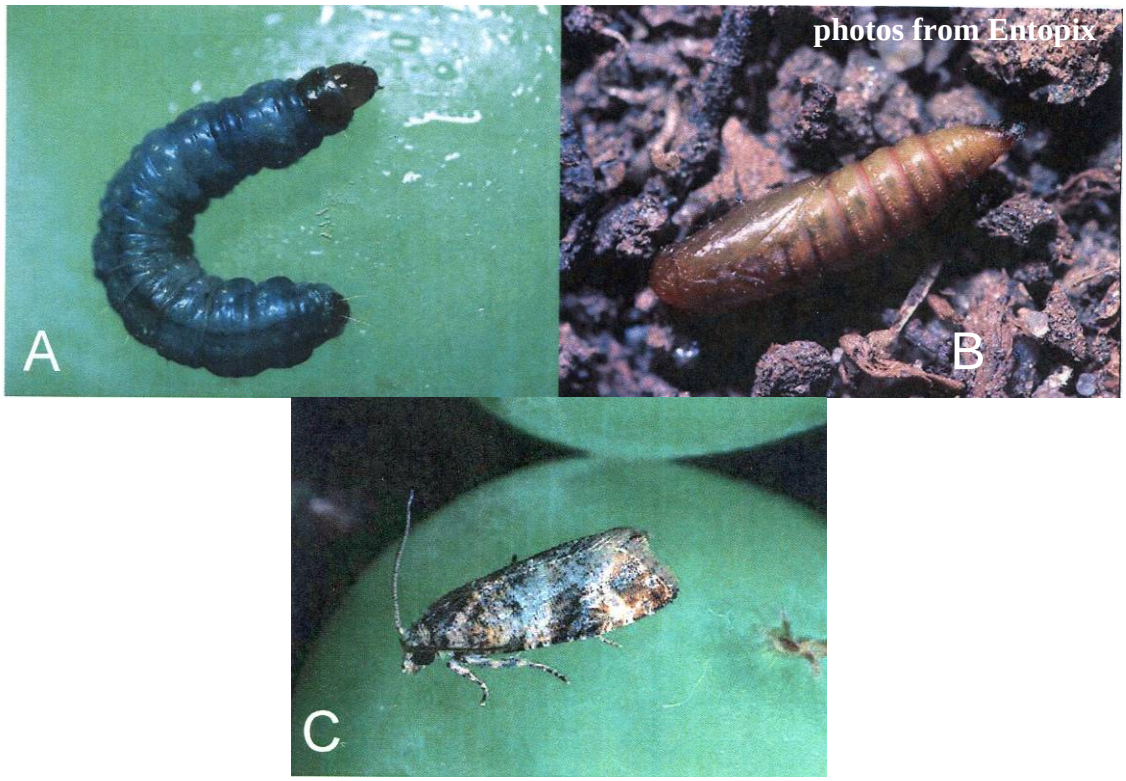
The European Grapevine Moth, *Lobesia botrana*

Denis & Schiffermüller, 1775 - Lepidoptera, Tortricidae

First U.S. Report



Life stages of ***Lobesia botrana*** (not to scale)
A. larva; B. pupa; C. adult

European Grapevine Moth (EGVM), *Lobesia botrana*, has been found in the Napa Valley of California in October 2009. This is the first occurrence of this moth in the United States. It is a serious pest of grape, feeding on the flowers and bunches. It is found in Southern Europe, North Africa, Anatolia, the Caucasus, and in Chile since 2008. The wingspan is 10 -13 mm with a body length is 6-9 mm. The larvae can grow 9 – 10 mm long. The Napa County Agricultural Commissioner, the California Department of Food and Agriculture and the U.S. Department of Agriculture are working together to determine the moth's distribution within Napa County by conducting extensive trapping using pheromone lures specific for *Lobesia botrana*. Detection traps have been placed at a density of 5 traps/sq. mi. within a 9 sq. mile core area around Oakville. Another 40 sq. mile area surrounding the core is also being trapped, while an additional 40 sq. miles is being trapped along lines that radiate outward from the core, like spokes on a wheel.

If found in California, contact your local County Agricultural Commissioner at:
http://www.cdfa.ca.gov/exec/county/County_Contacts.html

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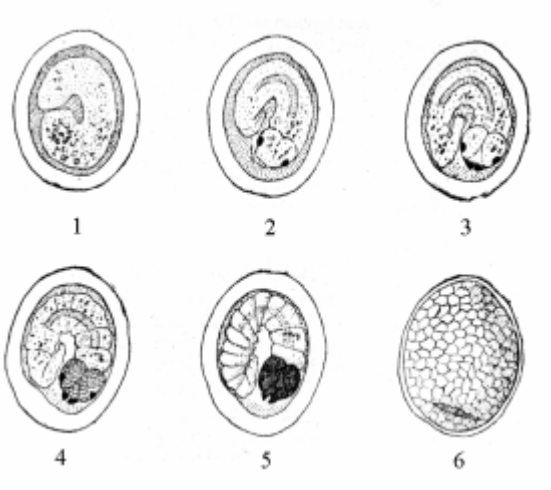
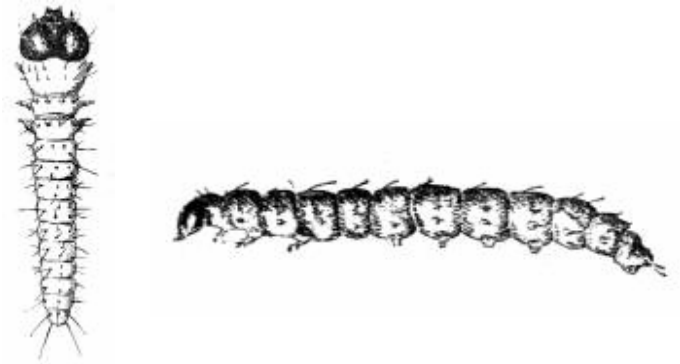
The life cycle of *Lobesia botrana*

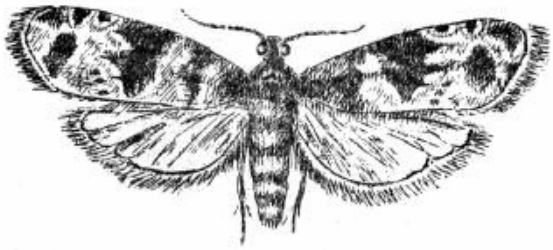


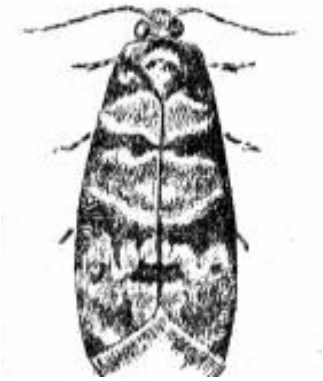
Embryonic development in the egg (x 25)



Newly hatched larva (x 40) & a fifth instar larva (x 6)

Pupa (x 10)





Adult *Lobesia botrana*: extended and at rest (x 7)

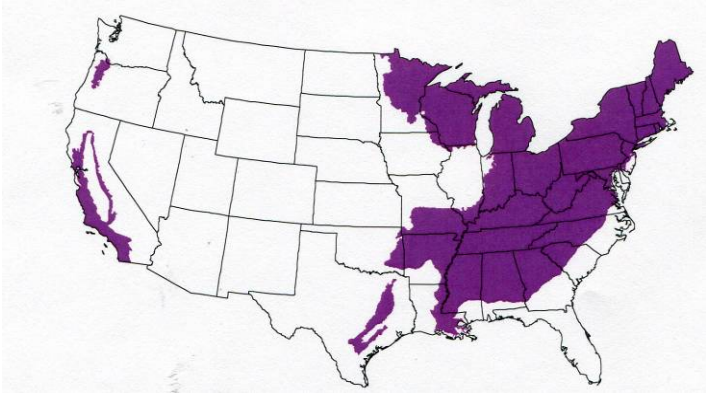
Images by J. Feytaud 1924

Images and Spanish language article found at
http://www.seea.es/conlupa/lbotrana/lbhistoria.htm

A description of the life cycle and biology of ***Lobesia botrana*** can be found at:
http://www.inra.fr/hyppz/RAVAGEUR/6lobbot.htm

Potential Distribution and Host Range

Mini Risk Assessment: Grape berry moth, *Lobesia botrana* (Denis & Schiffermüller) [Lepidoptera: Tortricidae] Department of Entomology, University of Minnesota
http://www.aphis.usda.gov/plant_health/plant_pest_info/pest_detection/downloads/pra/lbotranapra.pdf



Potential range of *Lobesia botrana* in the continental U.S.
(based on a CAPS risk assessment by the University of Minnesota, 2003)

Host Range

Blackberry	***Rubus fruticosus***
Carnation	***Dianthus spp.***
Cherry	***Prunus avium***
Cucumber	***Cucumis sativus***
Currant	***Ribes rubrum***
Grape	***Vitis vinifera***
Kiwi	***Actinidia chinensis***
Peach	***Prunus persica***
Olive	***Olea europea***
Persimmon	***Diospyros kaki***
Plum	***Prunus domestica***
Pomegranate	***Punica granatum***

Botrytis in damaged cluster
photo Gobierno de Mendoza

Larva feeding in a grape berry
photo Gobierno de Mendoza

Damage

The type of damage depends on the stage of development of the grapevine. First generation larvae feed on flowers and buds, pupating within rolled leaves or clusters of inflorescences tied with silk (called glomerules). Second generation larvae feed on and develop directly in an individual grape. The second and third generations of the European Grapevine Moth are the most economically damaging as they directly and severely affect mature berries through larval feeding. Mold, particularly Botrytis, develops quickly in the open wounds. The fruit then turns brown and rots.

Management of EGVM

At the moment trapping is being done in the Napa Valley by the CDFA and USDA to assess the range of the infestation using Delta Traps baited with a pheromone (see below).

Photo by M. Lubinski, CDFA, used with permission

One must be aware of the life cycle of the moth, the weather, and stage of development of the vine in order to successfully and economically control the EGVM. Conventional control methods may be the same as for other lepidopteran pests. *Bacillus thuringiensis* (see http://en.wikipedia.org/wiki/Bacillus_thuringiensis) can be utilized, but has only three day effectiveness in the field and is expensive for a large scale operation. Newer products of the spinosad group (see http://en.wikipedia.org/wiki/Spinosad) are quite effective and persist 7 to 10 days in the field. Pyrethroids (see http://en.wikipedia.org/wiki/Pyrethroid) are a chemical control method for a wide range of insects, including lepidopterans. The diapausal pupae of the EGVM can over winter under the bark of the vine and under the soil litter, so methods should be used to reach them to prevent early infestation in the spring.

Information Sources:

Venette, Robert C., Erica E. Davis, Michelle DaCosta, Holly Heisler, & Margaret Larson Department of Entomology, University of Minnesota, St. Paul, MN 55108, September 5, 2003 Mini Risk Assessment: Grape berry moth, *Lobesia botrana* (Denis & Schiffermüller) [Lepidoptera: Tortricidae]

Torres Vila, Luis Miguel, Universidad Politécnica de Madrid, January 31, 2001 Un aniversario aciago: dos siglos de historia como plaga de la polilla del racimo de la vid, *Lobesia botrana* Den. y Schiff

Image Sources:

Entopix, Mactode Publications, 3510 Indian Meadow Drive, Blacksburg, VA 24060 info@mactode.com.

Images by Jean de Feytaud (1881-1973), University of Bordeaux, courtesy of L.M. Torres-Vila Gobierno de Mendoza, Argentina, Instituto de Sanidad y Calidad Agropecuaria Mendoza http://www.iscamen.com.ar/index.php?option=com_content&view=article&id=76:250908-lobesia-botrana-en-chile&catid=32:novedades&Itemid=1