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The Christmas berry webworm, *Cryptoblabes gnidiella* (Millière), is an important pest in the Mediterranean region. This species is usually associated with other plant pests, especially various species of mealybugs and scale insects (Coccoidea) including the citrus mealybug (*Planococcus citri*) and a number of *Pseudococcus* species. Larvae feed on the sugary feces, or “honeydew,” excreted by the mealybugs. Major larval hosts include various citrus species such as orange, grapefruit, and lemon (*Citrus* spp.), avocado (*Persea americana*), pomegranate (*Punica granatum*), and grape (*Vitis* spp.) In Hawaii, this pest has been recorded on coffee (*Coffea arabica*), corn (*Zea mays*), green beans (*Phaseolus vulgaris*) and *Sorghum*. On grape, *C. gnidiella* is usually found on plants damaged by other insects, including *Lobesia botrana* (Tortricidae; recently eradicated from California). If introduced into the continental United States, *C. gnidiella* is most likely to spread to wherever associated host plants and coccids are found and could pose a threat to grape and citrus production.



Fig. 1: *Cryptoblabes gnidiella* larva (Photo by Lyle Buss, University of Florida).

Cryptoblabes gnidiella is a member of the Phycitinae subfamily of snout moths (Pyralidae). A native of the Mediterranean region, *C. gnidiella* is currently distributed through parts of Asia, Africa, Europe, South America, and the Caribbean. This species has also been introduced to Fiji, New Zealand, and Hawaii. USDA records indicate that *C. gnidiella* has been intercepted from numerous countries where it has not been reported, so it may be more widespread than the literature indicates. Adult forewing length ranges from 5.0-6.5 mm. The forewing is greyish brown with a variable amount of white coloring and scattered reddish-brown scales, giving a purplish appearance. The hindwing is shining white with conspicuous brownish-grey veins and white fringe. With its relatively simple and variable coloration, the honeydew moth can be confused with numerous other pyralids. *Duponchelia fovealis*, another invasive pyralid recently introduced into the U.S. from Europe, is attracted to the same pheromone lure.



Fig. 2: Top: Larval damage on grape clusters (Photos by Cristiane G. Manzoni and Jose M. Soares). Bottom: A mealybug (*Planococcus* sp.) commonly associated with *Cryptoblabes gnidiella* (Photo by Christian Fischer).

This aid is designed to assist in the sorting and screening *C. gnidiella* suspect adults collected from CAPS pheromone traps in the continental United States. It covers basic sorting of traps and first level screening, all based on morphological characters. Basic knowledge of adult lepidopteran morphology is necessary to screen for *C. gnidiella* suspects. Genitalic dissection by a trained lepidopterist is necessary for a species-level identification.

Cryptoblabes gnidiella pheromone traps should be sorted initially for the presence of moths of the appropriate size, color, and shape. Traps that contain moths meeting all of the following requirements should be moved to Level 1 Screening (Page 3):

- 1) Moths are approximately 5-7 mm long (Fig. 3)
- 2) Moths have an overall shape that is similar to the outline depicted in Fig. 3. Note that moths caught on their side or back may have a different outline.
- 3) Moth forewing is a greyish-brown with a variable amount of white and red coloring. Hindwings are pale to white with darker brown scaling along the veins. (Fig. 4)

Note that the appearance of moths caught in sticky traps can vary substantially depending on the amount of sticky glue on the moth (most individuals usually appear darker when covered in glue). For this reason, any small, pyralid-like moth meeting the above criteria should be sent forward to Level 1 Screening.

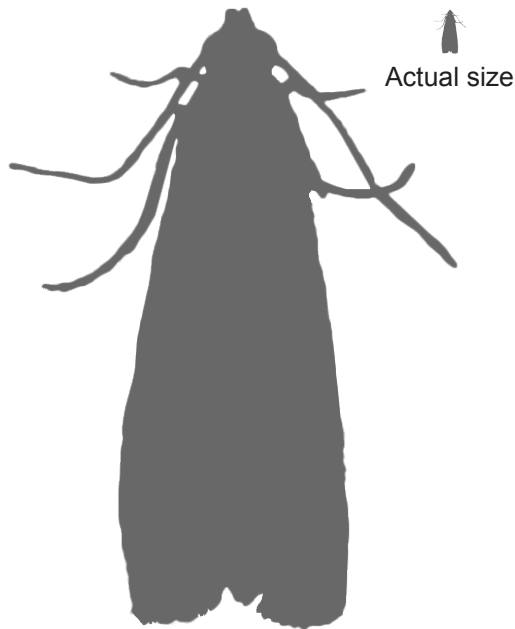


Fig. 3: Outline of a resting *Cryptoblabes gnidiella*. Pyralids have a variety of resting postures, resting with wings folded over the back or spread to the sides.



Fig. 4: Typical coloration of an adult *Cryptoblabes gnidiella* (male) (Photo by Hanna Royals). Note the red/purple hues of the forewings and pale hindwings with darkening scaling along wing veins.



Fig. 5: Typical resting posture of *Cryptoblabes gnidiella* (Photo by Pathpiva, Site de lépidoptères de France méridionale et de Corse, pathpiva.fr).

Moths that meet the sorting requirements should be screened for suspect pyralids. Level 1 Screening is difficult for small moths (like pyralids) and may need to be performed by a trained Lepidopterist. When in doubt distinguishing or evaluating first-level screening characters, forward traps that have passed the sorting requirements to a trained taxonomist. Suspect pyralids in traps should not be manipulated or removed for screening unless expertise is available.

Pyralid moths can be identified by the following combination of characters (note that some characters may be difficult to see on specimens coated in sticky trap glue):

- 1) Tympanum present at base of abdomen (Fig. 6). Noctuoidea have a tympanum on the thorax near the junction with the abdomen. Tympanal organs may be difficult to see without manipulating the specimen.
- 2) Labial palpi pointed and porrect or upturned (Fig. 7). Some species have very long labial palpi.
- 3) Proboscis (tongue) is scaled (Fig. 7). Members of the Tortricidae have an unscaled proboscis.



Fig. 6: Tympanum present at abdominal base of all Pyraloidea (Photo by Hanna Royals).



Fig. 7: Head of *Cryptoblabes gnidiella* showing scaled proboscis and upturned labial palpi. (Photo by Hanna Royals)

Traps to be forwarded to another facility for additional Screening should be carefully packed following the steps outlined in Fig. 8. Traps should be folded, with glue on the inside, making sure the two halves are not touching, secured loosely with a rubber band, and placed in a plastic bag for shipment. Insert 2-3 styrofoam packing peanuts on trap surfaces without moths to cushion and prevent the two sticky surfaces from sticking during shipment to taxonomists. DO NOT simply fold traps flat or cover traps with transparent plastic wrap (or other material), as this will guarantee specimens will be seriously damaged or pulled apart – making identification difficult or impossible.

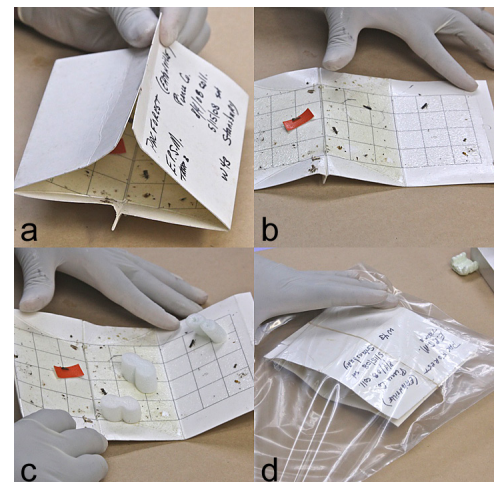


Fig. 8: Recommended packing method for shipment of sticky traps: a & b) open and unfold trap; c) place 2-3 packing peanuts in areas of trap with no moths; d) fold trap, secure with rubber band, and place in plastic bag.

In Italy, Bagnoli and Lucchi (2001) reported a variety of noctuids, tortricids, and other pyralids when trapping for *C. gnidiella* using a 4-component pheromone lure. However, CAPS surveys specify a 2-component lure, so it is unknown if the same range of species will be attracted.

The only non-target captured by Bagnoli and Lucchi (2001) present in the U.S. is *D. fovealis* (Figs. 11-12), the European pepper moth. This species is a greenhouse pest native to Europe that was first detected in California in 2005. It has since been found in Alabama, Arizona, Colorado, Florida, Georgia, Mississippi, New York, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, and Washington. The two species can be easily separated by forewing pattern: the forewings of *D. fovealis* are gray to grayish brown with white transverse lines, the outermost line projecting towards the termen.

Other pyralids are similar in color and size to *C. gnidiella*, such as *Cosipara tricoloralis* (Fig. 10). The wing pattern and color may be difficult to determine for moths covered in sticky glue. When in doubt, submit all specimens for identification that meet the criteria for Level 1 Screening.



Fig. 9: *Cryptoblabes gnidiella* (Photo by Hanna Royals)



Fig. 11: Male *Duponchelia fovealis* (Photo by Lyle Buss, University of Florida).



Fig. 10: *Cosipara tricoloralis* (Photo by Hanna Royals)



Fig. 12: Female *Duponchelia fovealis* (Photo by Lyle Buss, University of Florida).

Key to Sort and Screen *Cryptoblabes gnidiella* Suspects in the United States

1. Moth forewing length 5-7 mm; overall shape typical pyralid-like (Fig. 3); and forewings mottled brown with white, red or purple scattered scaling as in Fig. 4 2
- 1'. Moth forewing length larger or smaller than 5-7 mm long; overall shape not typically pyralid; or forewings not mottled brown with white, red or purple scattered scaling Not *C. gnidiella*
2. Abdominal tympana present; labial palpi upcurved; and proboscis scaled ***C. gnidiella* suspect**
- 2'. Abdominal tympana absent; labial palpi projecting forwards; or proboscis not scaled Not *C. gnidiella*

Citation

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References for more information on *C. gnidiella* and non-targets

Bagnoli, B. & A. Lucchi. 2001. Bionomics of *Cryptoblabes gnidiella* (Millière) (Pyralidae Phycitinae) in Tuscan vineyards (abstract). Proceedings of the IOBC/WPRS Working Group “Integrated Control in Viticulture” at Ponte de Lima, Portugal. March 2-7, 2001.

CABI. 2012. *Cryptoblabes gnidiella* (citrus pyralid). Crop Protection Compendium. Accessed May 9, 2017 from: www.cabi.org/cpc.

Molet, T. 2015. CPHST Pest Datasheet for *Cryptoblabes gnidiella*. USDA-APHIS-PPQ-CPHST.

Moth Photographers Group. Mississippi State University. (<http://mothphotographersgroup.msstate.edu/species.php?hodes=19225>)

Sullivan, M. & N. Breiter. 2007. Grape Commodity-based Survey Reference. Cooperative Agricultural Pest Survey (CAPS). 227 pp.

Passoa, S. C. 2009. Screening key for CAPS target Pyraloidea in the eastern and midwestern United States (males). USDA-APHIS-PPQ. 15 pp.

Acknowledgments

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