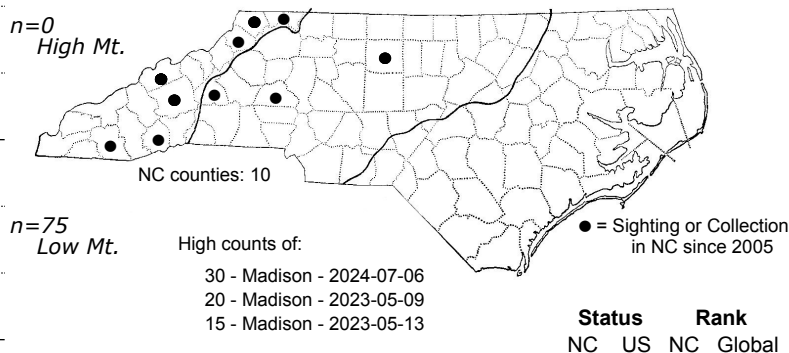
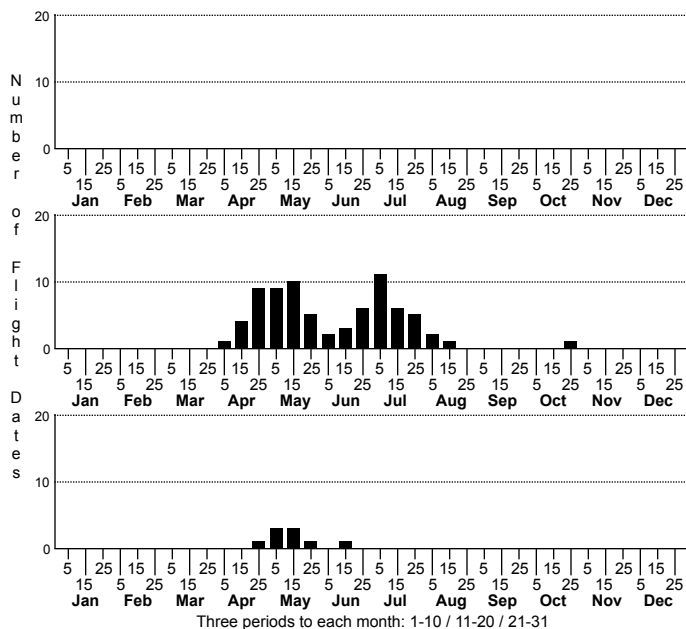


Eucopeia toculionana White Pinecone Borer Moth



FAMILY: Tortricidae SUBFAMILY: Olethreutinae TRIBE: Eucosmini
TAXONOMIC_COMMENTS:

FIELD GUIDE DESCRIPTIONS: Beadle and Leckie (2012) under *Eucosma toculionana*

ONLINE PHOTOS:

TECHNICAL DESCRIPTION, ADULTS: Heinrich (1920); Powell (1968)

TECHNICAL DESCRIPTION, IMMATURE STAGES: de Groot (1998)

ID COMMENTS: The following is primarily based on the original description by Heinrich (1920). The head and face are ochreous, and the palp is similar but dusted with black scales. The anterior portion of the thorax is yellow brown, while the caudal half of the thorax and patagia are dark with black tipped scales. The antenna is smoky black above and gray beneath.

The forewing has complex patterning that consists of a rich chocolate brown to dark yellow brown ground that is overlain with irregular silvery gray and black lines of varying lengths and widths. The most prominent feature is a lighter, irregular, yellowish brown to pale orange band that is broadly margined with silvery-gray at the middle of the wing; it typically extends from the costa to the middle of the dorsal margin. A similar and less defined band (often broken into two large blotches) occurs at three-fourths and extends from the costa to the tornus. A small concolorous blotch is also usually evident at the apex. A series of light spots are usually present along the costa that are often elements of the broad bands. The cilia are smoky gray with a thin dark marginal line near the base. The hindwing is dark smoky brown with lighter cilia that have a thin dark line near the base, while the legs are grayish white above with blackish rings.

Eucopeia toculionana might be confused with *E. monitorana*, but the latter has a lighter and wider median band that contrasts sharply with the darker basal fourth, along with a more uniformly dark hindwing.

DISTRIBUTION: *E. toculionana* occurs in eastern North America from southeastern Canada (Prince Edwards Island; Nova Scotia; New Brunswick) and the New England states westward through the Great Lakes region to Minnesota. The native range extends southward mostly through the Appalachian region to western North Carolina, eastern Tennessee and northern Georgia. Its southernmost range appears to be determined by the distribution of Eastern White Pine (*Pinus strobus*), which is the primary host plant (de Groot, 1998). This species has been widely planted throughout the eastern US outside of its natural range and *E. toculionana* appears to have expanded its range in some areas. As of 2022, all of our North Carolina records are from the Blue Ridge and Piedmont and within the general range of *P. strobus*.

FLIGHT COMMENT: de Groot (1998) reported that populations throughout the range are univoltine, with records extending from March through October. The peak in seasonal activity is from May through July. As of 2024, all but one of our records are from early-April through mid-August, with one very late-season record for late-October. Our phenology graph for the Blue Ridge is bimodal, which suggests the possibility of two generations per year in this region.

HABITAT: Local populations in North Carolina are only known from sites where Eastern White Pine is present. This species tolerates a wide range of site conditions and can be found in both mesic and dry forest communities. It is most frequent at low to mid-elevations in the mountains.

FOOD: Although Eastern White Pine (*P. strobus*) is the primary host species, specimens have been collected outside of North Carolina from spruces (*Picea* spp.), Balsam Fir (*Abies balsamea*), Eastern Hemlock (*Tsuga canadensis*) and Virginia Pine (*P. virginiana*; Powell, 1968). The use of these secondary hosts has been questioned and might reflect misidentified specimens (de Groot, 1998).

OBSERVATION_METHODS: Adults are active shortly after dark and come to lights.

NATURAL HERITAGE PROGRAM RANKS: GNR [S3S5]

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

COMMENTS: Eastern White Pine reaches its southern limits in northern Georgia and populations of *E. toculionana* in western North Carolina are near the southern limit of this species' range. The status of North Carolina populations of *E. toculionana* is uncertain -- we have relatively few site records for what should be a common species -- at least based on its host plants. However, it appears to be fairly widely distributed in the Blue Ridge, and to a lesser extent in the western Piedmont and foothills, indicating that it is unlikely to be limited by habitat.