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TORTRICIDAE - *Cydia splendana* (Hübner)

Taxonomy

Tortricoidea: Tortricidae: Olethreutinae: Grapholitini: *Cydia splendana* (Hübner)

Common names: chestnut fruit tortrix, acorn moth

Synonyms: *Tinea bicolorana*, *Tinea bicolorata*, *Tortrix glandella*, *Tortrix pencleriana*, *Tortrix penkleriana*, *Carpocapsa reaumurana*

Cydia splendana is sometimes referred to as "*C. triangulella*" in the literature (e.g., Razowski 2003). An explanation for the use of this alternate name is provided by Brown (2005: Note 16).

Larval diagnosis (Summary)

- D1 and SD1 on A9 on the same pinaculum
- Distance between V setae on A9 slightly to conspicuously greater than that between V setae on A8
- Number of crochets on most prolegs 19 or fewer (variable from proleg to proleg)
- Prothoracic shield without typical *C. pomonella* mottling
- Anal comb absent
- On *Castanea* (or Fagaceae)

Host/origin information

Cydia splendana is commonly intercepted on Fagaceae from Europe. More than 96% of interceptions are on *Castanea* (usually *C. sativa*).

Origin	Host(s)
Albania	*Castanea*
Greece	*Castanea*
Italy	*Castanea*
Macedonia	*Castanea*
Portugal	*Castanea*
Spain	*Castanea*
Turkey	*Castanea*

Recorded distribution

Cydia splendana is widely distributed thoughout Europe, ranging as far east as northern Iran and the Ural Mountains. Records from Asia represent other species of *Cydia* (Brown and Komai 2008).

Identification authority (Summary)

Host and origin information is important for positive identifications of *C. splendana*. Larvae should originate from Europe on *Castanea* and possess the combination of characters listed above, including the distance between V setae on A9 slightly to conspicuously greater than that between Vs on A8 and with 19 or less crochets on the abdominal prolegs. See the Detailed Information tab for characters to separate *C. splendana* from other *Castanea*-feeding tortricids.

Pest characterization

(Based on Cavey 2001, Brown and Komai 2008, Razowski 2003)

- Taxonomy: **Medium.** Identification to species is sometimes possible.
- Distribution: **High.** *Cydia splendana* is not present in the U.S.
- Potential Impact: **High.** *Cydia splendana* is a pest species.

This ranking characterizes *C. splendana* as quarantine significant for the U.S.

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Fig. 1: Late instar, lateral view


Fig. 2: Late instar, lateral view


Fig. 3: A9, anal shield


Fig. 4: L group on A9


Fig. 5: Crochets


Fig. 6: Head


Fig. 7: Hypo. complex


Fig. 8: Mandible

Larval diagnosis (Detailed)

Cydia on chestnut (*Castanea sativa*) are the most commonly intercepted tortricids at U.S. ports of entry. Tortricids found in chestnuts from the Old World were historically identified as *C. splendana* or *Pammene fasciana* (or *Cydia* sp.) until Komai and Ishikawa (1987) demonstrated that other *Cydia* species were responsible for infesting chestnuts in Asia. Brown and Komai (2008) provided a key to *Castanea*-feeding tortricids and included both Asian and European species. The majority of information provided here is from this key, modified slightly by Brown (2011).

Brown (2011) divided intercepted tortricid larvae into four "types." Larvae of *C. splendana* are grouped under the "*Cydia* type" with D1 and SD1 on the same pinaculum on A9, the L group on T1 not extending beneath the spiracle, and an anal comb absent. He used the following characters to identify larvae of *C. splendana*: body pinkish or whitish, pinacula mostly concolorous with body; distance between V setae on A9 slightly to conspicuously greater than that between V setae on A8; number of crochets on most prolegs 19 or fewer (variable from proleg to proleg); D2 setae on A9 on separate or same pinacula; SV group variable on abdominal segments; prothoracic shield without typical *C. pomonella* mottling (or very faint); on *Castanea*.

The larva of *C. splendana* was partially described by Swatschek (1958) including an illustration of the head. According to Erickson (1960), the head is light brown, the prothoracic and anal shields are yellowish, and the body is white. The cuticle is weakly granulate and the L setae are arranged vertically on A1. There are 14-21 crochets on A3-6 and 7-9 crochets on A10. The SV counts for A1,2,7,8,9 are 3,3,2,1,1. However both the crochet number and SV counts can vary. The spacing of the V setae on A9 is greater than A8. Brown and Komai (2008) added that the crochets are uniordinal, the D2 setae of A9 are often on separate pinacula and an anal comb is absent.

The keys in Brown and Komai (2008) and Brown (2011) use body color in some couplets to separate the various species of *Castanea*-feeding *Cydia*. It should be noted that body color fades rapidly in preserved specimens, and the usefulness of any color character will depend on the quality of the specimens and their state of preservation. Poorly preserved specimens often turn black or brown. The color photo of *C. splendana* is Villagran et al. (2000: fig. 2) is an example of this problem. In cases where color is present in a specimen (reddish abdomen or pinacula), these characters will be useful; in cases where reddish color is not present, it should not be assumed that the specimen is one of the whitish (non-colored) species without other supporting evidence. It may just be that the red color has faded. Weisman (1986) said the head is clear yellow and the body is always white for *C. splendana*. We very tentatively accept this. As a conflicting example, this is not the case for the codling moth that can be white or red causing Swatschek (1958) to describe this species as "white with a reddish tinge" (Erickson 1960). Clearly color variation in larval *Cydia* larvae needs more study and different species may well have different color variations. Compounding the problem, many caterpillars turn pink before pupation. Thus, it may not be possible to key out prepupae.

Other tortricid *Castanea* pests include: *P. fasciana* (western Europe east to the Ukraine), *C. fagiglandana* (Europe south to northern Iran and east to the Trans-Caucasus and the mountains of Turkestan), *C. glandicolana* (China, Korea, and Japan), *C. kurokoi* (China, Korea, and Japan), and *Fibuloides* (= *Eucoenogenes*) *aestuosa* (northern India, China, Korea, and Japan). For morphological characters to separate the Asian species (*C. glandicolana*, *C. kurokoi*, and *F. aestuosa*), consult Brown and Komai (2008) or Brown (2011). The European species that may be confused with *C. splendana* are discussed in detail here.

Larvae of *Pammene fasciana* are easily distinguished from *Cydia* by their large dark brown pinacula and anal comb (Villagran et al. 2000: fig. 3). In *C. splendana* the pinacula are moderately small, concolorous with the body, and an anal comb is absent.

Larvae of *C. fagiglandana* are more difficult to separate from those of *C. splendana*. Both species exhibit the same suite of "typical" *Cydia* characters: D1 and SD1 on the same pinaculum on A9; D2 setae on A9 on separate or same pinacula; SV group counts variable; anal comb absent. Brown (2011) separated the two species using the following description for *C. fagiglandana*: body reddish white, pinacula red (see Villagran et al. 2000: fig. 1); distance between Vs on A9 usually about the same as that between Vs on A8; number of crochets on most prolegs 18-24. In the *C. fagiglandana* specimens we examined, the reddish color was present in the body and pinacula, but it had faded considerably from live specimens. Thus, the distance between V setae on A9 (slightly to conspicuously greater than that between Vs on A8 in *C. splendana*) and crochet counts (19 or less in *C. splendana*) are probably more reliable characters to separate preserved specimens of these two species.

Villagran et al. (2000) attempted to separate larvae of *C. splendana* (as *C. penkleriana*), *C. fagiglandana*, and *P. fasciana* using head setae and pores in the vicinity of the stemmata. They characterized *P. fasciana* with Oa and SOa present, *C. fagiglandana* with Oa or SOa absent, and *C. splendana* with SO3 absent (terminology from Hinton 1946). We were unable to confirm these characters, and their practical use is questionable, especially given that the other characters listed here work to separate these species most of the time.

Other species of *Cydia* originating in Europe, especially *C. pomonella*, are similar to *C. splendana*. These two species are usually separable by host: Rosaceae for *C. pomonella* and *Castanea* for *C. splendana*. However, Weisman (1987: 263) did record *C. pomonella* from chestnuts. The two species can be separated by their color pattern; *C. splendana* usually lacks the characteristic mottling found on the prothoracic and anal shields of *C. pomonella*. In addition, crochet counts are different (19 or less in *C. splendana* versus 25-35 in *C. pomonella*).

Identification authority (Detailed)

Host and origin information is important for positive identifications of *C. splendana*. Larvae should originate from Europe on *Castanea* and possess the combination of characters listed above, including the distance between V setae on A9 slightly to conspicuously greater than that between Vs on A8 and with 19 or less crochets on the abdominal prolegs. Similar larvae from *Castanea* with the distance between V setae on A9 usually about the same as that between Vs on A8 and 18-24 crochets on most abdominal prolegs can be identified as *C. fagiglandana*. The other common European *Castanea*-feeding tortricid is *P. fasciana*, which is easily distinguished with its large dark brown pinacula and anal comb.

Tortricid larvae originating from Asia on *Castanea* are likely *C. glandicolana*, *C. kurokoi*, or *F. aestuosa*. Consult Brown and Komai (2008) or Brown (2011) for characters to diagnose these species. Weisman (1987) recorded *Cydia latiferreana* in chestnuts from Mexico. We did not study early instars of any chestnut feeding species, these may differ in appearance from the late instars.

Key to larval Tortricidae intercepted, or potentially encountered, at U.S. ports of entry

Origin records

Genus species has been intercepted from the following locations:

Albania, Armenia, Austria, Azerbaijan, Azores, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Jordan, Kazakhstan, Lebanon, Macedonia, Montenegro, Morocco (?), Netherlands, Poland, Portugal, Romania, Russia, Serbia, Serbia and Montenegro, Slovakia, Spain, Switzerland, Turkey, Ukraine (?), United Kingdom of Great Britain and N. Ireland, Yugoslavia

Origins from outside of Europe likely represent misidentifications and are not listed here.

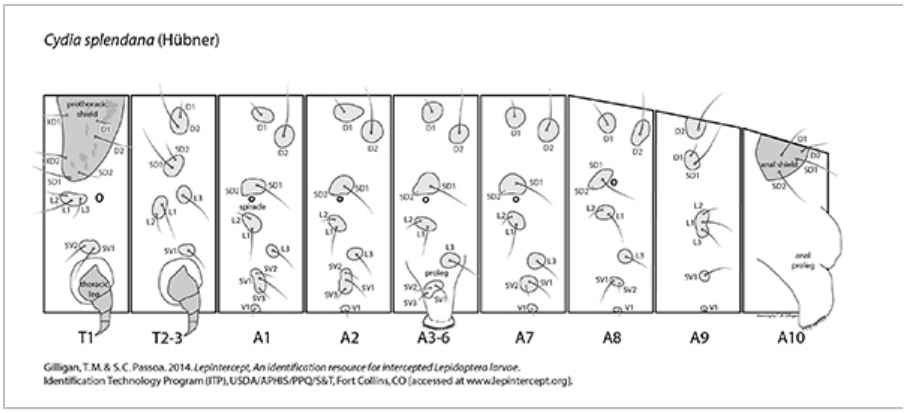
Host records

Genus species has been intercepted on the following hosts:

Castanea crenata, *Castanea dentata*, *Castanea mollissima*, *Castanea sativa*, *Castanea* sp., Fabaceae, Fagaceae, *Malus domestica*, *Prunus persica*, *Prunus* sp., *Quercus coccifera*, *Quercus rubra*, *Quercus* sp.

Hosts listed here outside of the Fagaceae need confirmation; those in the Rosaceae likely represent interceptions of *C. pomonella*

Setal map



Cydia splendana setal map

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