

LepIntercept

An identification resource for intercepted Lepidoptera larvae

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PYRALIDAE - *Cadra cautella* (Walker) *Non-Rep*

Taxonomy

Pyraloidea: Pyralidae: Phycitinae: *Cadra cautella* (Walker)

Common names: almond moth, tropical warehouse moth

Synonyms: *Cadra defectella*, *Cryptoblabes formosella*, *Ephestia irakella*, *Ephestia passulella*, *Ephestia pelopis*, *Ephestia rotundatella*, *Nephopteryx* [sic] *desuetella*

Larval diagnosis (Summary)

- Pigmented body pinacula
- A8 with SD2 separated from the spiracle by the horizontal diameter of the spiracle
- D2 seta on A1-7 two to two and a half times the length of the D1 seta
- Adfrontal area on the head does not reach the epicranial notch

Host/origin information

Larvae of *Cadra cautella* are commonly intercepted from countries throughout the world on a variety of hosts. The number of reported hosts in PestID exceeds 300, although those that are not dried plant material or stored products are questionable. Approximately 25% of all interceptions are from India. Other common origin/host combinations are listed here:

Origin	Host(s)
Ecuador	<i>Theobroma</i>
El Salvador	<i>Phaseolus</i>
India	<i>Arachis</i> , <i>Glycine</i> , <i>Oryza</i>
Peru	<i>Zea</i>

Recorded distribution

Cadra cautella is a cosmopolitan pest that is most common in tropical and subtropical regions.

Identification authority (Summary)

Because of the worldwide distribution of this species, origin information is not useful in identification. Larvae associated with stored products, dried fruits, nuts, or similar substrate are more easily identified to species using the above morphological characters. Larvae with these characters from living plant tissue should be identified only to subfamily because this feeding habit is not typical.

Pest characterization

(based on Cavey 2001, Neunzig 1990)

- Taxonomy: **High**. Identification to species is routine in late instars.
- Distribution: **Low**. *Cadra cautella* occurs in the U.S.
- Potential Impact: **High**. *Cadra cautella* is considered a pest.

This ranking characterizes *Cadra cautella* as not a quarantine significant species for the U.S.

Larval diagnosis (Detailed)

The larva of almond moth, *C. cautella*, has been illustrated many times. Some examples are Hinton (1942, 1943), Ensminger (1958), Aitken (1963), Carter (1984), Weisman (1986, 1987), Neunzig (1987, 1990), Solis (1999, 2011) and Schnitzler et al. (2011). Passoa (1985) illustrated the larva in color. Keys to selected larval structures (mandible, antenna, etc.) of stored product pests, including *C. cautella*, are given by Gentry et al. (1991).

Typically, *C. cautella* has pigmented body pinacula, A8 with SD2 separated from the spiracle by



Fig. 1: Late instar, lateral view



Fig. 2: Late instar, lateral view



Fig. 3: Late instar, dorsal view



Fig. 4: D1 vs. D2 setae



Fig. 5: Crochets



Fig. 6: Head

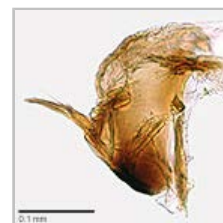


Fig. 7: Hypo. complex

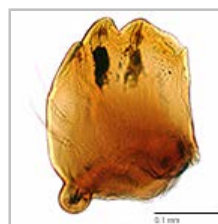


Fig. 8: Mandible

the horizontal diameter of the spiracle and D2 of A1-7 being two to two and a half times the length of D1 (Weisman 1986). In addition, the coronal suture is absent because the adfrontal area does not reach the epicranial notch (Weisman 1987). Other significant characters of *C. cautella* include: D1 and D2 on A1-7 in a horizontal line, mandible lacks an inner tooth (Passoa 1985), and the spiracles of A6 and A7 approximately equal in size (Schnitzler et al. 2011). Weisman (1987) reported that SD2 is below the level of the SD1 pinaculum on A1-7, although we have found this character difficult to interpret in some specimens. Hinton (1943: 168, 193, 194) added the diameter of the head punctures, size of the spiracles on T1 and A8, body color and chaetotaxy of the SV group on A3-6 and A8 to help define *C. cautella* in his work.

Some keys (Weisman 1986, Solis 2011) have a couplet that asks for an evaluation of the cuticular granules. This requires caution because it is easy to select the wrong option if a reference specimen of *C. cautella* is not available. Ensminger (1958: plate 17: fig. 5) illustrated the cuticle of *C. cautella* with faint pavement granules but the condition is scored as smooth in the above keys for this species if low magnification is used. Although A8 has SD2 separated from the spiracle by the horizontal diameter of the spiracle, there is some variation in this character. It can be slightly less or slightly more than the spiracle diameter, but does not overlap with other species (see Neunzig 1987).

Identification authority (Detailed)

Origins are not helpful because *C. cautella* is a cosmopolitan pest, although it is more common in warmer regions. Identifications are more accurate if the larva is associated with stored products from a building or at least is from dried fruits, nuts or similar substrate. Larvae that resemble *C. cautella* from living plant tissue are best left at subfamily because this feeding habit is not typical.

Capps (1963) warned that larvae of *Ribua* can be confused with *Ephestia*; this would also apply to *Cadra*. *Ribua* are associated with fungi on various plant substrates (Neunzig 1990). They are intercepted on pineapple from Latin America, and unlike *Cadra* or *Ephestia*, the cuticle is dark and granulose with obvious tonofibrillary platelets (Capps 1963).

Hinton (1943: 192) studied the first instar of three *Cadra* and *Ephestia*. They could be recognized to subfamily, all have a sclerotized ring around SD1 on T2 and A8. Identification to genus at U.S. ports would require looking at more than a few species given the diversity of our interceptions.

Living larvae of *C. cautella* may have some pink markings, but they do not form longitudinal stripes and they usually fade in preserved larvae (Aitken 1963).

Origin records

Cadra cautella has been intercepted from the following locations:

Afghanistan, Albania, Algeria, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Bahamas (?), Bangladesh, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Cambodia, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Cote D'Ivoire, Croatia, Cuba, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Ethiopia, France, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guyana, Haiti, Hawaii, Honduras, Hong Kong, Hungary, India, Indonesia, Iran, Israel, Italy, Jamaica, Japan (?), Jordan, Kenya, Kuwait, Laos, Lebanon, Liberia, Libya, Madagascar, Malawi, Malaysia, Mexico, Moldova, Morocco, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Pakistan, Palestinian Territory, Panama, Peru, Philippines, Poland, Puerto Rico, Qatar, Romania, Russia, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Lucia, Sudan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, United Kingdom of Great Britain and N. Ireland, Uruguay, Venezuela, Viet Nam, Yemen, Zambia, Zimbabwe

Host records

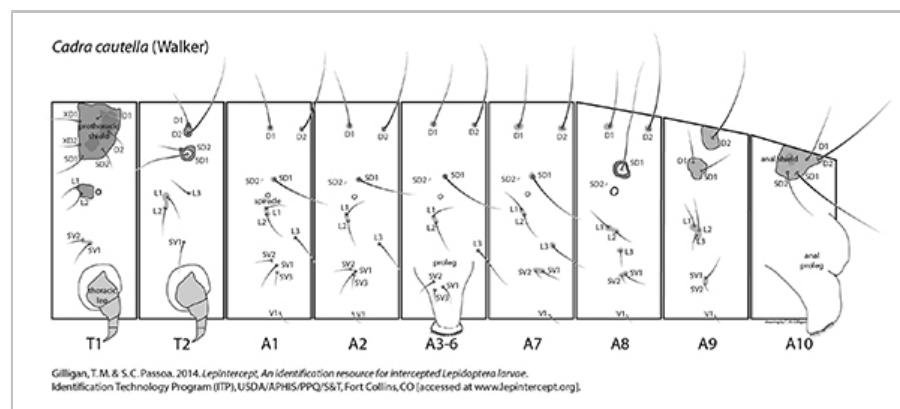
Cadra cautella has been intercepted on the following hosts:

Abelmoschus esculentus, *Abelmoschus* sp., *Acrocomia aculeata*, *Aegle marmelos*, *Aegle* sp., *Agaricus* sp., *Aleurites* sp., *Allium sativum*, *Allium* sp., *Anacardium occidentale*, *Ananas comosus*, *Ananas* sp., *Annona cherimola*, *Annona reticulata*, *Annona* sp., *Annonaceae*, *Arachis hypogaea*, *Arachis* sp., *Arctium lappa*, *Areca catechu*, *Artocarpus altilis*, *Artocarpus heterophyllus*, *Artocarpus* sp., *Bambusa* sp., *Bertholletia excelsa*, *Bertholletia* sp., *Betula* sp., *Blighia sapida*, *Bouea* sp., *Brassica juncea*, *Brassica oleracea*, *Brassica rapa*, *Brassica* sp., *Cajanus cajan*, *Calamus* sp., *Camellia sinensis*, *Camellia* sp., *Capsicum annuum*, *Capsicum* sp., *Carica papaya*, *Carica* sp., *Carthamus tinctorius*, *Carum carvi*, *Castanea sativa*, *Castanea* sp., *Chamaedorea* sp., *Chamaemelum nobile*, *Chenopodium quinoa*, *Chenopodium* sp., *Chicorium* sp., *Cicer arietinum*, *Cicer* sp., *Citrullus colocynthis*, *Citrullus lanatus*, *Citrus sinensis*, *Citrus* sp., *Cocos nucifera*, *Cocos* sp., *Coffea arabica*, *Coffea* sp., *Coix lacryma-jobi*, *Coix* sp., *Cola acuminata*, *Cola* sp., *Colocasia* sp., *Coriandrum sativum*, *Corylus* sp., *Crotalaria longirostrata*, *Crotalaria* sp., *Cucumeropsis mannii*, *Cucumis melo*, *Cucumis sativus*, *Cucumis* sp., *Cucurbita maxima*, *Cucurbita* sp., *Cucurbitaceae*, *Cuminum cyminum*, *Cuminum* sp., *Curcubita* sp., *Cydonia oblonga*, *Cymbopogon citratus*, *Cyperus esculentus*, *Cyphomandra* sp., *Dactylis* sp., *Dendrobium* sp., *Dennettia tripetala*, *Desmoncus* sp., *Dillenia indica*, *Dimocarpus longan*, *Dioscorea rotundata*, *Dioscorea* sp., *Diospyros* sp., *Dischidia* sp., *Elaeis guineensis*, *Elettaria cardamomum*, *Erythrina* sp., *Eucalyptus* sp., *Euphorbiaceae*, *Euryale* sp., *Fabaceae*, *Fagus* sp., *Ficus carica*, *Ficus* sp., *Genipa americana*, *Ginkgo* sp., *Glycine max*, *Glycine* sp., *Gnetum* sp., *Gossypium* sp., *Guizotia abyssinica*, *Helianthus annuus*, *Hordeum* sp., *Hordeum vulgare*, *Hylocereus* sp., *Hypericum* sp., *Ipomoea batatas*, *Irvingia gabonensis*, *Jatropha* sp., *Juglans regia*, *Juglans* sp., *Kalanchoe* sp., *Lablab purpureus*, *Lansium domesticum*, *Laurus nobilis*, *Lavandula* sp., *Leguminosae* sp., *Lens culinaris*, *Lens* sp., *Leonotis leonurus*, *Linum* sp., *Linum usitatissimum*, *Lonchocarpus* sp., *Lupinus* sp., *Macadamia integrifolia*, *Magnoliophyta* sp., *Malpighia glabra*, *Malus domestica*, *Malus* sp., *Malus sylvestris*, *Malvaceae*, *Mangifera indica*, *Mangifera* sp., *Manihot esculenta*, *Matricaria recutita*, *Medicago sativa*, *Mentha* sp., *Minthostachys* sp., *Momordica charantia*, *Morus alba*, *Morus rubra*, *Morus* sp., *Murraya koenigii*, *Musa paradisiaca*, *Musa* sp., *Myristica fragrans*, *Myristica* sp., *Nelumbo nucifera*,

Nelumbo sp., *Nephelium lappaceum*, *Nigella sativa*, *Olea europaea*, *Olea* sp., *Origanum majorana*, *Origanum vulgare*, *Oryza punctata*, *Oryza sativa*, *Oryza* sp., *Passiflora edulis*, *Persea americana*, *Persea* sp., *Phaseolus coccineus*, *Phaseolus lunatus*, *Phaseolus* sp., *Phaseolus vulgaris*, *Phoenix canariensis*, *Phoenix dactylifera*, *Phoenix* sp., *Pinus* sp., *Piper nigrum*, *Pistacia vera*, *Pisum sativum*, *Pisum* sp., *Pithecellobium dulce*, *Plumeria* sp., *Poaceae*, *Prunus americana*, *Prunus armeniaca*, *Prunus cerasus*, *Prunus domestica*, *Prunus domestica* ssp. *insititia*, *Prunus persica*, *Prunus* sp., *Psidium guajava*, *Psidium* sp., *Psophocarpus tetragonolobus*, *Pterocarpus* sp., *Punica granatum*, *Pyrus* sp., *Raphanus* sp., *Rhaphis* sp., *Rosa* sp., *Rosmarinus* sp., *Rubus fruticosus*, *Rubus* sp., *Rubus ursinus*, *Rumex acetosa*, *Rutaceae*, *Saccharum* sp., *Salvia hispanica*, *Sesamum indicum*, *Sesamum* sp., *Solanum lycopersicum* var *lycopersicum*, *Solanum melongena*, *Solanum* sp., *Solanum torvum*, *Solanum tuberosum*, *Sorghum bicolor*, *Sorghum* sp., *Spondias* sp., *Tamarindus indica*, *Tamarindus* sp., *Tetrapleura* sp., *Tetrapleura tetraptera*, *Theobroma cacao*, *Theobroma* sp., *Thevetia* sp., *Trigonella foenum-graecum*, *Triticum aestivum*, *Triticum durum*, *Triticum* sp., *Vaccinium* sp., *Vicia faba*, *Vigna mungo*, *Vigna radiata*, *Vigna* sp., *Vigna unguiculata*, *Vitis* sp., *Zea mays*, *Zea* sp., *Zingiber officinale*, *Zingiber* sp., *Ziziphus jujuba*, *Ziziphus* sp.

Records on trees (birch, pine) and toxic plants (*Hypericum*) are especially suspect.

Setal map



Cadra cautella setal map



[Click here to download a full-size printable PDF of this larval setal map](#)

LepIntercept - An identification resource for intercepted Lepidoptera larvae
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