



# *Autographa gamma* (L.)

## Silver Y Moth



### IDENTIFICATION AID

This identification aid illustrates the genitalia of the Silver Y Moth as well as 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 (USDA/APHIS/PPQ) for guidance; to Michael Pogue (USDA/ARS) for the careful review; to Chris Looney from the Washington State Department of Agriculture for providing specimens of *A. californica* and genitalic photographs of several species; Jim Vargo for his courtesy sharing of photographs of pinned specimens; Sarahlyne Guerrero (USDA/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, for the loan of *Autographa pseudogamma* specimens; and Beverly Pope (Florida Dept. of Agriculture and Consumer Services, Division of Plant Industry) for library support.

#### Primary references:

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.

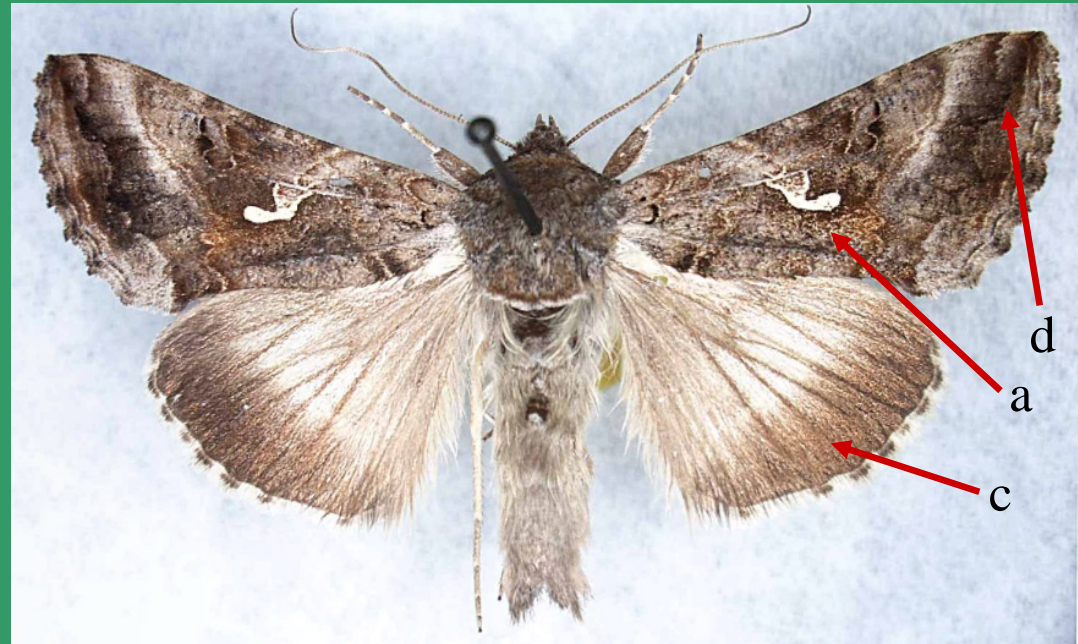
# *Autographa gamma* (L.)

## The Silver Y Moth

The silver Y moth, *Autographa gamma* (Linnaeus), 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 (c), 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 (d) but diffuse in *A. gamma*.



Images by Julieta Brambila

***Autographa gamma* 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 of *A. gamma* is not distinctive. Therefore, for final identification, it is necessary to dissect and examine adult male genitalia.**

# *Autographa gamma* (L.)

## The Silver Y Moth

The genitalia of *Autographa gamma* (L.) are characterized by valves 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 valve. 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).

The genitalia of *A. gamma* (the target) is most similar to the genitalia of *A. californica*, a western species strongly attracted to the lure for *A. gamma*, and hence a commonly caught species. However, in southern and eastern United States, other non-target species are caught which may be similar in wing coloration but which strongly differ in the various genitalic characters, as presented in this Identification Aid.

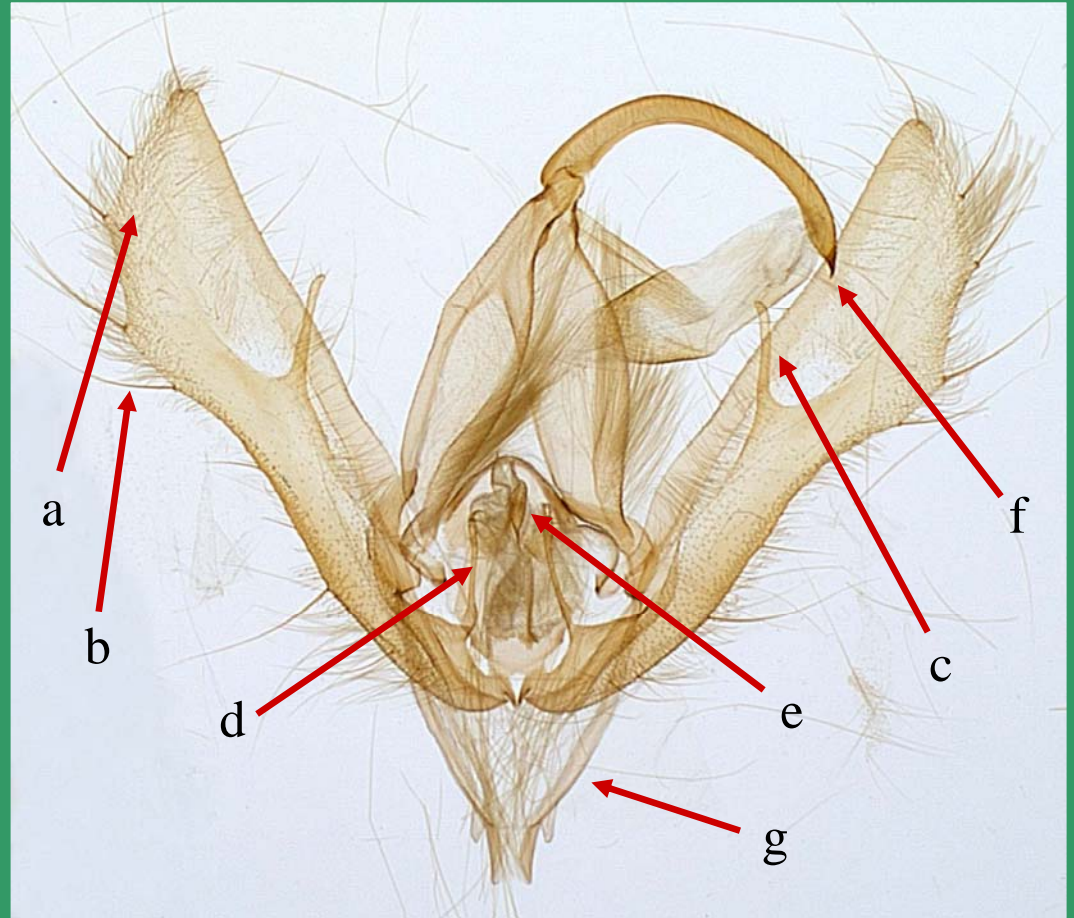


Image by Chris Looney, modified

# *Autographa gamma* (L.)

## The Silver Y Moth

The aedeagus of *Autographa gamma* is bulbous at base (a). The vesica is about 1.5 times the length of the aedeagus, with about a one-half rotation coil. The vesica has two spines (called cornuti), an elongate apical cornutus (b) surrounded by a field of pointed granules (spicules) (c) and a short, strongly curved, basal cornutus (d). The presence of the basal curved spine and the field of spicules, which can be seen through the wall of the aedeagus, distinguish *A. gamma* clearly from other *Autographa* species as well from other plusiine species.

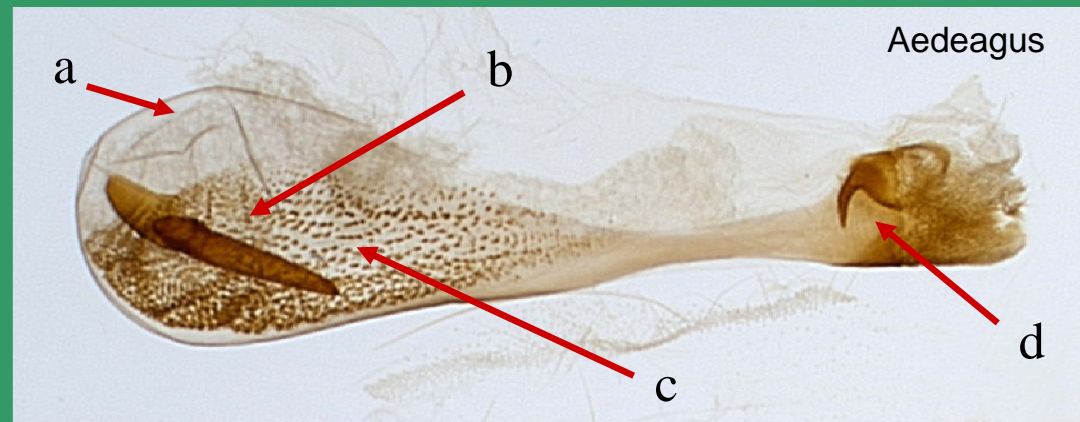


Image by Chris Looney, modified

# *Autographa californica* (Speyer)

## The Alfalfa Looper Moth



Image by Jim Vargo

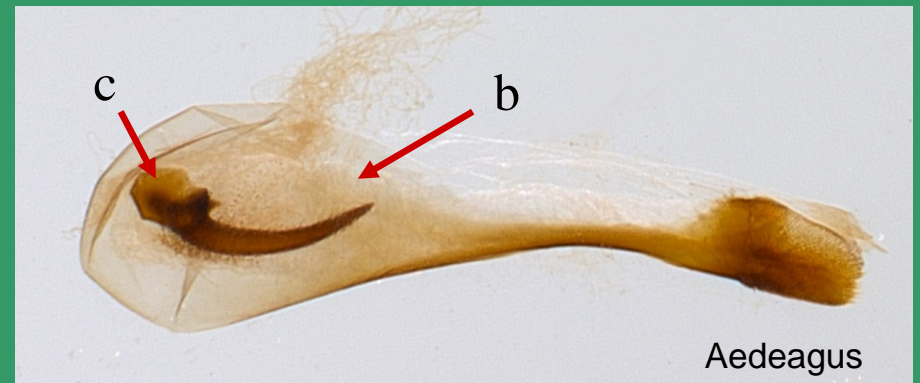


Image by J. Brambila

*Autographa californica* (Speyer) is most closely related to *A. gamma* and is commonly found in *A. gamma* traps in western U.S. It is distinguished from *A. pseudogamma*, a native species, by a black streak (a) toward the apex of the forewing. These three species look very similar to each other, especially in the fish-hook shaped silver stigma. Dissection of genitalia is essential for their correct identification, but eversion of the vesica is not required. By coloration, they 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 (b) on the vesica of *A. californica* is curved and has a broad flange (c); a basal cornutus is absent; and pointed granules near the apical cornutus are not present (see the latter two characters in the aedeagus photograph of *A. gamma*).



Images by Don Kitchen, modified



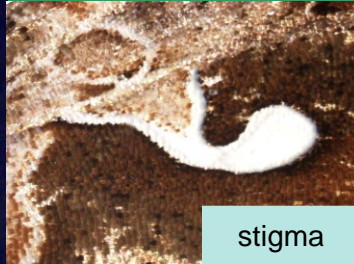
Aedeagus

# *Autographa pseudogamma* (Grote)

## The False Silver Y Moth



Image by Jim Vargo



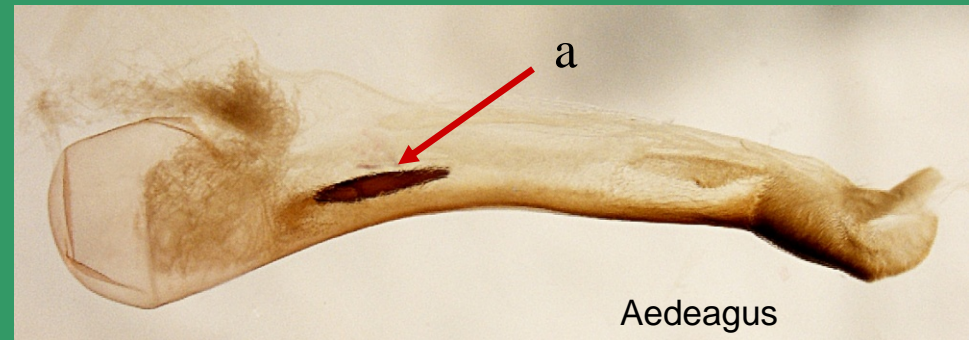
stigma

Image by J. Brambila

*Autographa pseudogamma* (Grote) is a native species not commonly found in traps with *A. gamma* pheromones. It is very similar in wing color pattern to both *A. gamma* and another native species, *A. californica*, from which it can be distinguished primarily by genitalic characters. Dissection of genitalia is essential for its correct identification but eversion of the vesica is not essential. *Autographa pseudogamma* is characterized by having a single cornutus on the vesica, while *A. gamma* has two cornuti. The cornutus (a) in *A. pseudogamma* is straight while in *A. californica* the cornutus is curved. A basal cornutus is absent and a field of pointed granules near the apical cornutus is also absent, characters present in *A. gamma* and which distinguish it from all other *Autographa* species.



Images by J. Brambila



Aedeagus

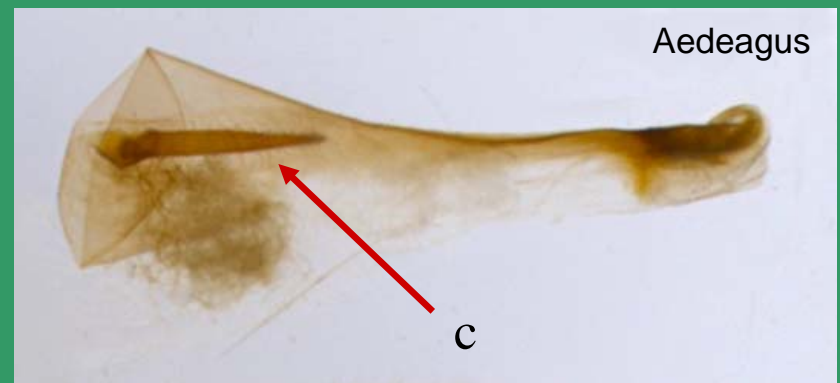
# *Autographa ampla* (Walker)

## The Large Looper Moth



Image by Jim Vargo

*Autographa ampla* (Walker) is occasionally caught in *A. gamma* survey traps in northern or western U.S. The forewing coloration is diagnostic of this species (a) and dissection is only necessary in damaged specimens. The male genitalia of *A. ampla* is very similar to that of *A. gamma*, although several characters distinguish them. In *Autographa ampla* the outer margin of the valve has prominent setae (b) and the vesica has a single slender cornutus (c) with a produced base, lacking the curved, basal cornutus characteristic of *A. gamma*.



Aedeagus

# *Chrysodeixis includens* (Walker)

## Soybean Looper Moth



Image by Jim Vargo

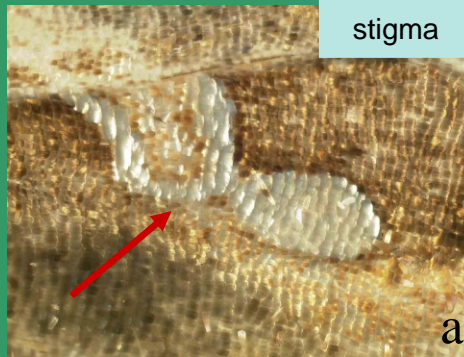
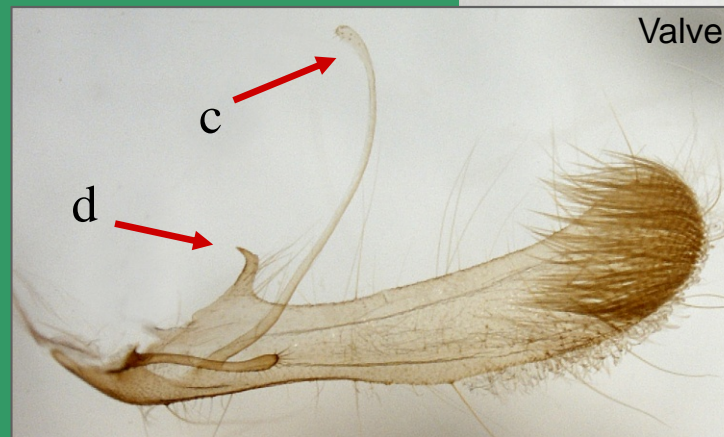
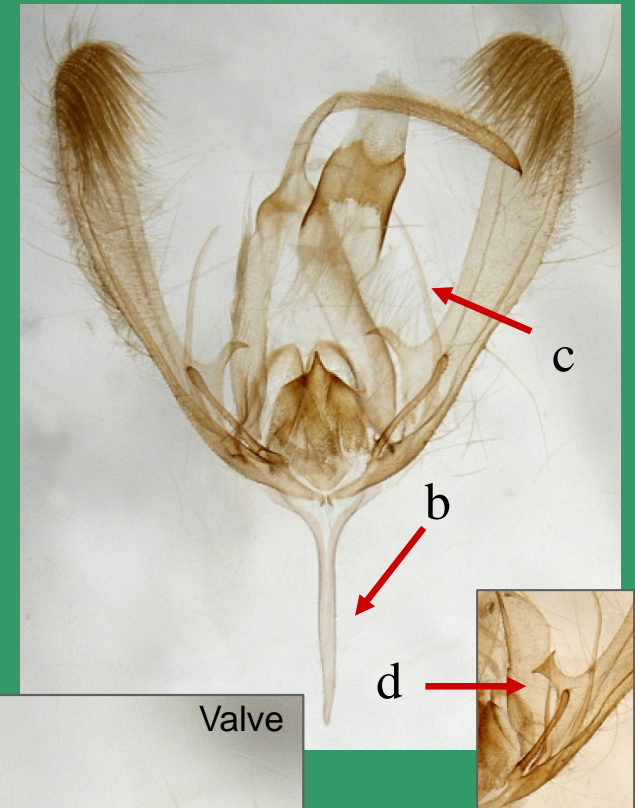


Image by J. Brambila



Images by Julieta Brambila



Aedeagus

One of the plusiine moths that is most commonly collected during *A. gamma* surveys, especially in the eastern U.S., is *Chrysodeixis includens* (Walker). The silver marking (stigma) (a) in the forewing is variable, sometimes divided in two. The genitalia of *C. includens* are unique and useful for its identification. The best characters are the extremely long and pointed saccus (b), the extremely long and thin clasper (c); and the costal projection (variable in shape) near the base (d) of the valve. The aedeagus is bulbous at the base and the vesica has a proximal hooked cornutus.



# *Rachiplusia ou* (Guenée)

## The Gray Looper Moth



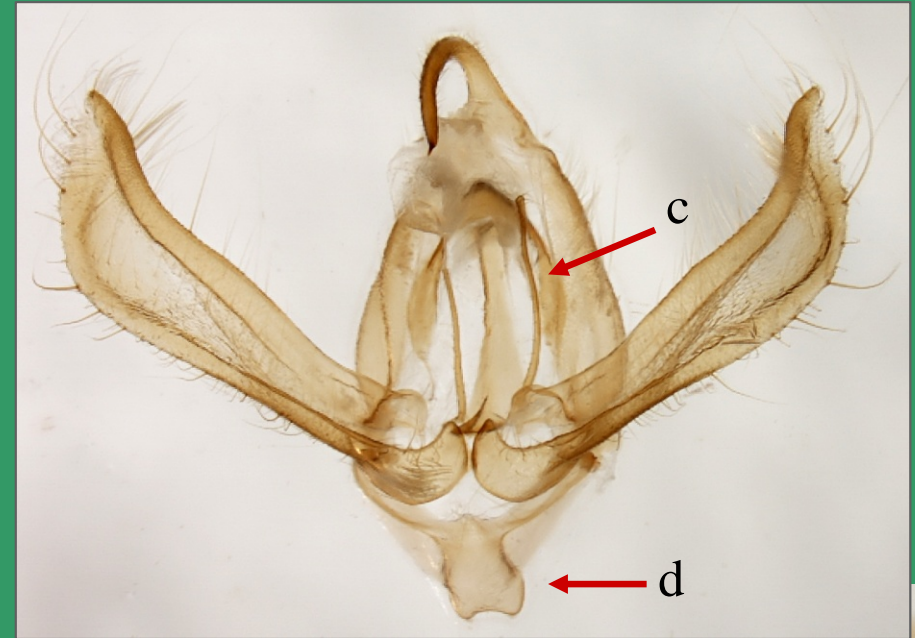
Image by Jim Vargo

stigma



a

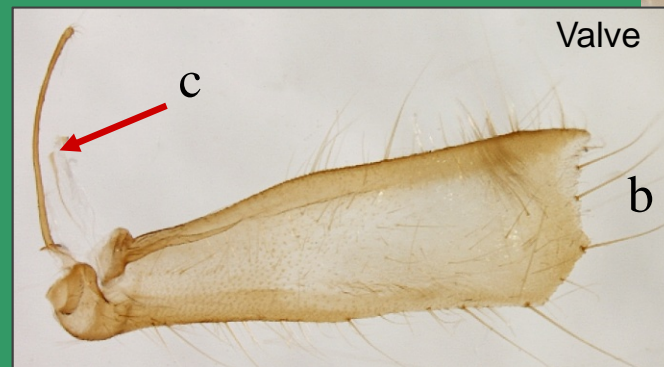
Image by Julieta Brambila



c

d

In the southern states, *Rachiplusia ou* (Guenée) is easy to confuse with *A. californica* as its size and forewing coloration is similar, especially when in poor condition. The shape of the silver stigma is variable (a). It is the only plusiine, other than *Syngrapha ignea*, with spines on the tibia on all three pairs of legs. The genitalia are very different and easy to distinguish. The valves are truncate (b), lack claspers, and have a very long clavus (c). The shape of the saccus is enough for an identification as it has two lateral flanges, the apex appearing bifurcated (d). The aedeagus is bulbous at the base (e) and the vesica has two patches of cornuti (f).



Valve

c

b



d

Images by Julieta Brambila



Aedeagus

e

f

# *Anagrapha falcifera* (Kirby)

## The Celery Looper Moth



Image by Jim Vargo



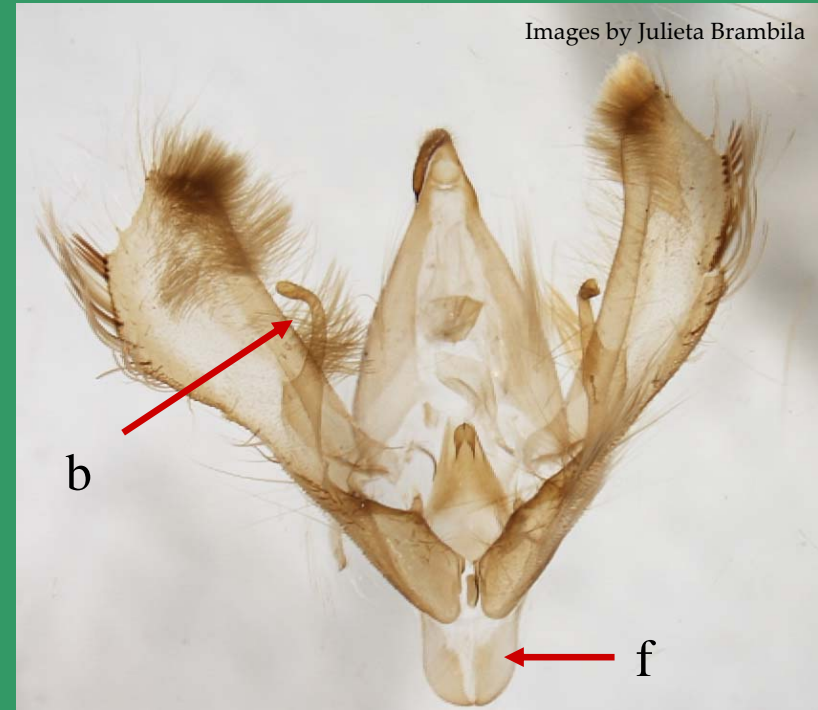
stigma

a

Image by Julieta Brambila



Uncus



Images by Julieta Brambila

b

f

*Anagrapha falcifera* (Kirby) is regularly caught in *A. gamma* survey traps, although not in high numbers. It can be recognized without dissection by its distinctive forewing coloration, particularly by the form of the stigma (long, unbroken, and appearing long-tailed) (a). The genitalia are notable by the twisted S-shaped claspers (b) and by various aspects of the valves, including the truncate apex (c), dorsal margin thickly clothed with setae (d), and ventral margin with a row of stout spine-like setae (e) near the apex. The saccus (f) is short and rounded at apex. The aedeagus has two sclerotized bands (g). The vesica has a grooved apical cornutus (h).

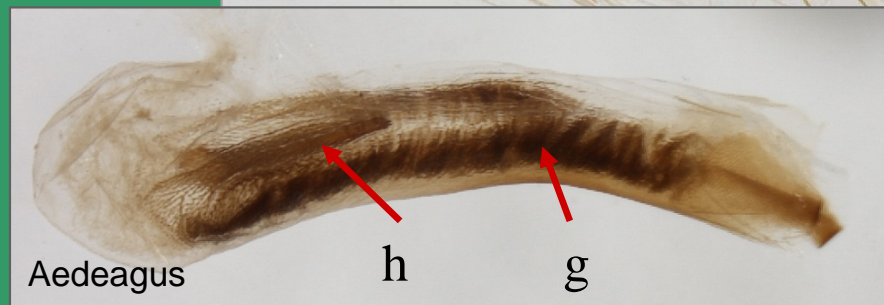


Valve

d

c

e



Aedeagus

h

g

# *Ctenoplusia oxygramma* (Geyer)

## Sharp-Stigma Looper Moth

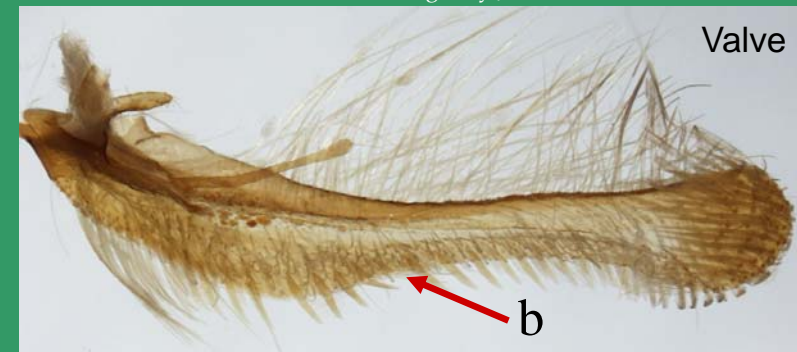
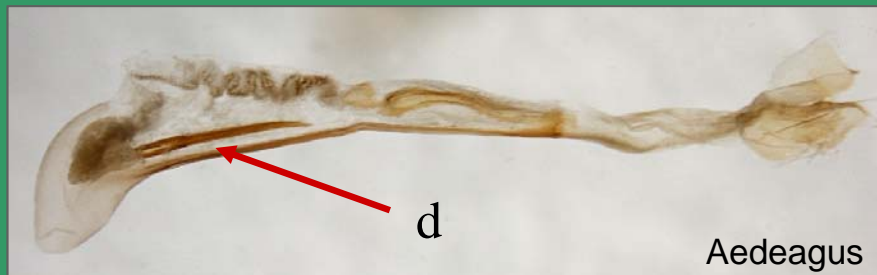


Image by Jim Vargo., modified

*Ctenoplusia oxygramma* (Geyer) has been found in some *A. gamma* traps from NE U.S.A., although it also occurs in the SE. The forewings are dark gray-brown with a uniquely shaped silver stigma (oblique, elongate, and angular) (a). The genitalia are also uniquely shaped and diagnostic of the species. Notable are the blade-like setae (b) on the outer margins of the valves; the elongate saccus (c) with three apical projections; and the long apical cornutus on the vesica (d).



Images by Julieta Brambila



# *Trichoplusia ni* (Hübner)

## The Cabbage Looper Moth



Image by Lyle Buss

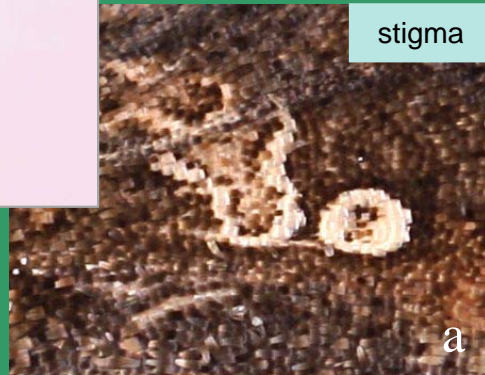
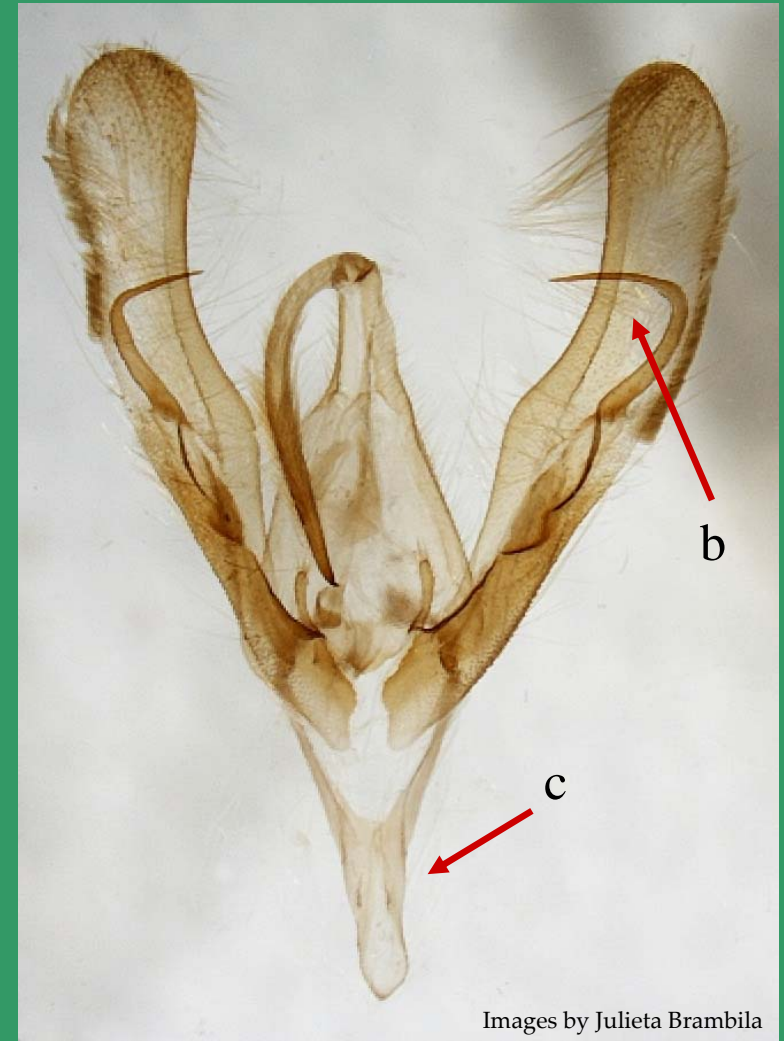


Image by Lyle Buss, modified

Another of the plusiine moths most commonly collected during *A. gamma* surveys anywhere in the U.S. , is *Trichoplusia ni* (Hübner). The stigma on the forewing is a double silver mark (a). Because the wing coloration and the shape of the stigma are variable, it is essential that genitalia are examined. The main genitalic characters that make identification of this species easy are the large and recurved clasper on the center of the valves (b), the elongate V-shaped saccus (c), bulbous base (d) of the aedeagus, and the long apical cornutus on the vesica (e).



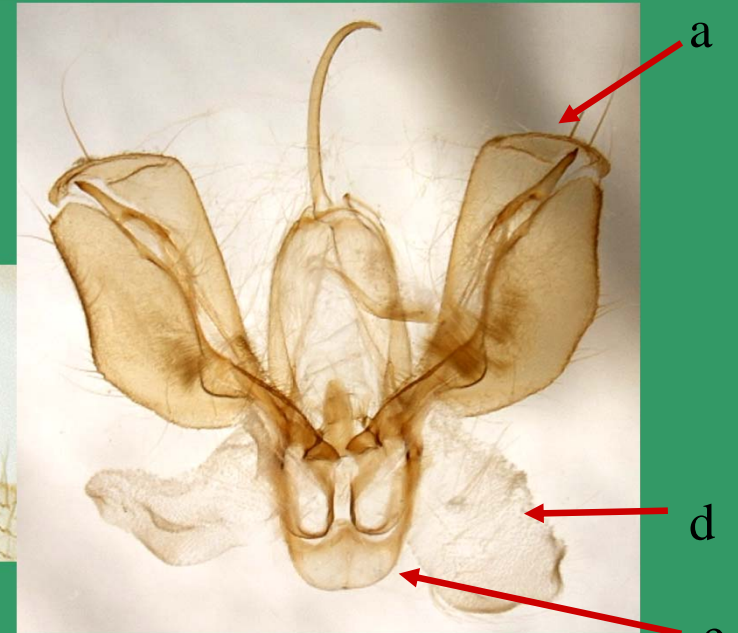
# *Spodoptera frugiperda* (J. E. Smith)

## Fall Armyworm

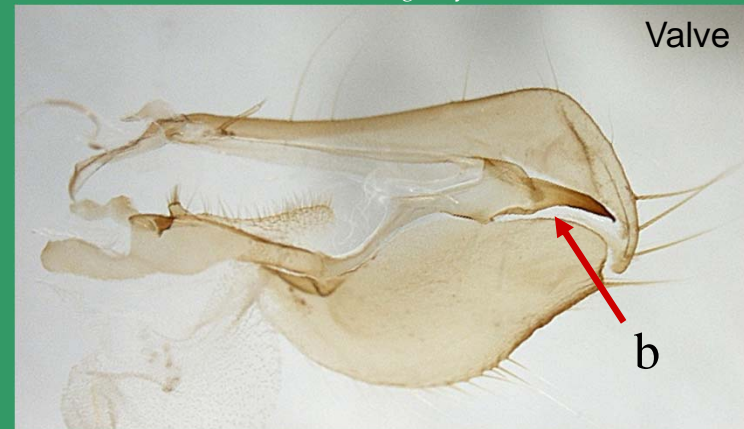


Image by Lyle Buss, modified

Sometimes, *Spodoptera frugiperda* (J. E. Smith), not a plusiine noctuid, is caught in large numbers in *A. gamma* survey traps because it is abundant in agricultural fields. It is unlike *A. gamma* in part by its smaller size, lack of a silver stigma on the forewing, and by genitalic characters. The valves are broad and have a truncate apex (a); the clasper is absent; an ampulla is present and is slightly curved, nearly reaching the apex of the valve (b); the clavus is short and setose (c); a single, long, coremata lobe is present (d); and the saccus (e) is broadly rounded at the apex. The aedeagus has patches of spines (f) and granules and does not have large cornuti, quickly distinguishing it from the aedeagus of *Autographa gamma*.

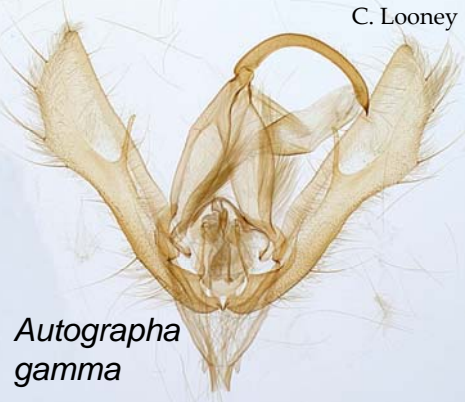


Images by Julieta Brambila



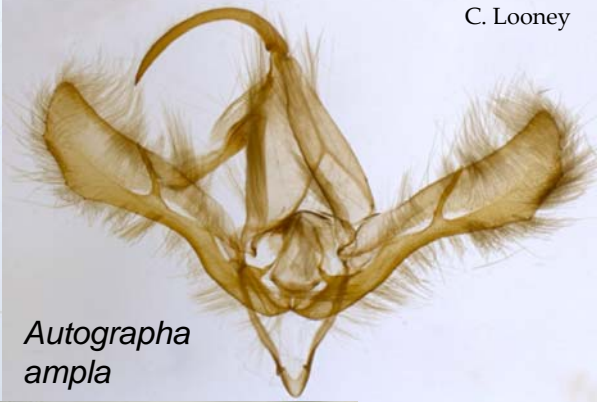
# Summary (a selection)

C. Looney



*Autographa gamma*

C. Looney



*Autographa ampla*



*Rachiplusia ou*

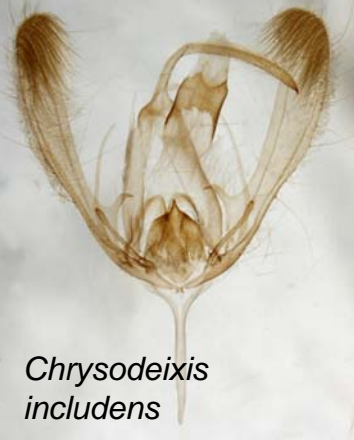


*Ctenoplusia oxygramma*

D. Kitchen



*Autographa californica*



*Chrysodeixis includens*

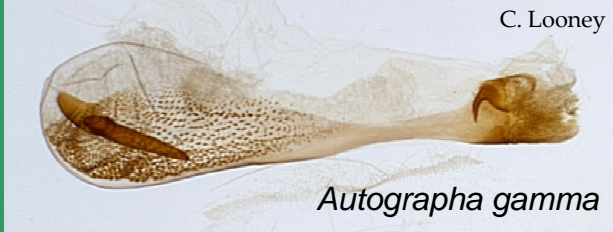


*Anagrapha falciifera*



*Trichoplusia ni*

C. Looney



*Autographa gamma*

C. Looney



*Autographa ampla*

D. Kitchen



*Autographa californica*



*Rachiplusia ou*



*Spodoptera frugiperda*



*Chrysodeixis includens*