Introduction

Gnorimoschema is a worldwide genus whose center of diversity lies in the Nearctic region, where more than 60 species are known (Hodges 1983, Powell and Povolny 2000). The Nearctic species are also the most evolutionarily specialized (Povolny 1967, Powell and Povolny 2000), as exemplified by the gall-inducing habit of some, including the eight studied here. Galls can be defined most simply as abnormal local swellings of plant tissue caused by insects or other organisms.

The name *Gnorimoschema* was proposed at the turn of the century, shortly after which the then known species were reviewed (Busck 1901, 1903). Three and a half decades later, the genus was redefined, and the accumulated species assembled in a list (Busck 1939). A quarter century later, Povolny (1964) established the tribe Gnorimoschemini to include *Gnorimoschema* and closely allied genera. Both Gnorimoschemini and *Gnorimoschema* are thought to be monophyletic; the fused sacculus forming a broad, ventral plate (Fig. 11) may be a *Gnorimoschema* synapomorphy (Povolny 1991, Powell and Povolny 2000). In his worldwide systematic investigations of Gnorimoschemini, Povolny (1967) studied some Nearctic *Gnorimoschema*, including three species treated here. He concluded that Nearctic *Gnorimoschema* are closely related, and predicted that cryptic or sibling species complexes would be found among them.

The eight moths studied here induce monothalamous or single-chambered hard, persistent, fusiform or spindle-shaped galls on the main stems of native, mostly rhizomatous and perennial forbs of the genera *Solidago*, *Aster*, *Grindelia*, and *Haplopappus* (Asteraceae) (Front cover; Figs. 29–36). Between 1869 and 1915, the five previously known species were taxonomically described: *G. gallaesolidaginum* (Riley 1869), *G. gallaeasterellum* (Kellicott 1878), *G. salinarum* (Busck 1911), *G. septentrionellum* Fyles (1911b), and *G. gibsoniellum* Busck (1915). For the most part, adults of the species in this study are not attracted to light; all five previously known species were described from reared adults, like the three new species described here. Captured adults are seldom abundant in collections; they are sometimes outnumbered by reared adults.

Brief remarks by Osten Sacken (1863) may comprise the earliest scientific description of a *Gnorimoschema* gall. This description, based on galls originating in Connecticut, is of historical interest only as the maker was identified