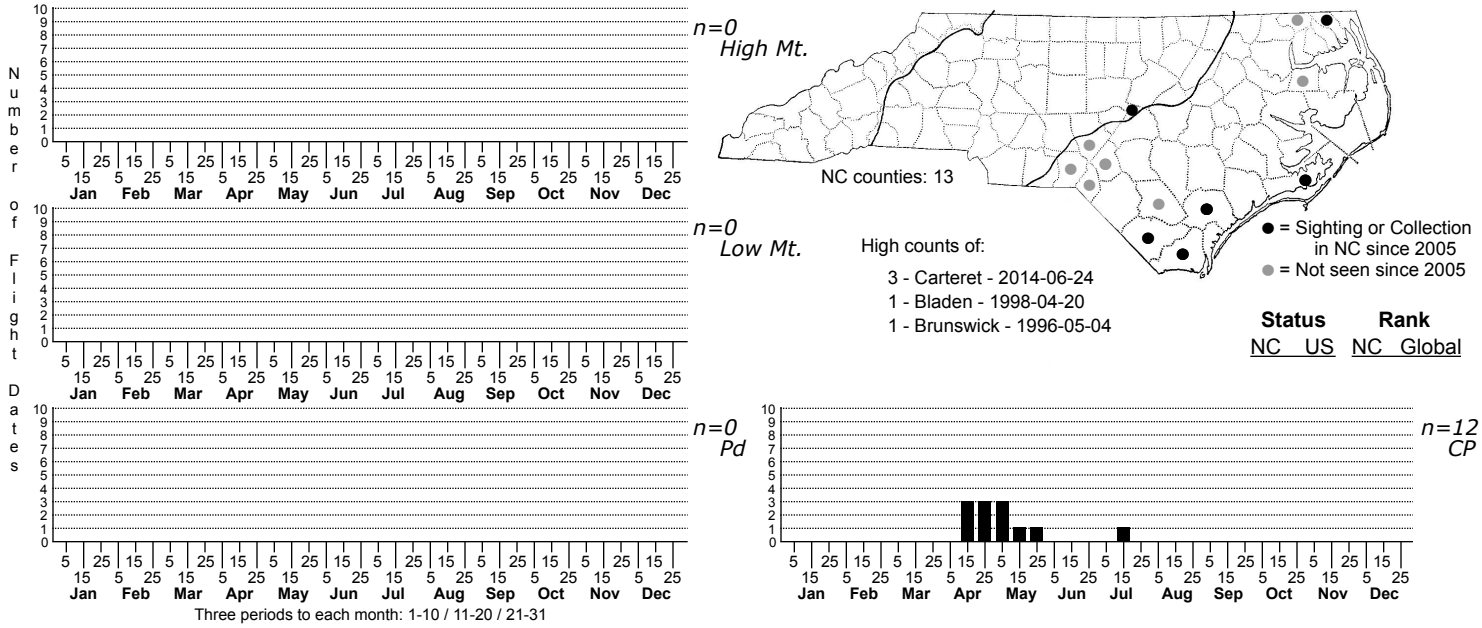
Callosamia securifera Sweetbay Silkmoth



FAMILY: Saturniidae SUBFAMILY: Saturniinae TRIBE: Attacini
TAXONOMIC_COMMENTS: One of three Callosamia species in North Carolina, all of which overlap in range in the North Carolina Coastal Plain. As discussed by Ferguson (1972), C. securifera had long been considered just a form or subspecies of C. angulifera, a view that persisted even after differences in host plants, habitats, and other features had been carefully described. Brimley (1938) appears to have been one of the lumpers, only including C. angulifera in his list of species for North Carolina even though he himself had reared at least one specimen (from Wendell) from a cocoon collected from Sweetbay. This specimen, a male, is now in the NCSU Insect Museum and, apart from an odd reddish color on the wings appears to represent C. securifera (one of the few specimens from the Piedmont).

FIELD GUIDE DESCRIPTIONS: Covell (1984)
ONLINE PHOTOS:
TECHNICAL DESCRIPTION, ADULTS: Forbes (1923), Ferguson (1972), Tuskes et al. (1996)
TECHNICAL DESCRIPTION, IMMATURE STAGES: Forbes (1923), Ferguson (1972), Tuskes et al. (1996); Wagner (2005)

ID COMMENTS: Strongly sexually dimorphic: males are dark umber shaded with pale gold and females are more generally yellowish to golden and variably shaded with umber. The pattern and coloration of both sexes overlap particularly with those of the Tulip-tree Silkmoth (C. angulifera). Examination of the underside of the hindwing offers the most reliable way to distinguish them (Ferguson, 1972). In securifera -- males and females -- there is less contrast between the large dark patch in the basal and medial portion of the wing and the submarginal area just beyond the postmedian line (Ferguson, 1972); in angulifera the submarginal area is much lighter in color, varying from whitish to pinkish. In securifera, the postmedian line, which is black, is bordered by a grayish-brown line over most of its length whereas in angulifera it is typically bordered by a bright white or pinkish line (Covell, 1984). Other differences include the size of the discal spots, particularly on the hindwing, which are usually smaller in securifera or even absent. However, some specimens of angulifera, particularly males of the summer brood, can also have reduced spots on the hindwing. In general, good quality photographs showing the underside of the hindwing are needed to confirm some individuals. One other thing to note, however, is that male securifera fly only around mid-day and nearly all males seen at night, including at lights, represent angulifera.

DISTRIBUTION: Almost all of our records are from the Coastal Plain, where it ranges from the Fall-Line Sandhills to the Outer Coastal Plain; we have no records from the Outer Banks, however, or from other barrier islands. Two historic records exists from Wake County in the eastern Piedmont where Sweetbay reaches its western limit.

FLIGHT COMMENT: Double-brooded, with a strong spring flight, as shown by our data, but also with a later one in the summer. Spring-flying individuals are typically paler yellow than summer-flying ones, which have more umber shading on the forewings (Ferguson, 1972).

HABITAT: Most of our records come from peatlands or wet pine flatwoods where Sweetbay Magnolia is common. On several occasions, we have found cocoons to be especially numerous one year following a fire. Conversely, areas that have been burned less recently often have none at all, despite Sweetbay being common. From that, we suspect that securifera may, to some extent, be a fire follower, at least in flatwoods and sandhill seep habitats where it appears to show a similar distributional pattern as the Notodontid, Datana ranaeceps. While it also occurs in less-frequently burned pocosins and swamp forests, its abundance in those habitats has not been determined.

FOOD: Larvae are essentially monophagous, feeding nearly exclusively in the wild on Sweetbay Magnolia (Magnolia virginiana). In the wild, cocoons have also rarely been found on Loblolly bay (Gordonia lasianthus), which the larvae will eat in captivity (Baggett and Peigler, in Tuskes et al., 1996). Captive larvae will also accept other species of magnolias and Tulip-tree (Liriodendron tulipifera), as well as a few other species not in the Magnoliaceae (Tuskes et al., 1996; Wagner, 2005). In North Carolina, we only have records for Sweetbay Magnolia.

OBSERVATION_METHODS: Adults fly during the day and males, in particular, are almost never taken at lights (we have collected only one male securifera in a light trap). Females, however, show up at least occasionally at sheets and traps, although usually as single individuals. As in other Saturniids, adults do not feed and consequently do not come to bait. One productive way of sampling is the use of tethered or caged females to lure wild males. Searching for cocoons and/or larvae, however, offers the best way of assessing presence and population size in a given area of habitat (see Peigler, 1976, 1979).

NATURAL HERITAGE PROGRAM RANKS: G4 S3S4 [S2S3]

STATE PROTECTION: Currently placed on the NHP Watch List as W3: seemingly rare species that are too poorly known to assess their conservation status in North Carolina. Although it is clearly a habitat specialist and its natural range is declining as the result of human activities (Peigler, 1979), not enough information exists to determine whether the apparent rarity of this species is due to its day-flying habitats or reflects a truly sparse and patchy distribution.

COMMENTS: Based on cocoon surveys, Peigler (1979) believed this species is rare and declining, including in Brunswick County, NC. While the host plant for this species, Sweetbay, is widespread in the Coastal Plain, C. securifera appears to have a much patchier distribution, not occurring in all habitats that support its host plant, including areas where sweetbay is common. It can, however, be locally abundant, judging from the density of cocoons found in some areas. This appears to be especially true in areas where a fire had occurred one year earlier. Since securifera eggs, larvae, and pupae are highly unlikely to survive a fire on site, this strongly suggests that adults may be fire followers similar to Datana ranaeceps, actively moving into areas where fire has caused a flush of new growth of its host plants. If so, this species could actually be even more specialized in its habitat requirements than indicated even by its use of only a single host plant. As in most habitat specialists, reduction and fragmentation of its habitat would pose major threats to continued presence in North Carolina. Conversion of peatlands to agricultural and silvicultural uses, submergence of vast peat dome pocosins due to sea level rise, and reduction of natural fire frequency in both peatland and flatwoods habitats are all likely to have had impacts on this species or will in the future. In addition to conversion of habitats, Peigler (1979) also included use of pesticides to be a threat to this species. The degree to which these factors has already reduced the viability of this species still needs to be investigated, however. Documenting its relationship to fire should be one main goal and, conversely, its use of infrequently burned pocosins and swamp forests needs to be determined. Surveys of cocoons and larvae probably offer the best hope of obtaining this information, since the adults are difficult to sample using conventional methods.