Green Oak Tortrix

Tortrix viridana

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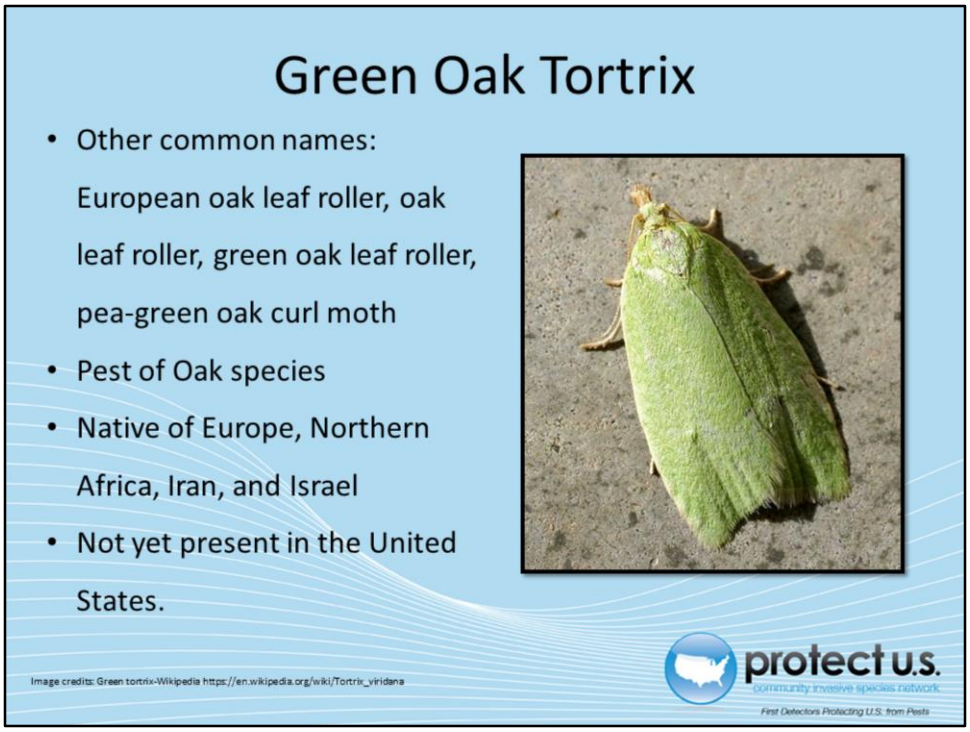
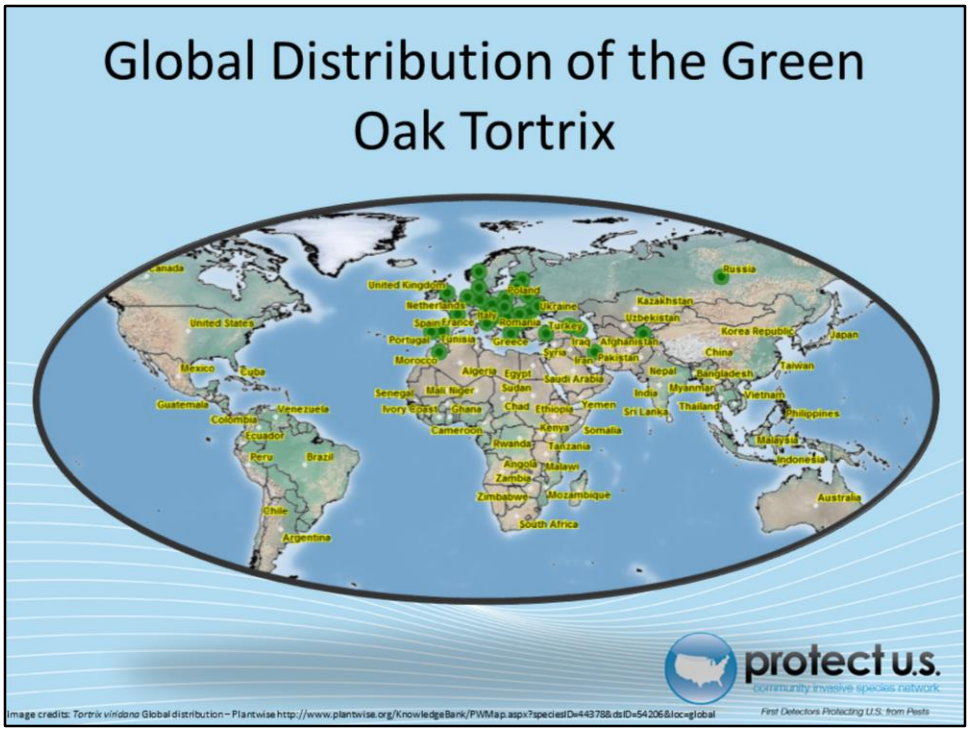
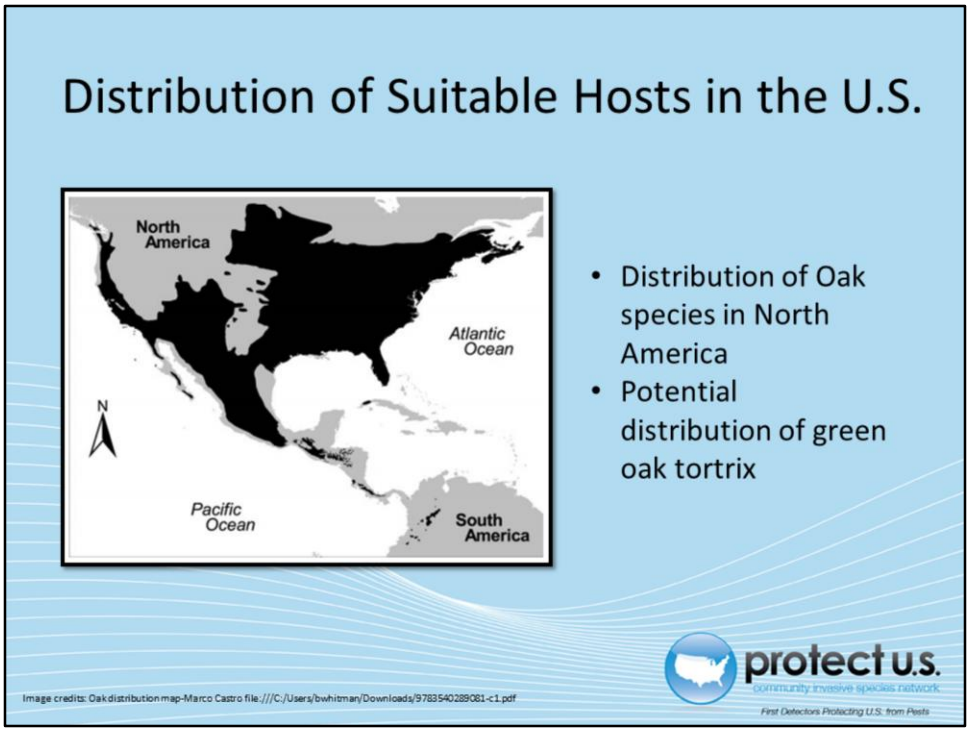


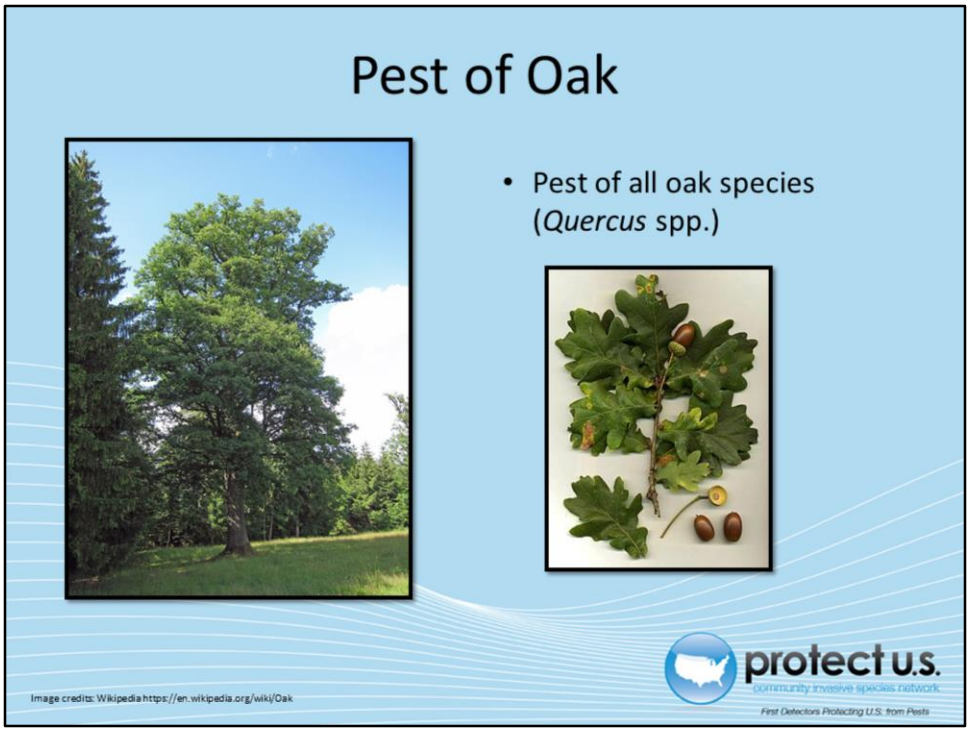
The scientific name of this moth is *Tortrix viridana*, and it is in the taxonomic family Tortricidae (7). The common names of*Tortrix viridana*, include green oak tortrix, European oak leaf roller, oak leaf roller, green oak leaf roller, pea-green oak curl moth (3). It is a native of Europe, Northern Africa, Iran, and Israel, and has not yet become established in the United States (12). Green oak tortrix is an exclusive feeder on *Quercus* spp., in particular *Q. robur* (8). Feeding and defoliation of oak trees from the larvae can cause the trees to be weakened and infected by many other pests and diseases (11).



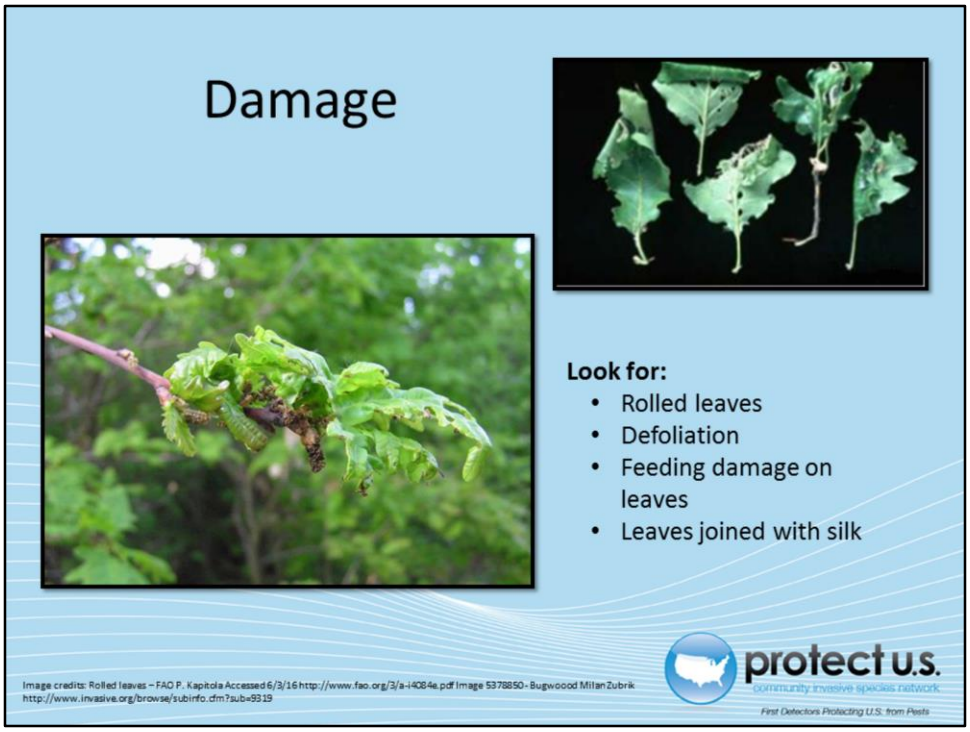
Green oak tortrix is distributed across Europe, northern Africa, Cypress, Iran, Israel, and parts of Asia (3, 9, 12, and 15)



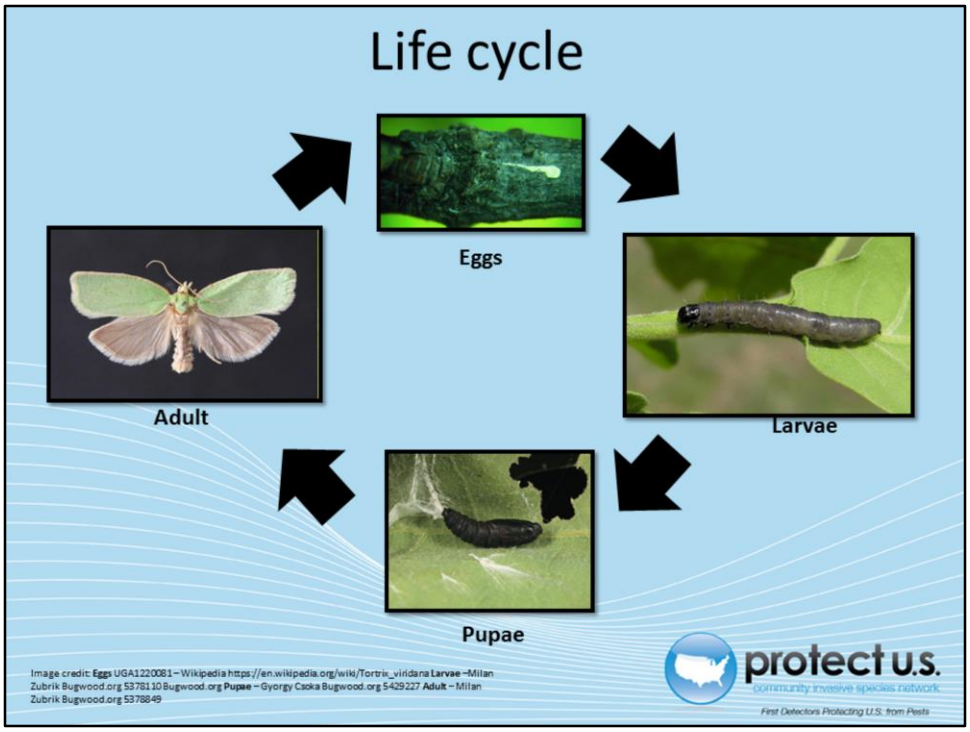
Oak species, *Quercus* spp., are the primary host for *T. viridana.* Oak trees are widely distributed in the United States and if established, the green oak tortrix could potentially occupy this range(5).



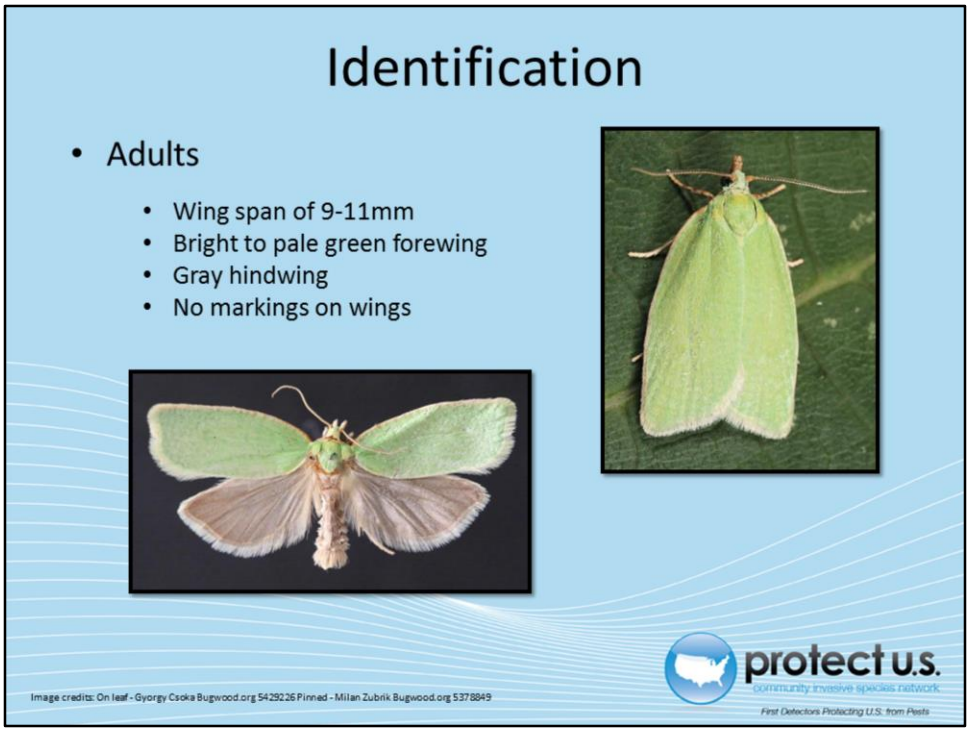
Green oak tortrix is a pest of *Quercus* spp., oak, its primary host (5).



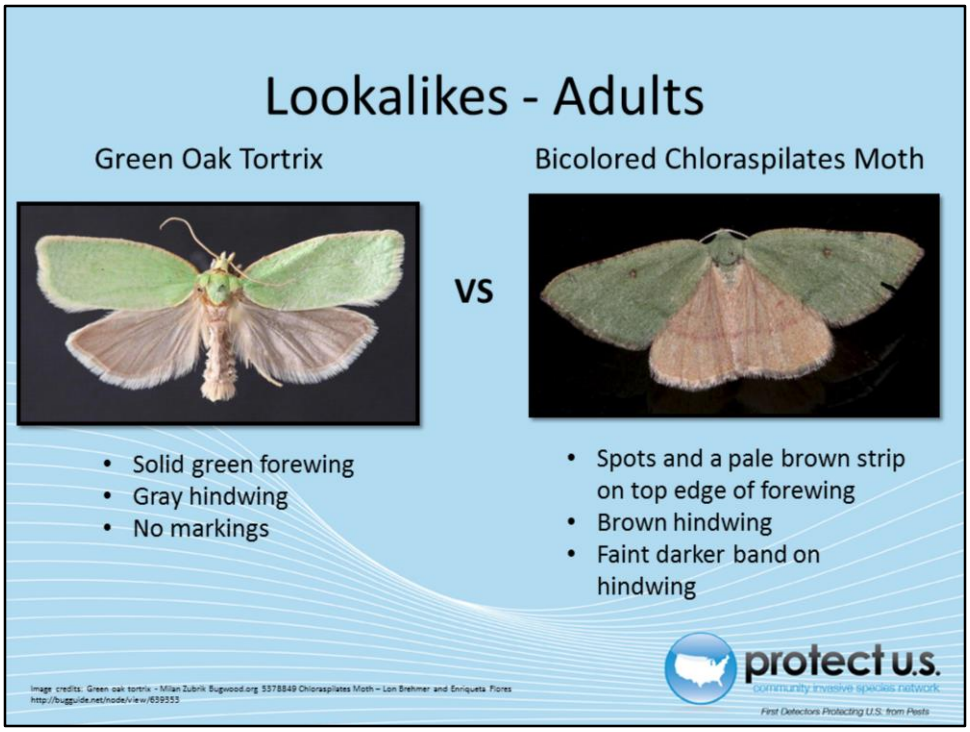
Damage symptoms include rolled leaves all over the crown of the tree (8). Defoliation, including complete defoliation, can be caused by abundant larvae. The larvae often join leaves with silk, and feed on the leaf edges and along the midvein (13).



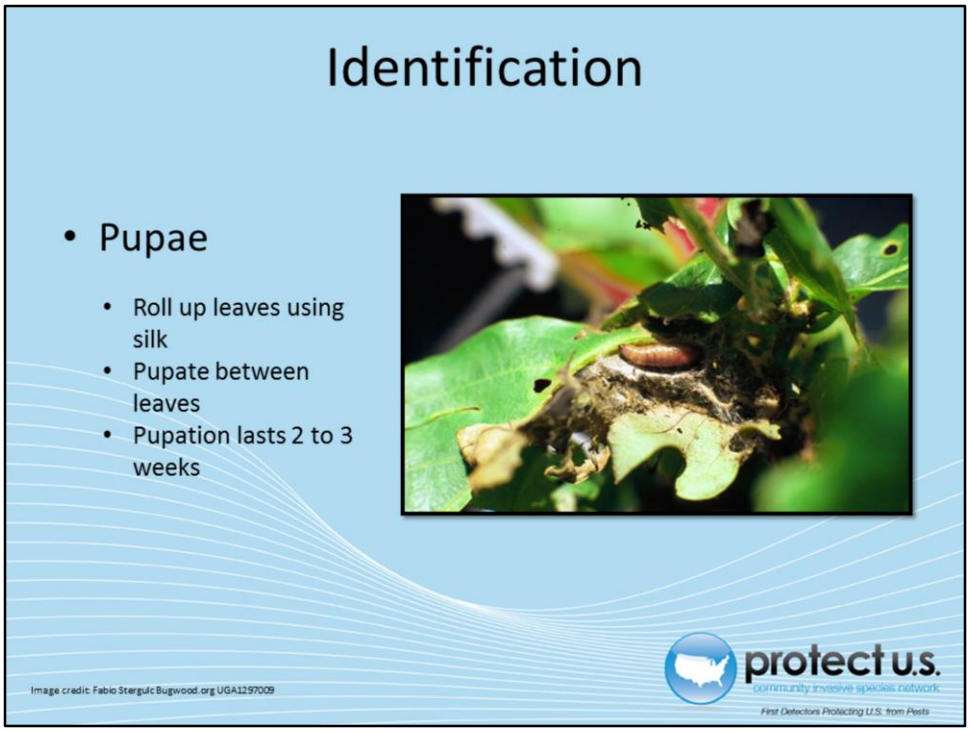
Green oak tortrix is univoltine, meaning it has a single generation per year. Females will lay eggs in June and July in the crown of the tree. Egg are laid in pairs, and each female lays about 50 to 60 eggs. Eggs will overwinter, so the larvae hatch the following April and May. The larvae then feed on the new bud growth of the tree, before the leaves open. When the larvae are older, they will begin feeding on the leaves (5). The larvae will pupate in the folded leaves of the tree for about 2 to 3 weeks (14). New adults will emerge from May to July (5).



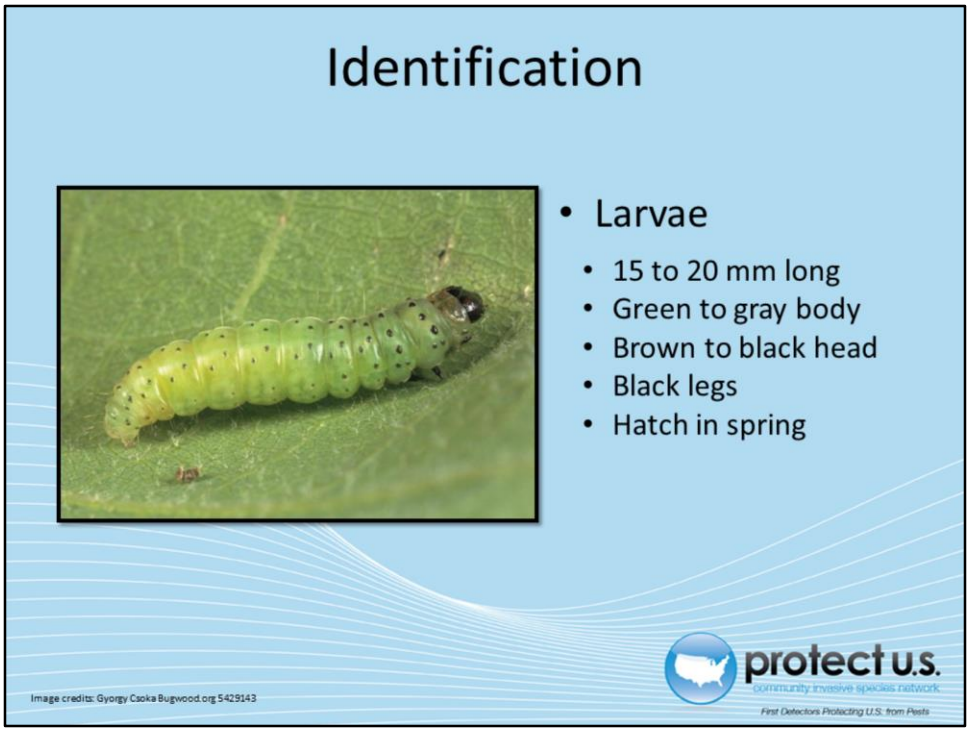
Adult moths have a wingspan of 9 to 11mm. The forewings are light green, and the hind wings are gray (8). The exact color of the forewing can vary from bright green to a more dull, pale green. However, they are the only species of the family Tortricidae that have a uniformly green forewing without markings (5).



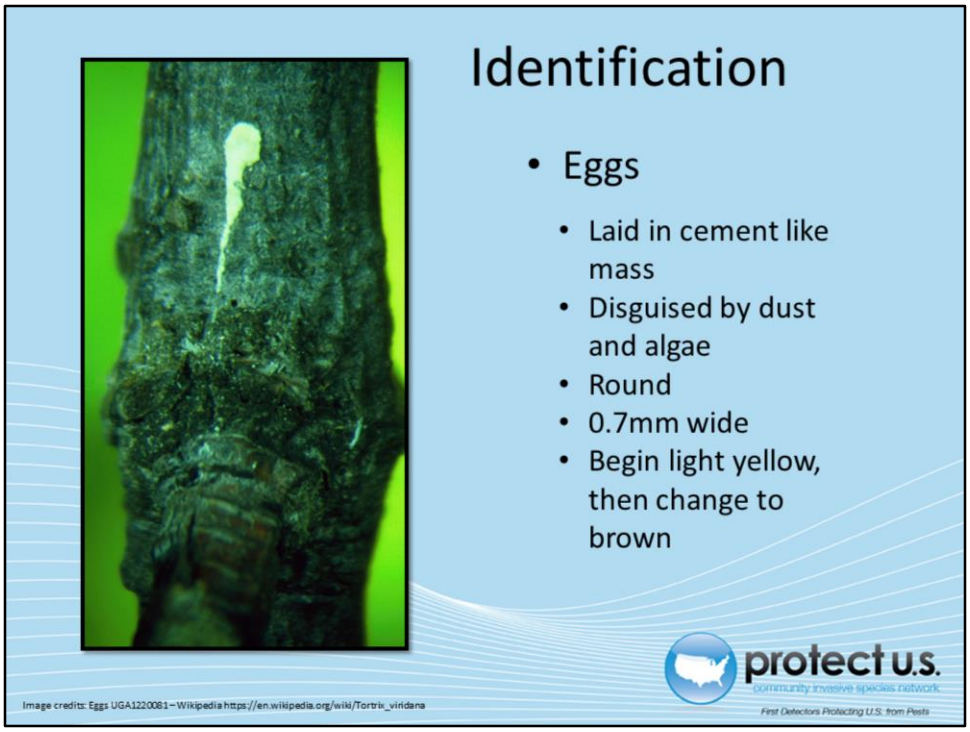
Green oak tortrix is similar in appearance to *Chloraspilates bicoloraria*, or Bicolored Chloraspilates Moth. This moth is native to North America with a range from southeastern California to west Texas and Oklahoma (2). Both moths have a wingspan of about 9 to 11mm and a green forewing. However, Bicolored Chloraspilates Moth has a pale brown strip that runs along the top edge of the forewing. It also has brown spots on the forewing. While similar in color, the hindwing of the Green oak tortrix is gray, unlike the brown of Bicolored Chloraspilates. Green oak tortrix also does not have the slightly darker line running through the middle of the hindwing (2 and 5).



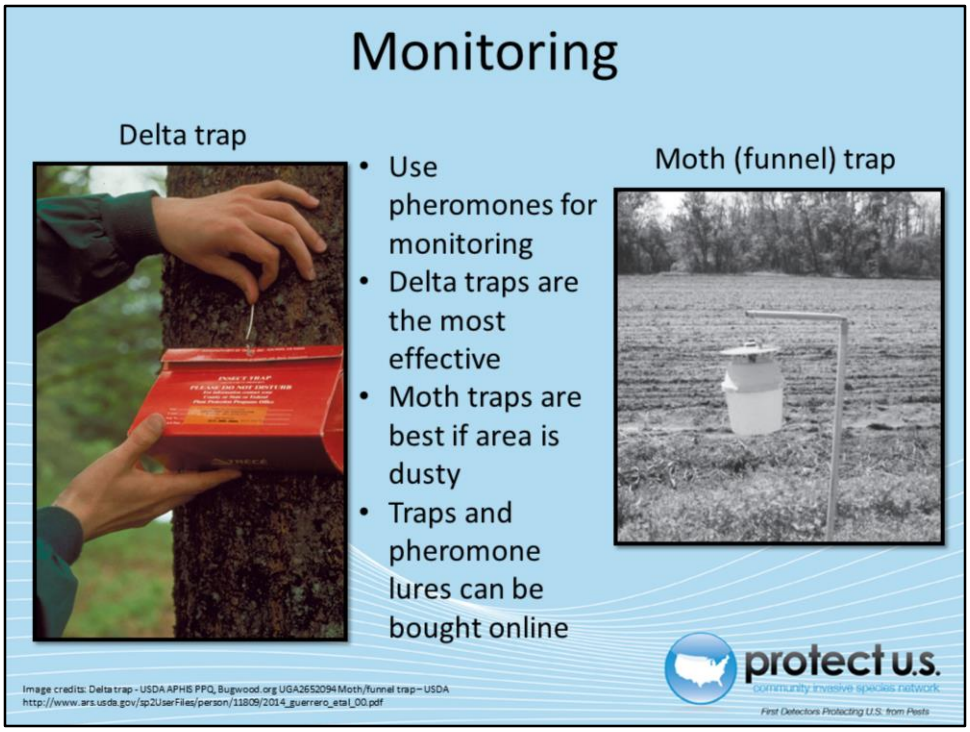
Larvae roll up leaves with silk, and pupate between them. Pupation lasts 2 to 3 weeks (14).



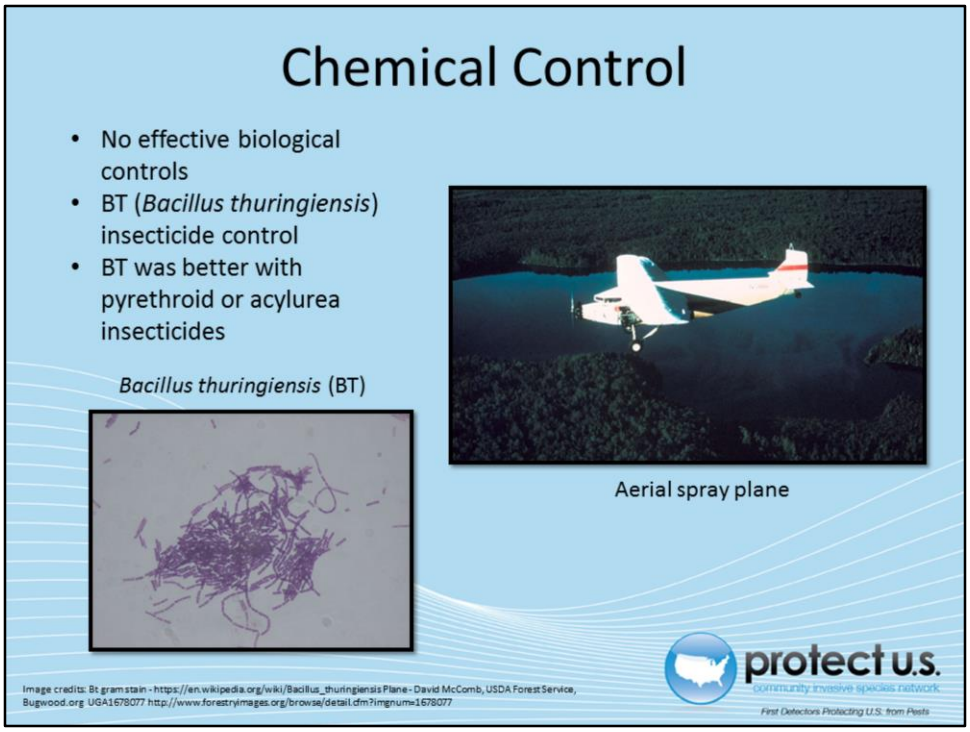
Caterpillars hatch in the spring and feed on new buds (14). Larvae have black legs. They are about 15 to 20mm long. Color can vary, with an abdomen from green to gray and a head from brown to black. The prothoractic shield may be black to almost translucent. Pinacula, flattened plates that have setae, are darkened and prominent on the abdomen and thorax (5).



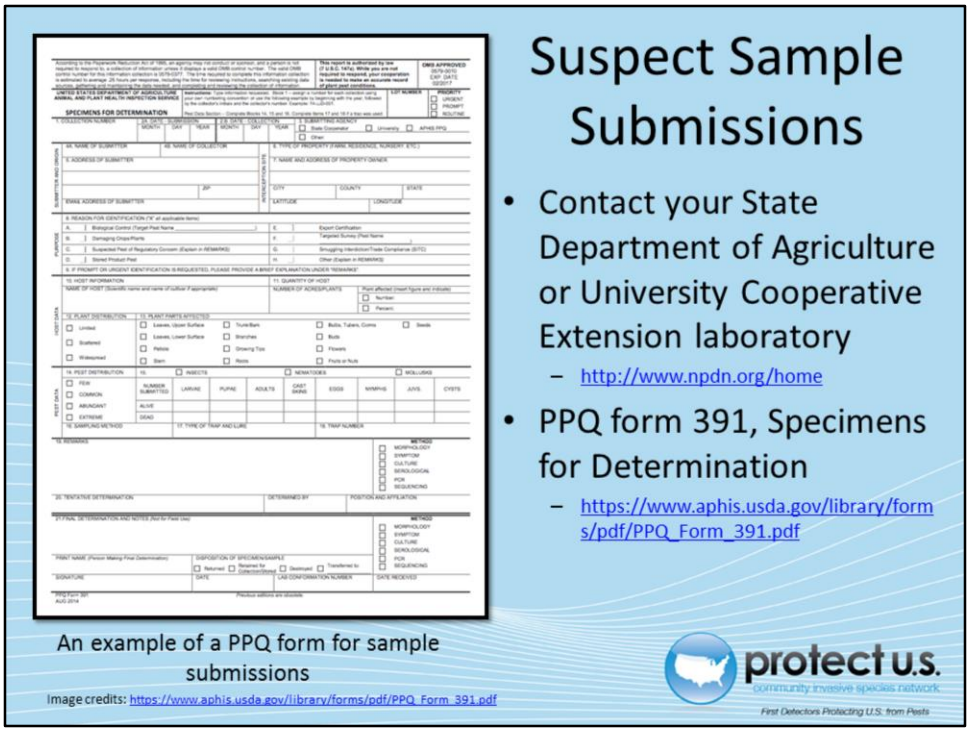
The eggs are round with about a 0.7mm diameter. They are light yellow at first and then change to brown. They are laid in a cement like mass onto the host tree. The mass is lined in dust and algae, so the eggs are nearly invisible (15).



Pheromone surveying has been found to be effective in trapping green oak tortrix for monitoring. Synthetic pheromones have been tested in Romania, Poland, Czechoslovakia, Iran, and Germany (13). The pheromone TV 83 was found to be effective in Mushroom traps in Germany (10). Another pheromone, (Z)-11-Tetradecenyl acetate has been found to be a main component of the green oak tortrix female pheromone secretion. This pheromone was found to be very effective in attracting green oak tortrix (1). The recommended monitoring method is a delta pheromone trap with the pheromone TV 83, Z11-14Ac, or Z11-13Ac as the attractant compound (1 and 10). Although delta traps are the best for pheromone monitoring, a moth or funnel trap is better if conditions are hot or dusty. Companies sell pheromone lures and traps online to monitor for this pest (15).



A great many experiments have been conducted on the use of biological controls for Green oak tortrix (8). However, despite the number of parasitoids that can infect it in its native habitat and predators such as ant and birds, no effective biological controls have been found (8 and 9). The only effective control found is bioinsecticides based on *Bacillus thuringiensis* or BT. BT is a soil dwelling bacteria used in insecticidal control of Lepidoptera (moths and butterflies) and some other insect orders. A single spraying was found to be sufficient, though adding a chemical insecticide such as a pyrethroid or acylurea with the BT application increased effectiveness of the treatment (6, 8, 13, and 16).



An example of a PPQ form for sample submissions

Image credits: https://www.aphis.usda.gov/library/forms/pdf/PPQ_Form_391.pdf

If a suspect pest has been located in the United States, a sample should be submitted for proper identification. Contact your local diagnostic lab to ship in a sample for identification. Information regarding your local diagnostic lab is available at National Plant Diagnostic Network (NPDN) website. The diagnostic lab information and available contacts are divided by state.

http://www.npdn.org/home

The sample specimen should be submitted along with accompanying documentation using the PPQ form 391.

https://www.aphis.usda.gov/library/forms/pdf/PPQ_Form_391.pdf

Your local diagnostic lab is part of your local cooperative extension service or your state department of agriculture. Your local lab will also have a specific form. All local labs may not be a member of NPDN. However, all labs should report new pest and pathogen detections to local regulatory officials.

Remember that new pest and pathogen records must be reported to your State Plant Health Director (SPHD) and your State Plant Regulatory Official (SPRO). The SPRO is a State Department of Agriculture Employee and the SPHD is a USDA-APHIS-PPQ employee.

The link to your SPRO is on the National Plant Board (NPB) website. It has an interactive map and when you click on your state it will take you to another page with contact information. The NPB is a cooperative organization that includes membership from all State Departments of Agriculture.

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