

LepIntercept

An identification resource for intercepted Lepidoptera larvae



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GELECHIIDAE - *Pectinophora gossypiella* (Saunders)

Taxonomy

Gelechioidea: Gelechiidae: Pexicopiinae: *Pectinophora gossypiella* (Saunders)

Common names: pink bollworm

Synonyms: *Gelechia umbripennis*

Larval diagnosis (Summary)

- Adfrontal setae are widely separated and AF2 is at the apex of the front
- Mandible with four teeth, the last one smaller than the others
- Crescent shaped marking often present on the prothoracic shield
- Abdominal prolegs with crochets in a uniordinal penellipse
- Anal crochets in a single uninterrupted band
- SD1 on A9 is setaform, not hairlike
- SD1 on A8 is dorsad to the spiracle

Host/origin information

The pink bollworm is most commonly intercepted on okra (*Abelmoschus esculentus*) originating from the Caribbean. More than 89% of all interceptions are from Haiti.

Origin	Host(s)
Haiti	<i>Abelmoschus esculentus</i>

Recorded distribution

Pectinophora gossypiella is distributed in scattered locations throughout southern Europe, Africa, the Middle East, Asia, and Australia. In the New World it occurs from the southern U.S. to Argentina, including the Caribbean (Gall 1966, Hill 1975).

Identification authority (Summary)

It is important to restrict identifications of *P. gossypiella* to the proper hosts and known distribution. *Pectinophora gossypiella* feeds on Malvaceae and has been recorded from the locations listed above. Many of the exotic species related to the pink bollworm, although not common at ports, represent a serious threat to North American agriculture. Old World interceptions should be examined carefully to eliminate these as possibilities.

Pest characterization

(Based on Cavey 2001, Hill 1975)

- Taxonomy: **High**. Identification to species is normal in late instars.
- Distribution: **Medium**. *Pectinophora gossypiella* has a limited distribution in the U.S.
- Potential Impact: **High**. *Pectinophora gossypiella* is a serious pest.

This ranking characterizes *Pectinophora gossypiella* as quarantine significant for the U.S.

Larval diagnosis (Detailed)

The larva of *P. gossypiella*, the pink bollworm, has been described several times. Some examples are Busck (1917), Heinrich (1921), Capps (1958), Peterson (1962), Weisman (1986), Stehr (1987), Sri et al. (2010), and Schnitzler et al. (2011). Schmutterer (1990) photographed two color forms of the larva. One is an early instar with a dark head and prothoracic shield followed by segmental pink transverse bands on a light yellow ground color. The other is older and has the head, prothoracic shield and body colored light pink. The abdomen is paler between the segments. Color photographs in Hughes and Moore (2011) are similar to Schmutterer (1990).

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Fig. 1: Late instar, lateral view



Fig. 2: Late instar, lateral view



Fig. 3: T1 shield



Fig. 4: Abd. crochets



Fig. 5: Anal crochets



Fig. 6: Head

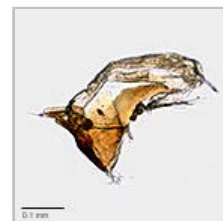


Fig. 7: Hypo. complex



Fig. 8: Mandible

Pearson (1958) described the four instars of *P. gossypiella* and illustrated two examples with a colored plate. Naranjo et al. (2002) reviewed the literature on the pink bollworm.

Typically, the larva of *P. gossypiella* is recognized by a combination of characters (Busck 1917: 346, Heinrich 1921: 808-809, Weisman 1986). The adfrontal setae are widely separated and AF2 is at the apex of the front; the mandible has four teeth with the last one smaller than the others; a crescent shaped marking is often present on the prothoracic shield; the abdominal prolegs have crochets in a uniordinal penellipse; the anal crochets are in a single uninterrupted band; and SD1 on A9 is setiform, not hairlike. The L group of A9 is normally bisetose (e.g., Okumura 1961, Stehr 1987), but Busck (1917: plate 11) and Heinrich (1921: plate 103) showed a microscopic third L seta. We have not been able to confirm this chaetotaxy in the specimens we examined. Unlike some other gelechiids, *P. gossypiella* lacks an anal comb (Heinrich 1921).

Several species of New World *Anatrachyntis* (= *Pyroderces* or *Sathrobrotia*) intercepted at United States ports can be confused with the pink bollworm. They have SD1 on A8 anterior to the spiracle, SD1 and D1 joined on A9, and the abdominal crochets in a circle (Adamski et al. 2006). The pink bollworm has abdominal crochets in a uniordinal penellipse and SD1 is dorsal of the spiracle on A8. The D and SD setae of A9 are on separate pinacula.

Several pest species are easily confused with *P. gossypiella*. The cotton stem moth, *P. subcinerea* (= *vilella*) has the SV group bisetose on A8 and SD1 hairlike on A9 (Capps 1958a, b). *Mometa zemiodes*, the false pink bollworm, is found in rotten cotton bolls from Africa (McKinley 1967). The mandible has four teeth of almost equal size with a sharp point on the outer edge; the labrum is rounded with a notch of about 45 degrees; the pinacula are large and the pink body color pattern is diffuse (Pearson 1958: 201, McKinley 1967: figs. 8, 14). *Pectinophora scutigera* is a PKNT0 species (Pests not known to occur [in the United States]) (Hodges 1984). It differs from the pink bollworm in having the abdominal crochets in two transverse bands and the anal crochets divided in two groups (Capps 1958b, Hodges 1984). For more information on the larva of *P. scutigera*, consult Holdaway (1926) and the illustrations of the crochets in Holdaway (1929). Except for *P. scutigera* that has been intercepted from Hawaii, the Dominican Republic, and West Germany on okra and cotton in baggage (Lima unpublished pathway study), we do not know of any interceptions for these other species at our ports.

Identification authority (Detailed)

Many gelechiids have unknown larvae and quite a few may fit any of the couplets in Weisman's (1986) key. Thus it is important to restrict identifications of *P. gossypiella* to the proper hosts and known distribution. *Pectinophora gossypiella* feeds on Malvaceae (especially okra and cotton) (Pearson 1958) and occurs in scattered locations throughout southern Europe, Africa, the Middle East, Asia, Australia, and from the southern USA to Argentina in the New World (Gall 1966, Hill 1975). Surprisingly, the pink body color can completely fade in preserved larvae.

Many of the exotic species related to the pink bollworm, although not common at ports, represent a serious threat to North American agriculture. Old World interceptions should be examined carefully to eliminate these as possibilities.

There is an unknown gelechiid species that looks like the pink bollworm except there are too few crochets (6-10 per segment) that tend to form a circle. Because SD1 is dorsal to the spiracle on A8, that rules out *Anatrachyntis rileyi*. It should be identified as Gelechiidae. Another unknown gelechiid species has a dark genal spot, this spot is lacking in the pink bollworm; it also should be identified as Gelechiidae.

Origin records

Pectinophora gossypiella has been intercepted from the following locations:

Antigua and Barbuda, Barbados, Dominica, Dominican Republic, Ecuador, Guatemala, Guyana, Haiti, Jamaica, Mexico, Nigeria, Peru, Puerto Rico, St. Kitts and Nevis, St. Vincent and the Grenadines, Togo, Trinidad and Tobago, Turkey, US Virgin Islands, Venezuela

Host records

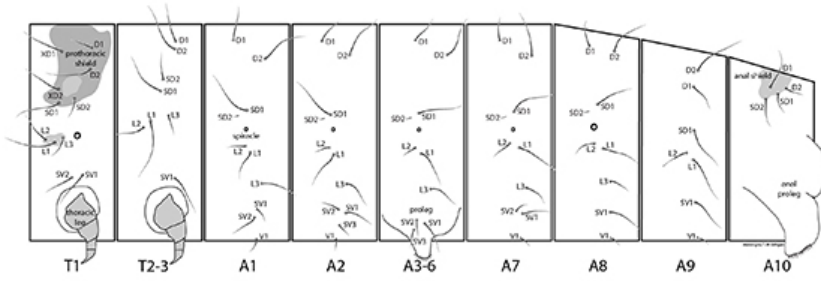
Pectinophora gossypiella has been intercepted on the following hosts:

Abelmoschus esculentus, *Abelmoschus* sp., *Capsicum annuum*, *Galphimia glauca*, *Gossypium* sp., *Hibiscus sabdariffa*, Malvaceae, *Mangifera indica*, *Prunus* sp., *Sechium edule*, *Solanum* sp., *Solanum tuberosum*

Hosts listed here that are not Malvaceae need confirmation.

Setal map

Pectinophora gossypiella (Saunders)



Gilligan, T.M. & S.C. Passoa. 2014. *LepIntercept*. An identification resource for intercepted Lepidoptera larvae. Identification Technology Program (ITP), USDA/APHIS/PPQ/SS/T, Fort Collins, CO (accessed at www.LepIntercept.org).

Pectinophora gossypiella setal map



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LepIntercept - An identification resource for intercepted Lepidoptera larvae by Todd M. Gilligan and Steven C. Passoa
Identification Technology Program (ITP), Fort Collins, CO. Last updated February 2014.

