

Autographa gamma

Silver Y Moth



IDENTIFICATION AID

This identification aid illustrates the genitalia of the Silver Y Moth as well as the genitalia of the most common non-target species caught in traps with the pheromone for *Autographa gamma*. It complements the previously produced screening and diagnostic aids and is directed to those dedicated to species identification. It is primarily an extension of the work by S. Passoa (2006) titled, "Simplified screening aid for *Autographa gamma* in APHIS sticky traps."

This resource was produced by Julieta Brambila (USDA/APHIS/PPQ) for CAPS (Cooperative Agriculture Pest Survey program). Special appreciation is directed to Steve Passoa (APHIS/PPQ) for guidance, to Michael Pogue (USDA/ARS) for the careful review, and to Chris Looney from the Washington State Department of Agriculture for providing specimens of *A. californica* and genitalic photographs of several species. Appreciation also goes to Jim Vargo for his courtesy sharing of photographs of pinned specimens; Sarahlyne Guerrero (APHIS/PPQ) for the dissection of many specimens; Don Kitchen (Washington State Dept. Agric.) for providing photographs of *A. californica* genitalia; Lyle Buss (University of Florida, Entomology and Nematology Dept.) for photographs of pinned *Trichoplusia ni* and *Spodoptera frugiperda*; Charlie Covell from the McGuire Center for Lepidoptera and Biodiversity, in Gainesville, Florida, for the loan of *A. gamma* specimens; Dr. James Hayden from the Florida Dept. of Agriculture and Consumer Services, Division of Plant Industry (FDACS-DPI), for the loan of *Autographa pseudogamma* specimens; and Beverly Pope (FDACS-DPI) for library support.

PRIMARY SOURCES:

LAFONTAINE, J.D. and R.W. POOLE. 1991. The moths of America north of Mexico (MONA), Noctuoidea, Noctuidae (Part), Plusiinae. Fascicle 25.1, 182 p.

PASSOA, S. 2006. Simplified screening aid for *Autographa gamma* in APHIS sticky traps.

WHITTLE, K. 1986. Pests not known to occur in the United States or of limited distribution (PNKTO), number 75: Silver Y Moth. 16 p.

Autographa gamma

Silver Y Moth

The silver Y moth, *Autographa gamma* (L.), belongs in the family Noctuidae (“cutworms”), subfamily Plusiinae.

Autographa gamma moths are variable in size and coloration, ranging from 40 to 48 mm in wingspan, with forewing length about 20 mm, marbled brown, gray-brown, or occasionally yellow-brown or black. They tend to be smaller and grayer in the spring generation, while they tend to be larger and browner in the summer. At the center of the forewing is a silver or slightly golden Y- or Gamma-shaped marking (a), also called the ‘stigma’. The reniform spot (b) is oblique, constricted in the middle, with a shiny border. The hindwings are light brown with a wide dark brown margin (d), and with the veins covered with brown scales.

It is most similar in appearance to *Autographa californica* and *Rachiplusia ou*, but the latter two are dark gray and have a well-defined black streak from the subterminal line to the postmedial line, which is present (c) but diffuse in *A. gamma*.



a: silver Y- or Gamma-shaped stigma

b: reniform spot constricted in the middle

c: diffuse black streak

d: wide brown margin on hind wing

Autographa gamma

Silver Y Moth

Autographa gamma (L.) is very similar to several North American species in the subfamily Plusiinae (Noctuidae), some of which are attracted to the same lure. The wing color pattern of *A. gamma* is not distinctive. For species identification, it is necessary to dissect the genitalia.

The genitalia of *Autographa gamma* are characterized by valvae elongate and blade-like in shape, angled and broader apically (a) than at base, without a corona but with a few large setae (b), and with a finger-like elongate clasper (c) in the center at about 2/3 the length of the valva. The clavus (d) is rounded apically and has a few short setae at the apex. The juxta (e) has a thin, clubbed process. The uncus is elongate, curved, slightly swollen near the apex, and has a curved tooth apically (f). The saccus is elongate, V-shaped (g).

- a: valva
- b: large setae
- c: clasper
- d: clavus
- e: juxta
- f: uncus
- g: saccus

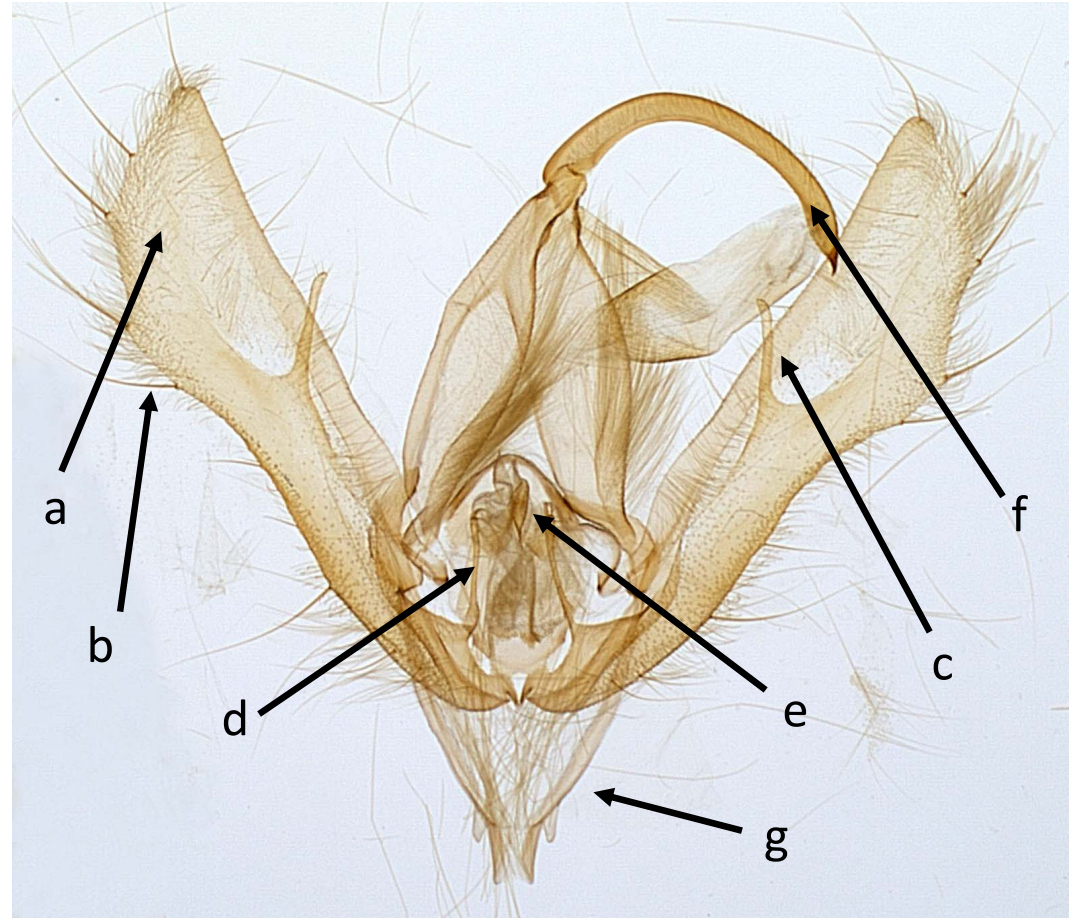
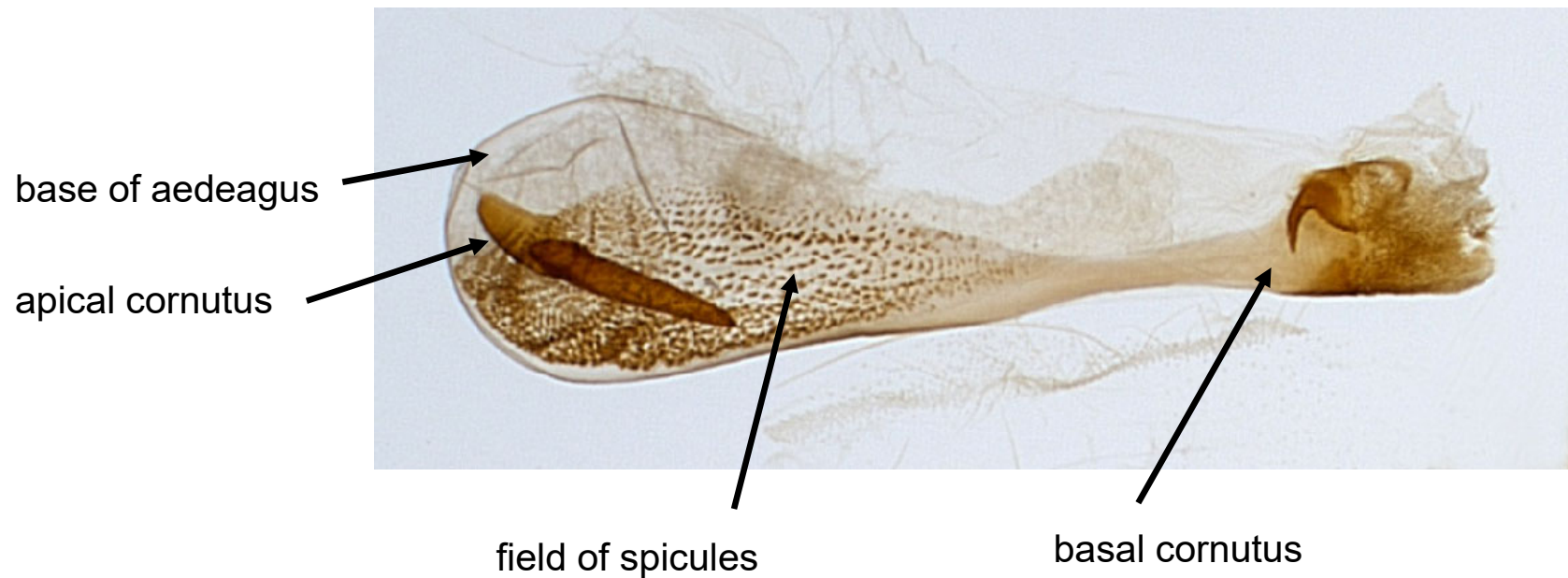


Image by Chris Looney, modified

Autographa gamma

Silver Y Moth

The aedeagus of *Autographa gamma* is bulbous at the base. The vesica has two spines (called cornuti), an elongate apical cornutus surrounded by a field of pointed granules (spicules) and a short, strongly curved, basal cornutus. The presence of the basal curved cornutus and the field of spicules, which can be seen through the wall of the aedeagus, distinguish *A. gamma* from other *Autographa* species as well as from other plusiine species.



Autographa californica

Alfalfa Looper Moth



Image by Jim Vargo

Autographa gamma is most similar to *A. californica* (Speyer), a native western species. Both are attracted to the same lure. Dissection of genitalia is essential for correct identification, but eversion of the vesica is not required. By coloration, both can be confused with *Rachiplusia ou*, but the latter has spines on the tibiae, which are not present in *Autographa* species.

The most important characters that distinguish *A. californica* from *A. gamma* are on the vesica. The apical cornutus on the vesica of *A. californica* is curved and has a broad flange. A basal cornutus is absent, and a field of spicules near the apical cornutus is not present.



Images by Don Kitchen, modified



apical cornutus

Aedeagus

Autographa pseudogamma

False Silver Y Moth



Image by Jim Vargo

Autographa pseudogamma (Grote) is another native species very similar to *A. gamma*, from which it can be distinguished by genitalia characters. Dissection is required, but not eversion of the vesica. *Autographa pseudogamma* is characterized by having a single cornutus on the vesica, while *A. gamma* has two cornuti. The apical cornutus in *A. pseudogamma* is straight while in *A. californica* it is curved. A basal cornutus and a field of spicules are both absent, distinguishing it from *A. gamma*.



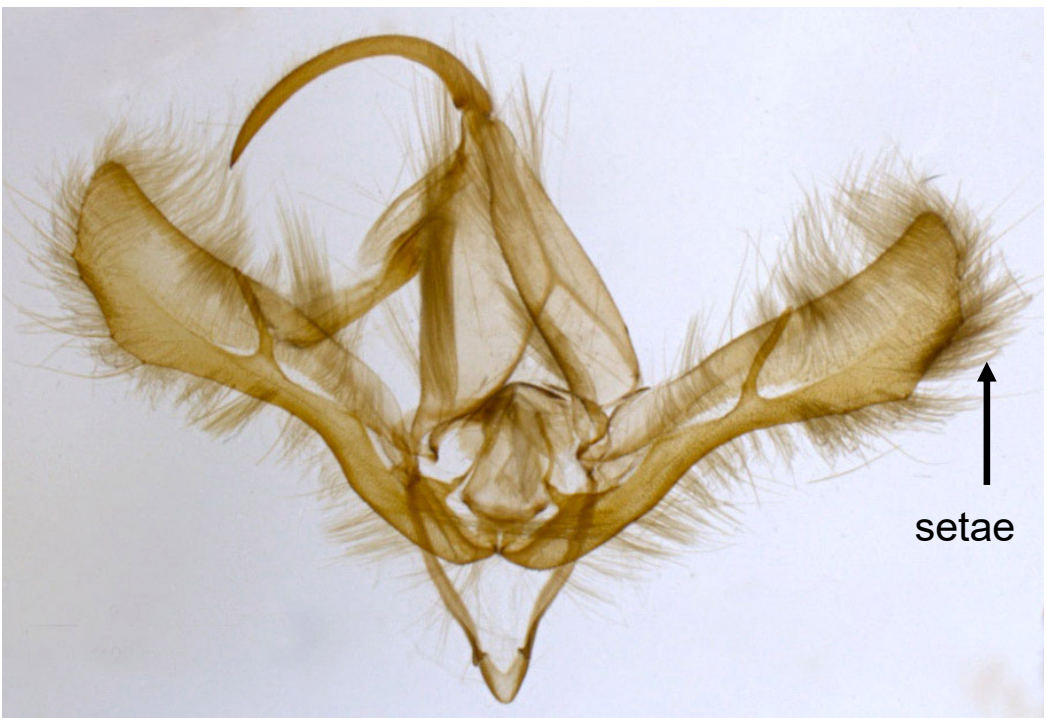
apical cornutus

Autographa ampla

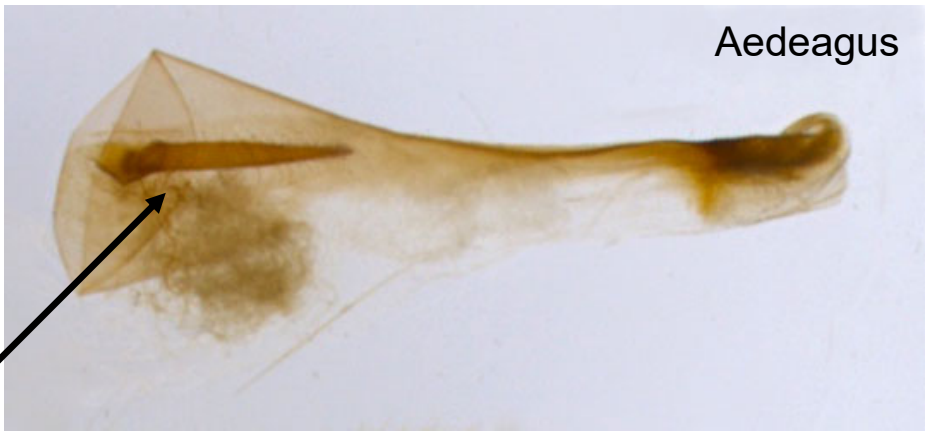
Large Looper Moth



Image by Jim Vargo



Autographa ampla (Walker) is occasionally caught in *A. gamma* surveys. The forewing coloration is diagnostic of this species and dissection is only necessary in damaged specimens. The male genitalia of *A. ampla* is distinguished from *A. gamma* by several characters, including prominent setae on the outer margin of the valva and a single slender cornutus with a produced base. The vesica lacks a curved basal cornutus and a field of spicules, which are characteristic of *A. gamma*.



apical cornutus

Images by Chris Looney, modified

Chrysodeixis inclusens

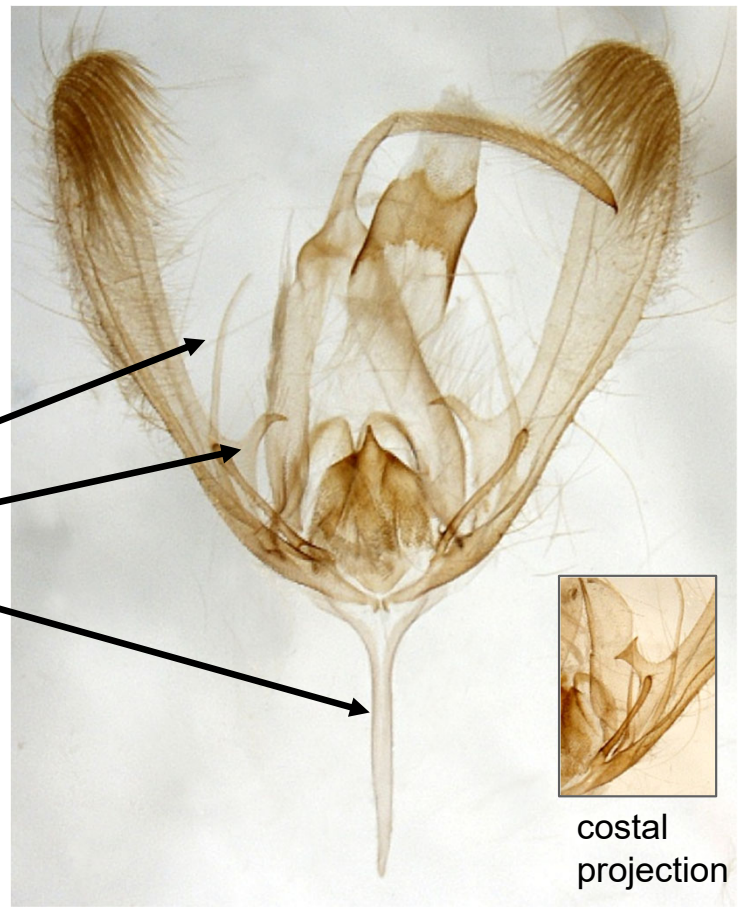
Soybean Looper Moth



Image by Jim Vargo



stigma



clasper

costal projection

saccus



costal projection

The most commonly collected plusiine species collected during *A. gamma* surveys, especially in the eastern U.S., is *Chrysodeixis inclusens* (Walker). The silver stigma in the forewing is variable, sometimes divided in two. The genitalia of *C. inclusens* are unique and useful for its identification, especially the long and thin saccus, narrow valva, elongate clasper, and curved costal projection (variable in shape) near the base of the valva. The aedeagus is bulbous at the base and the vesica has a basal curved cornutus.



Aedeagus

base of aedeagus

Rachiplusia ou Grey Looper Moth

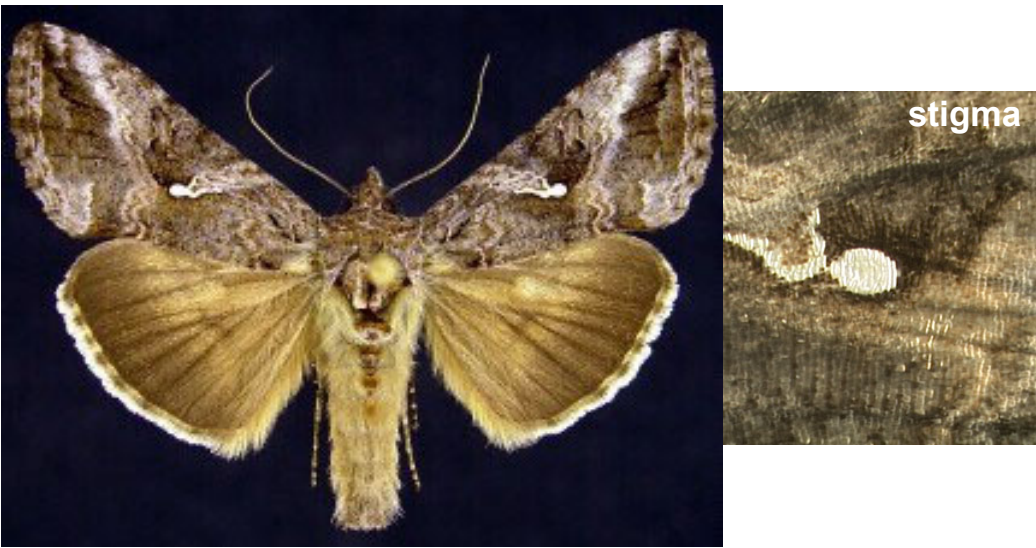
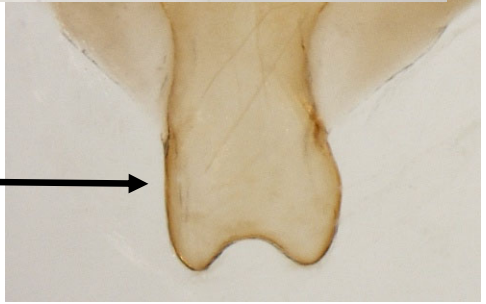


Image by Jim Vargo



clavus
saccus
cornuti



Aedeagus

Rachiplusia ou (Guenée) is easy to confuse with *A. californica* since its size and wing coloration are similar, especially when in poor condition. The shape of the silver stigma is variable. It is the only plusiine (other than *Syngrapha ignea*) with spines on the tibiae on all three pairs of legs. The genitalia are characteristic and make easy to distinguish. The valvae are truncate, lack claspers, and have a very long clavus. The shape of the saccus is enough for an identification; it has two lateral flanges, the apex appearing bifurcated. The aedeagus is bulbous at the base and the vesica has two patches of cornuti.

Anagrapha falcifera

Celery Looper Moth

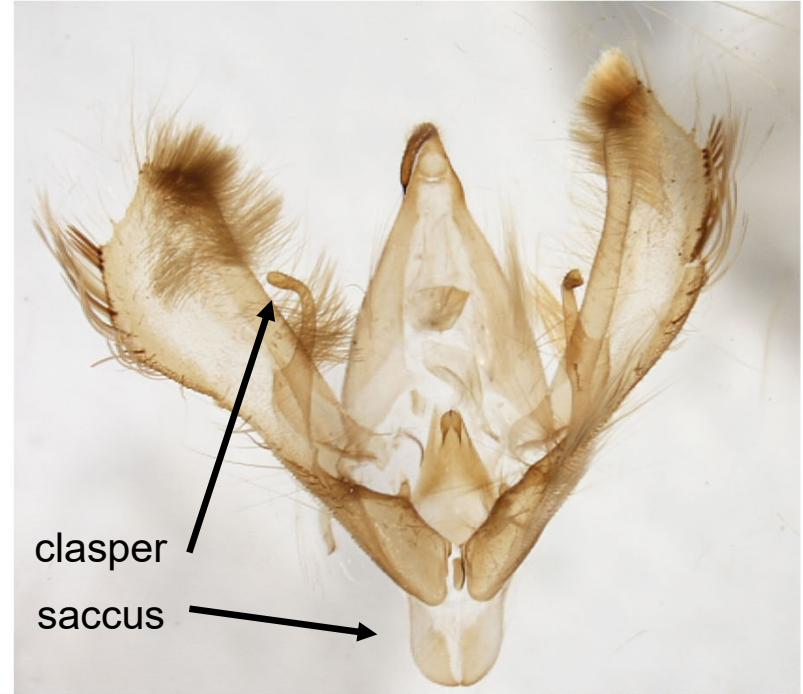


Image by Jim Vargo

Anagrapha falcifera (Kirby) can be recognized without dissection by its distinctive forewing color pattern, particularly by the long-tailed silver stigma. The genitalia are notable by the twisted S-shaped clasps and by various aspects of the valva, including the truncate apex, dorsal margin thickly clothed with setae, and ventral margin with a row of stout spine-like setae near the apex. The saccus is short and rounded. The aedeagus has two sclerotized bands and the vesica has a grooved apical cornutus.



Uncus



clasper

saccus



Valva



cornutus

Aedeagus

Ctenoplusia oxygramma

Sharp-Stigma Looper Moth



Image by Jim Vargo

The wings of *Ctenoplusia oxygramma* (Geyer) are dark gray-brown and have a uniquely shaped silver stigma (elongate and angular). The genitalia are also diagnostic of the species. Notable are the blade-like setae on the outer margin of the valva, the elongate saccus with three apical projections, and the long apical cornutus on the vesica.



Saccus



cornutus

Aedeagus

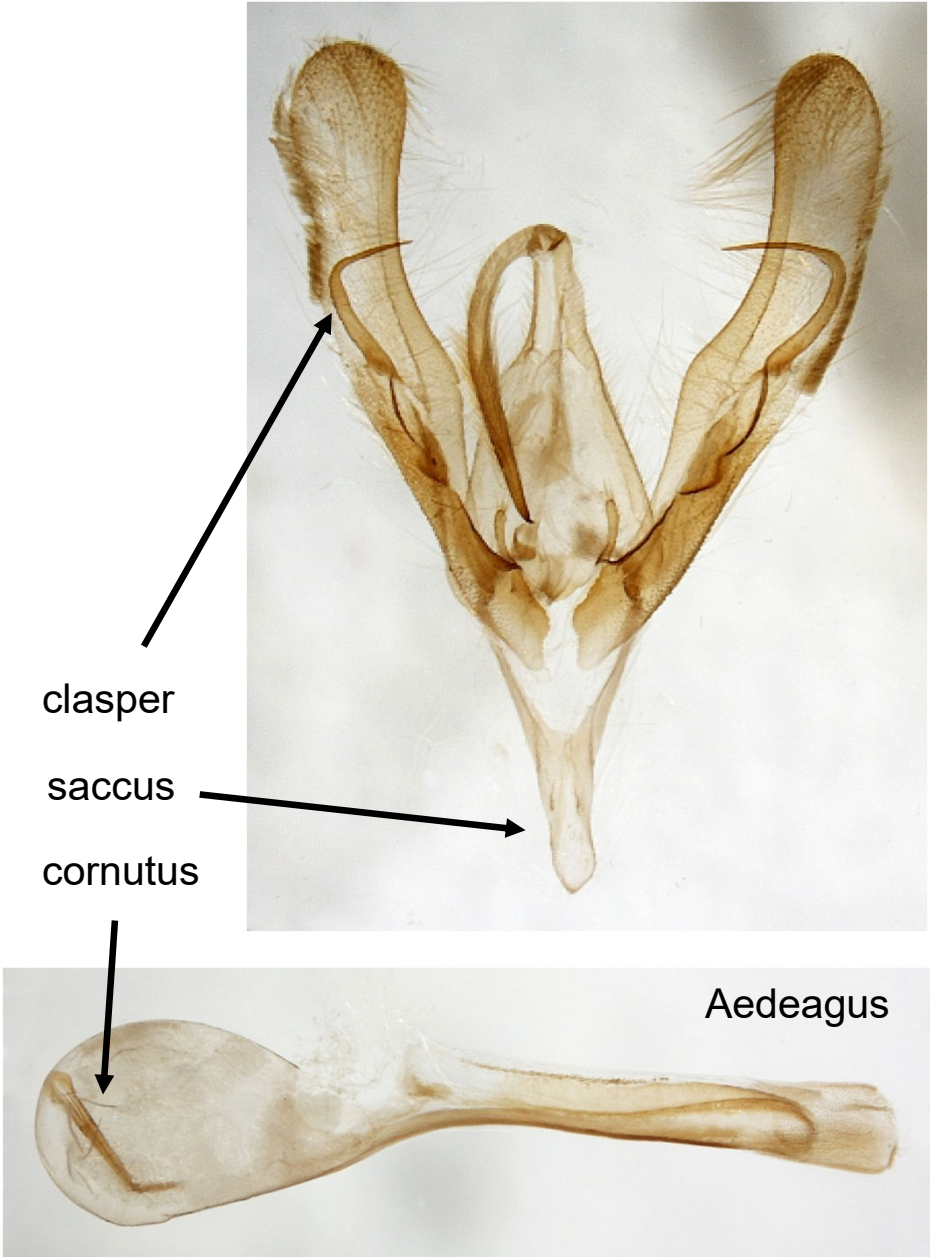
Trichoplusia ni

Cabbage Looper Moth



Image by Lyle Buss

Trichoplusia ni (Hübner) is distinguished by a stigma in the form of a double silver mark, although its shape is variable. Dissection of the genitalia is recommended. The main genitalia characters that make identification of this species easy are the large and recurved clasper on the center of the valva, the elongate V-shaped saccus, bulbous base of the aedeagus, and the long apical cornutus on the vesica.



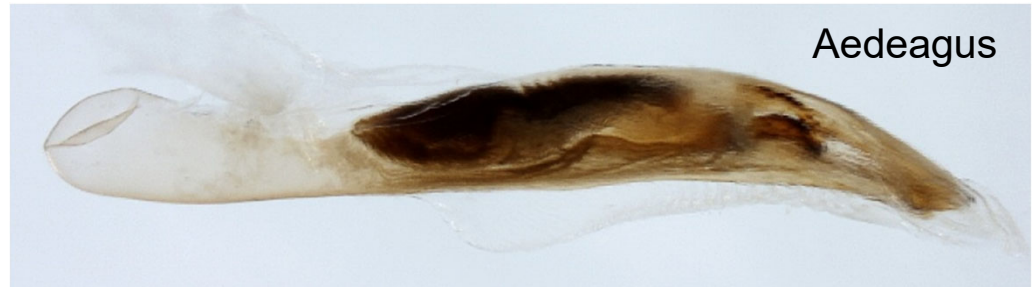
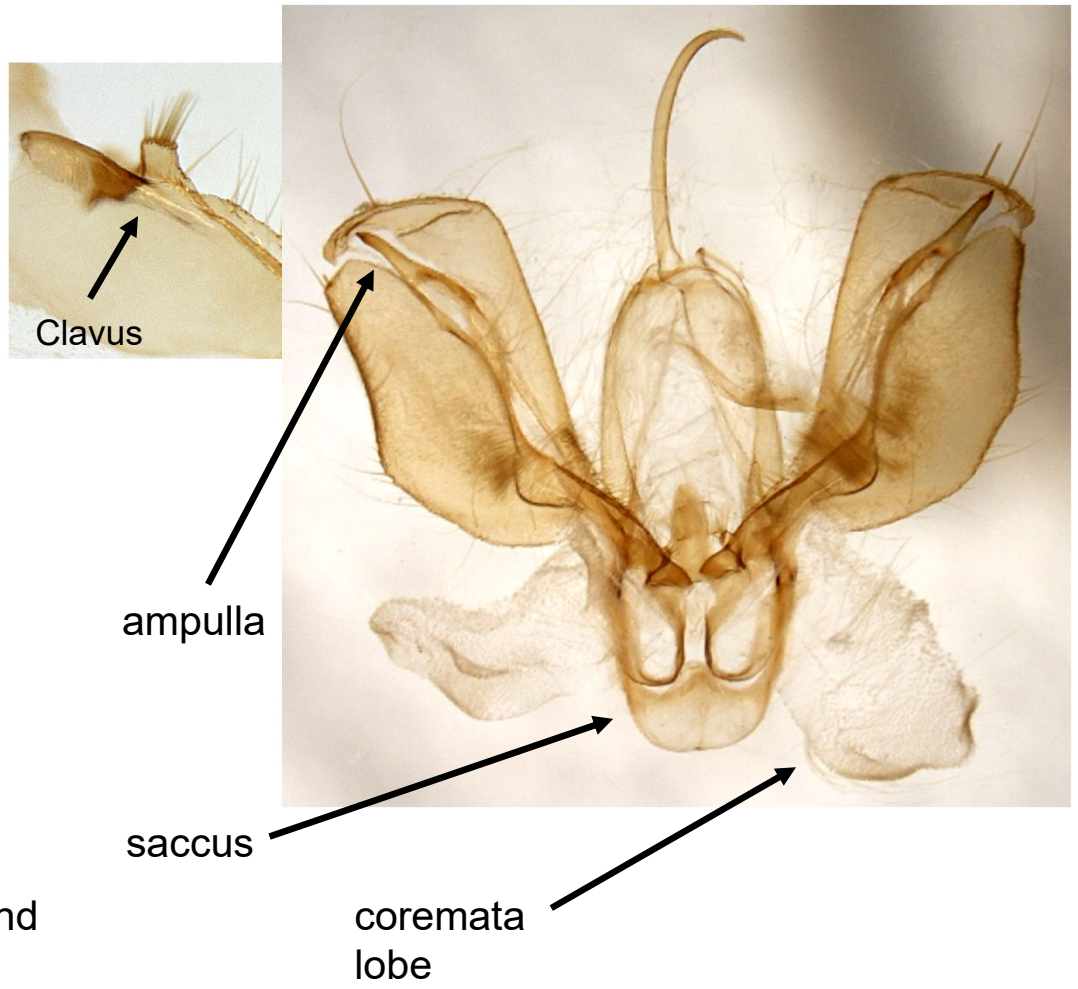
Spodoptera frugiperda

Fall Armyworm



Image by Lyle Buss, modified

Spodoptera frugiperda (J.E. Smith), not a plusiine noctuid, is also found in *A. gamma* survey traps. It lacks a silver stigma on the forewing. The valvae are broad and have a truncate apex, lack a clasper, have a slightly curved ampulla, have a diagnostic short and setose clavus, have a single coremata lobe, and have a rounded saccus. The aedeagus has patches of spines and granules and does not have large cornuti, quickly distinguishing this species from *Autographa gamma*.



Summary (a selection)

Images by Julieta Brambila unless otherwise indicated.

