# Other Nearctic *Gnorimoschema* Gall Inducers

Although biological data are available for no more than half of the described Nearctic *Gnorimoschema*, it is evident that the genus runs the gamut of foodplant deformation. The gamut ranges from few exterior signs of feeding through mined leaves, tied leaves, galled leaves, soft and nonpersistent stem galls, to hard and persistent stem galls, as demonstrated by the California subset of 17 species (Powell and Povolny 2000). All foodplants mentioned in this section are referable to Asteraceae.

Concerning stem gallers, three taxa occur in eastern North America in addition to those in this study. One, *G. busckiellum* Kearfott, galls lateral branches of *Aster patens* Ait., and is still known only from the type series reared in New Jersey. In the gall induced by this moth, the finished adult exit is covered only by intact plant epidermis (Kearfott 1903), as in four of the gallers studied here, namely *G. septentrionellum, G. gallaespeciosum, G. gibsoniellum,* and *G. gallaeasterellum.*

Another stem galler, *G. subterraneum* Busck, occurs on both the East and West coasts, but has not been reported anywhere between. In the East, it is known only from the type series reared in Massachusetts from main-stem galls on *Aster ericoides* L. at or near ground level. The finished adult exit of this galler is covered by intact plant epidermis (Busck 1911). In the West, *G. subterraneum* galls occur on *A. chilensis* Nees, varying in height from ground level upward (Powell and Povolny 2000). Although this moth induces stem galls of the hard, persistent type like the moths studied here, unlike those studied here, the female genitalia lack paird pockets in the intersegmental membrane between terga 8 and 9 (Powell and Povolny 2000).

The unresolved *G. gallaediplopappum* Fyles can be tentatively included here. As discussed earlier, it has been reported from Quebec, Nova Scotia, and Maine galling stems of *Aster umbellatus* Mill. and *Solidago rugosa* Ait. (Fyles 1890, 1911a; Procter 1946; McDunnough 1959). This and the two preceding moths have life systems similar to the eight species in this study, in that the larvae remain in their galls for pupation rather than leave them to pupate elsewhere.

Among the exclusively western *Gnorimoschema*, three species induce stem