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NOCTUIDAE - *Copitarsia*

Taxonomy

Noctuoidea: Noctuidae: Cuculliinae: *Copitarsia*

Larval diagnosis (Summary)

- T2-3 with both SD1 and SD2 connected to a minute tonofibrillary platelet by a sclerotized bar
- Mandible without a retinaculum
- Spinneret rounded or with a medial depression
- Labial palpi with last segment much shorter than basal segment
- Late instar larvae with white body setae, paired dorsal dashes or triangles, lateral red spots, or no markings
- Early instar larvae with a mottled head, dark setae, reduced prolegs on A3 and A4, and a green dorsum faintly striped with white

Host/origin information

Most interceptions of *Copitarsia* originate from Colombia (>60%) or Mexico (>25%). Other countries and associated hosts are listed below:

Origin	Host(s)
Colombia	*Alstroemeria*, *Aster*, *Callistephus*, *Chrysanthemum*, *Dianthus*, *Limonium*, *Mentha*, *Moluccella*, *Solidago*
Mexico	*Alstroemeria*, *Brassica*, *Chenopodium*, *Coriandrum*
Chile	*Asparagus*
Ecuador	*Alstroemeria*, *Helianthus*, *Moluccella*

Recorded distribution

Species of *Copitarsia* occur from central Mexico along the western edge of Central and South America to southern Argentina (Gould et al. 2013). There are also interception records from the Caribbean. The genus is not reported as established outside of the New World.

Identification authority (Summary)

Copitarsia larvae can be recognized to genus using morphology. In a few cases, host and orgin will allow a tentative species name. *Copitarsia* are more commonly intercepted from Mexico and South America than most of Central America except Guatemala. It does not occur in the Old World.

Pest characterization

- Taxonomy: **Medium.** Most identifications are to genus.
- Distribution: **High.** *Copitarsia* do not occur in the U.S.
- Potential Impact: **High.** Several *Copitarsia* are pests.

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

Larval diagnosis (Detailed)

There are from six to 25 species in *Copitarsia* depending on the taxonomic authority, but only a few of these are economic pests (Gould et al. 2013). Consult Pogue (2014) for a critical review of nomenclature in the *Copitarsia decolora* complex, including host plants and some larval descriptions. Most of the species of concern to APHIS are treated in his publication. Additional descriptions are given by Angulo et al. (1985), Arce de Hamity and Neder de Roman (1993), Angulo and Olivares (2005), Angulo et al. (2006), and Zuniger et al. (2006). Color illustrations of larval *Copitarsia* were published by CESAVEP (2002), Angulo et al. (2006), Passoa (2007), Pogue [2010], and Gould et al. (2013).

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Fig. 1: Late instar, lateral view

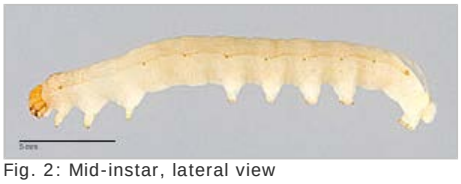


Fig. 2: Mid-instar, lateral view


Fig. 3: Early instar, lateral view


Fig. 4: Head, T1 shield


Fig. 5: Head, T1 shield

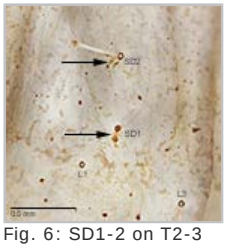


Fig. 6: SD1-2 on T2-3


Fig. 7: Crochets


Fig. 8: Head

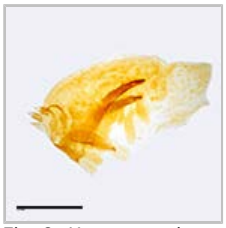


Fig. 9: Hypo. complex


Fig. 10: Mandible

Typically, late instars of *Copitarsia* are recognized by the short last segment of the labial palpi, a median depression at the apex of the spinneret and the presence of a minute sclerotized bar connecting both the SD1 and SD2 setal bases to a ventral tonofibrillary platelet on the mesothorax and metathorax (Weisman 1986). In addition, the mandible always lacks a retinaculum, the mature larva has white body setae and the early instar larva has a mottled head, dark body setae, and a green dorsum having faint white stripes (Riley unpublished, Weisman 1986, Passoa 2007). The first three instars have reduced prolegs on A3 and A4 and move in a looping fashion (semi-loopers); later instars have abdominal prolegs of equal size allowing normal movement without looping (Arce de Hamity and Neder de Roman 1993: 32).

However, both the spinneret morphology and body coloration of *Copitarsia* are variable. Not all species have an equal indentation at the apex of the spinneret. *Copitarsia gibberosa* has deep indentation, giving the impression of two lobes (Pogue 2014). The spinneret of *C. corruda* and *C. decolora* are both broadly rounded, but *C. decolora* differs from the former species in having a slight median notch (Pogue and Simmons 2008). Neither *C. naenoides* (Angulo et al. 2005) nor *C. incommoda* (Pogue 2011) have a median indentation on the spinneret.

Body coloration is also variable both in markings and ground color. *Copitarsia decolora* from Mexico, previously known as *C. consueta*, has a green or brown color form, each with or without large dorsal triangular markings on the last few abdominal segments and sometimes with red markings near the abdominal spiracles (CESAVEP 2002). Pogue (2011) noted green and brown color forms also occur in *C. corruda* and that the dorsal markings are like dashes in *C. incommoda*. Passoa (2007) illustrated *Copitarsia* larvae showing a green morph with red near the spiracles, brown morphs in two shades and an early instar larva with *Spodoptera exigua*-like coloration.

Given the similar coloration, it is easy to confuse early instar *Copitarsia* and *Spodoptera exigua*. However, *Copitarsia* never has a black mesothoracic spot typical of *S. exigua*. In addition, the head of *Copitarsia*, although variable in pattern, is often more speckled than *S. exigua* (compare Wagner et al. 2011 to Pogue [2010]). The spinneret is pointed in *S. exigua* but blunt in *Copitarsia*. Other differences are given by Riley (unpublished). *Copitarsia* could also be confused with *Peridroma saucia*; characters to separate the two are in Weisman (1986).

In some situations, the ability to recognize *Copitarsia* eggs can be important, especially on asparagus. Gonzales-Bustamante (2008), Angulo and Olivares (2009), and Andaur-Arenas and Olivares (2009) have illustrated *Copitarsia* eggs in enough detail to recognize the genus if there are few other possibilities and the fauna is well documented.

Identification authority (Detailed)

Copitarsia larvae can be recognized to genus using morphology. In a few cases, host and orgin will allow a tentative species name. As a rule, *Copitarsia* are more commonly intercepted from Mexico and South America than most of Central America except Guatemala (Pogue 2014). It does not occur in the Old World. Pogue (2014) summarized exact distributions for the economically important species.

Because of misidentifications in the literature, hostplants are of little value (Pogue 2014). *Copitarsia decolora* is the only species in Mexico and Central America, except for one anomalous record of *C. corruda* in Mexico (Pogue 2014, Pogue and Simmons 2008). For now it seems accurate to name all Mexican and Central American specimens *C. decolora* based on origin. However, that could change if further study shows *C. corruda* is established in the region.

Specimens from Peru on asparagus, if the morphology and coloration fit Pogue and Simmons (2008), can be called *C. corruda*.

Specimens of *Copitarsia* with segmental abdominal dashes from western South America could be *C. incommoda*. Other interceptions of *Copitarsia* on other hosts are best left at genus. The shape of the spinneret is helpful, but too many species of *Copitarsia* have undescribed larvae for species determinations in most of South America.

The genus *Copitarsia* does not have any widely accepted English common names. The Spanish common name for *C. decolora* is "gusano del corazon de la col" (Saunders et al. 1983). Although widely distributed in Latin America, *C. decolora* is well known in Mexico. Therefore, we can suggest Mexican cabbage heartworm or Mexican cabbage head caterpillar for this species.

Origin records

Copitarsia have been intercepted from the following locations:

Argentina, Aruba, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Israel*, Jamaica, Mexico, Netherlands*, Nicaragua, Panama, Peru, Puerto Rico, Venezuela

Copitarsia do not occur outside of the New World. Thus, interception records from Europe or the Middle East likely represent transshipments or mixing of commodities (usually cut flowers) from South America (denoted with an *).

Host records

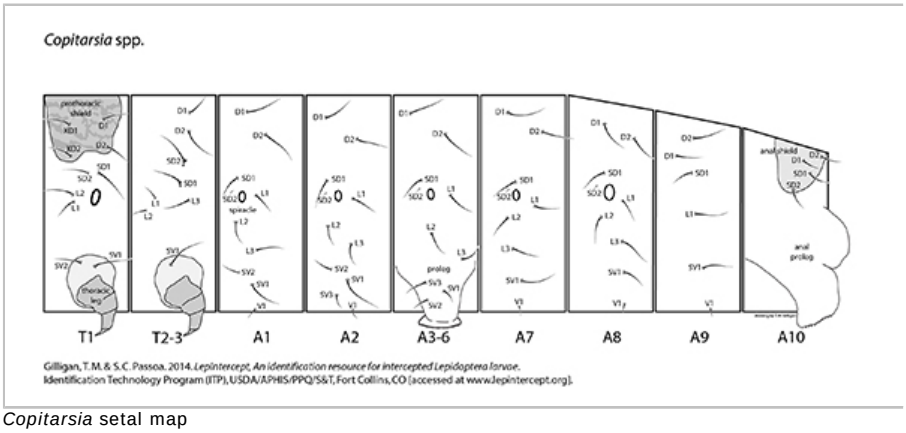
Copitarsia have been intercepted on the following hosts:

Abelmoschus esculentus, *Achillea millefolium*, *Achillea* sp., *Aconitum* sp., *Agapanthus* sp., *Ajuga* sp., *Allium ampeloprasum*, *Allium cepa*, *Allium fistulosum*, *Allium schoenoprasum*, *Allium* sp., *Aloe*

vera, *Alstroemeria aurantiaca*, *Alstroemeria* sp., *Amaranthus* sp., *Amaryllis* sp., *Ammi majus*, *Ammi* sp., *Ammi visnaga*, *Ananas comosus*, *Anemone* sp., *Anethum graveolens*, *Anethum* sp., *Anigozanthos* sp., *Anigozanthus* sp., *Annona cherimola*, *Anthemis* sp., *Anthurium* sp., *Antirrhinum majus*, *Antirrhinum* sp., *Apium graveolens*, *Apium graveolens* var. *dulce*, *Apium* sp., *Arachniodes* sp., *Artemisia dracunculus*, *Artemisia* sp., *Asparagus officinalis*, *Asparagus* sp., *Aster* sp., *Astilbe* sp., *Basilicum* sp., *Beta* sp., *Beta vulgaris* var. *cicla*, *Beta vulgaris* var. *vulgaris*, *Bouvardia* sp., *Brassia* sp., *Brassica chinensis*, *Brassica napus*, *Brassica oleracea*, *Brassica oleracea* var. *alboglabra*, *Brassica oleracea* var. *botrytis*, *Brassica oleracea* var. *capitata*, *Brassica oleracea* var. *italica*, *Brassica pekinensis*, *Brassica rapa* ssp. *chinensis*, *Brassica rapa* ssp. *pekinensis*, *Brassica rapa* var. *parachinensis*, *Brassica* sp., *Bupleurum* sp., Cactaceae, *Callistephus chinensis*, *Callistephus* sp., *Calluna vulgaris*, *Campanula cochlearifolia*, *Campanula* sp., *Capsicum* sp., *Carthamus* sp., *Celosia argentea* var. *cristata*, *Celosia* sp., *Chamaemelum nobile*, *Chamaemelum* sp., *Chamomilla* sp., *Chenopodium album*, *Chenopodium ambrosioides*, *Chenopodium berlandieri* ssp. *nuttalliae*, *Chenopodium* sp., *Chrysanthemum* sp., *Chrysanthemum* x *morifolium*, *Cicer arietinum*, *Cichorium endivia*, *Cichorium intybus*, *Citrus aurantiifolia**, *Codiaeum* sp., *Colocasia esculenta*, *Consolida* sp., *Coriandrum sativum*, *Coriandrum* sp., *Crocosmia* sp., Cupressaceae, *Cynara scolymus*, *Dahlia* sp., *Daucus* sp., *Delphinium* sp., *Dendranthema* sp., *Dendrathema* sp., *Dianthus barbatus*, *Dianthus caryophyllus*, *Dianthus* sp., *Digitalis* sp., *Dracaena marginata*, *Dysphania ambrosioides*, *Eruca sativa*, *Eryngium foetidum*, *Eryngium* sp., *Eucalyptus* sp., *Euphorbia* sp., Euphorbiaceae, *Eustoma* sp., *Fragaria* sp., *Freesia* sp., *Gerbera* sp., *Gladiolus* sp., *Glycine max*, *Godethia* sp., *Godetia* sp., *Grevillea* sp., *Gypsophila elegans*, *Gypsophila paniculata*, *Gypsophila* sp., *Helianthus annuus*, *Helianthus* sp., *Helichrysum* sp., *Heliconia* sp., *Hippeastrum* sp., *Hydrangea* sp., *Hypericum* sp., *Iris* sp., *Lactuca sativa*, *Lactuca* sp., *Lathyrus odoratus*, *Laurus* sp., *Leucadendron* sp., *Leucaena* sp., *Liatris* sp., *Liatris spicata*, *Lilium* sp., *Limonium sinuatum*, *Limonium* sp., *Lippia* sp., *Lisianthus* sp., *Lysimachia* sp., *Majorana* sp., *Malus domestica*, *Marjorana hortensis*, *Mathiola* sp., *Matthiola incana*, *Matthiola* sp., *Mentha arvensis*, *Mentha piperita*, *Mentha* sp., *Minthostachys* sp., *Moluccella laevis*, *Moluccella* sp., *Ocimum basilicum*, *Ocimum* sp., *Opuntia* sp., *Origanum majorana*, *Origanum* sp., *Origanum vulgare*, *Ornithogalum* sp., *Paeonia* sp., *Persea americana**, *Petroselinum crispum*, *Petroselinum* sp., *Phaseolus* sp., *Phaseolus vulgaris*, *Philodendron* sp., *Phlox* sp., *Physalis ixocarpa*, *Physalis philadelphica*, *Physalis pubescens*, *Physalis* sp., *Pinus* sp.*, *Pisum sativum*, *Pisum sativum* var. *macrocarpon*, *Pisum* sp., Poeaceae*, *Polianthes* sp., *Polianthes tuberosa*, *Porophyllum* sp., *Portulaca oleracea*, *Portulaca* sp., *Protea* sp., *Prunus armeniaca**, *Prunus domestica**, *Prunus persica**, *Prunus persica* var. *nucipersica**, *Pyrus pyrifolia**, *Ranunculus* sp., *Raphanus sativus*, *Raphanus* sp., *Rosa* sp., *Rosmarinus officinalis*, *Rubus idaeus*, *Rubus* sp., *Ruscus* sp., *Salvia officinalis*, *Salvia* sp., *Sechium edule*, *Solanum melongena*, *Solanum* sp., *Solidago canadensis*, *Solidago* sp., *Solidaster* sp., *Spinacia oleracea*, *Statice* sp., *Strelitzia* sp., *Suaeda* sp., *Tagetes* sp., *Thymelaea hirsuta*, *Thymus* sp., *Thymus vulgaris*, *Trachelium* sp., *Tulipa* sp., *Vaccinium* sp., *Veronica* sp., *Vicia faba*, *Vigna* sp., *Zantedeschia aethiopica*, *Zantedeschia* sp., *Zea mays*

Records from citrus, avocado, grasses, tree fruits, and pine need confirmation (denoted with an *).

Setal map



Copitarsia setal map

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