Department for Environment Food & Rural Affairs

# Plant Pest Factsheet

# *Omnivorous Leafroller*

# *Platynota stultana*

**Figure 1.** *Platynota stultana* larva. Photo: Jack Kelly Clark, courtesy University of California Statewide IPM Program.

## Background

*Platynota stultana*, commonly known as the omnivorous leafroller, is a moth native to North America, where the larvae can cause economic damage to a wide range of crops. It is now found in a number of glasshouses in Spain, having been present for several years. It is not currently known to be in the UK. This Plant Pest Factsheet provides information on distribution, host range, biology, detection, impact, and control.

## Geographical Distribution

*Platynota stultana* is thought to be native to north-western Mexico and adjacent south-western United States. Through the 1930s, it was intercepted frequently at ports of entry in Arizona, primarily on peppers from Mexico. It has become widespread in Arizona, California, Florida, and Texas. In the mid-1980s, *P. stultana* was introduced to Hawaii, and is now established with a limited distribution. There have also been records from Arkansas, Colorado, District of Colombia, Illinois, Maryland, Massachusetts, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, and Virginia. However, the majority of these records are not considered reliable or refer mostly to interceptions or outbreaks, such as with glasshouse-grown roses in Virginia and Washington DC.

In 2004, there was a finding of a single *P. stultana* larva at nursery in the UK, on *Lantana camara* from the USA. After a successful eradication there has been no evidence of the pest since. The distribution of the species in North America (excluding East coast records) suggests that *P. stultana* is unlikely to be able to overwinter outdoors in the UK, however experimental data has shown that other tortricid species that share similar temperature tolerances are capable of overwintering in the UK.

In the EU, *P. stultana* has been recorded in Spain, Italy, and France. It was first recorded in Almería, Spain in 2009 on crops of pepper (*Capsicum annum*), with subsequent findings in the following years on a variety of hosts. Adult moths have also been caught in Alicante, Granada, and Murcia, but no outbreaks or economic damage has been recorded. In June 2018, an interception of a pupa was made in Germany on *Capsicum* sp. from Spain. In August 2020, *P. stultana* was found in Italy, with eleven specimens being caught by pheromone traps in the Puglia region in 2022. In the same year, in the Occitanie region of France, three adult males were caught using light traps, its current presence in France is unknown.

## Host Plants

*Platynota stultana* has a large host range. It has been reported from over 100 plant species in 30 different families. In the USA, *P. stultana* is primarily recorded as a pest of outdoor crops in California, especially *Citrus*, cotton (*Gossypium*), grape (*Vitis*), peach (*Prunus persica*), and peppers (*Capsicum annum*). It has also been found in protected glasshouse crops of roses (*Rosa*) and carnations (*Dianthus*) in multiple states. Other economically important hosts include apples (*Malus*), aubergine (*Solanum melongena*), blackberries and raspberries (*Rubus*), maize (*Zea mays*), pepper (*Capsicum annuum*), tomatoes (*Solanum lycopersicum*), celery (*Apium graveolans*), *Sorghum*, soya bean (*Glycine max*) and beans (*Phaseolus*). It has also been recorded feeding on a range of ornamental hosts, including geranium (*Pelergonium*), *Cyclamen*, walnut (*Jugulans*), pine (*Pinus*), yew (*Taxus*), various grasses (Poaceae), and many others.

## Description

Eggs are flattened ovals, greenish to translucent, and very small measuring up to 1mm. They are laid in batches containing more than 100 overlapping eggs, which has an overall appearance somewhat resembling pale green fish scales or a flattened pinecone. Many other micromoths lay egg batches in this way. So, it is not possible to identify *P. stultana* eggs to species based solely on appearance.

Newly hatched larvae are cream with a brown head and are less than 2 mm long. As they grow older, larvae reach a maximum of 15–19 mm in length and the colour becomes very variable, but is usually grey-green, greenish or cream, with a brown or black head. There are small whitish spots along the body, and a dark stripe down the centre through which the body contents can be seen moving (Fig. 1). Larvae are similar in appearance to many native Tortricidae and are very active if disturbed. Pupae are dark brown and are usually hidden inside a rolled leaf.


**Figure 2.** *Platynota stultana* adults. Set specimens of male (top) and female (bottom). In life, the moth rests with the wings folded over its back in a bell shape, with the hindwings completely hidden. Both images © Todd Gilligan, CSU, Bugwood.org

Adult moths are small, but quite variable in size, and commonly ranges from 7 to 13 mm in length (12–25 mm wingspan). They rest with their wings folded against the body in a tented “bell” shape, as seen with most Tortricidae. The wing markings consist of shades of light and dark brown and are variable in both colour and strength (Fig. 2). Usually, males have a darker brown area at the base of the wings, with a paler area at the tips, which is similar to some native species. Females are often slightly larger and have less distinct

markings. The grey labial palps (at the front of the head, much thicker than the antennae) are very long in comparison to the head and point forwards. While these long palps are comparatively unusual in the Tortricidae, closely related species also have them, for example, the native moth *Sparganothis pilleriana*, or other species of *Platynota* from North America. Other families of moths also contain species with long labial palps. Thus, field identification of any life stage of *P. stultana* is difficult, and requires confirmation from a lab.

## Biology

In warm conditions, *P. stultana* has overlapping generations, with up to six complete lifecycles a year observed in California. A single female can lay over 400 eggs during her lifespan. Eggs take an average of 6 days to hatch at 32°C, but this changes with temperature, and hatching time increases to about 9 days at 21°C. Newly hatched larvae move upwards, towards the shoot tips, and usually hide between young leaves or in other concealed locations. Older larvae are capable of rolling leaves (spinning them together with silk) and are often found individually within these leaf rolls. Larvae may also attack fruit, either spinning a leaf to the fruit surface for concealment or tunnelling further into the fruit. The larval period is variable between individuals at all temperatures, but on average it is about 20 days at 32˚C, or 30 days at 21˚C; pupation takes around 5 or 9 days, respectively. Larvae show some ability to overwinter in California, constructing shelters out of webbing, either on the plant or in dead leaves and other plant material on the ground. However, these larvae do not have a true diapause (a state of inactivity during adverse conditions), as they appear to be partially active during this time and continue feeding at a lower rate.

## Dispersal and Detection

*Platynota stultana* shows a limited ability to disperse naturally. Though adults can fly, it is not a migratory species and has not been recorded flying long distances. After hatching, larvae will move away from the egg mass. While they usually crawl around the plant, they are also capable of ballooning (floating in air currents attached to strands of silk), which, depending on weather conditions, will enable them to disperse locally. However, *P. stultana* has been moved long distances in trade, likely on plants or plant products, and has become established in several new regions as a result.

Rolled leaves are likely to be the symptom first noticed on plants, as larvae spin silk webbing on and around their food and, on leaves, roll them and spin them together with silk, hence the ‘leafroller’ part of the common name. When examined closely, feeding damage, frass (excrement) and larvae or pupae may be visible inside the leaf rolls, but these are almost identical to many native species which feed in this way. Adults are nocturnal and are not likely to be seen flying in the daytime unless their resting place is disturbed. Moths are attracted to light traps, though distinguishing them from native moths could be problematic. Pheromone trapping is used in the USA and Spain.

## Economic Impact

Larvae have been recorded causing damage to a number of crops in the USA. Leaf-rolling and feeding has little apparent impact on yields of fruit crops, but attacks on flower buds can occur. Older larvae will also eat fruits, usually feeding on the surface, but they can tunnel deeper into the fruit. Damage to young fruit often heals over, leaving scarring or pitting that is mostly cosmetic. While fruit destined for processing will probably not be affected, this scarring is likely to prevent sale as table fruit. Damage to older fruit can be more serious, usually because the wounds allow the entry of secondary pathogens, with resultant rot and spoilage. Yield losses to grapes have been reported as up to 50%, with one vineyard reporting an 80% loss one year. In oranges, as well as feeding damage to fruit, *P. stultana* also seems responsible for causing stunted fruit, which cannot be harvested and may account for as much as 10% of the total crop. Cotton yield loss has been estimated up to 25% on occasion, caused by feeding to all parts of the plant including shoots and seed pods. Economic damage to alfalfa (*Medicago sativa*) late in the season has been reported, due to extensive webbing of the flowers preventing pollination. In Spain, most damage has been minor to date, mostly consisting of curled and rolled leaves in crops. However, pepper fruit has been attacked, though it is not known if this has caused economic losses.

## Pest management and reporting

*Platynota stultana* could potentially arrive in the UK on tomatoes or peppers from Spain or North America. Larvae have been shown to be able to survive longer than a week in temperatures of 0-1°C, therefore it could survive chilled transport of fruit or vegetables. It is recommended that pheromone baited sticky traps are installed in packhouses receiving host material from countries such as Spain, where this pest is known to occur in order to monitor for its presence.

The larvae have some protection from insecticide treatments because they can roll leaves and silk around themselves, but effective approved insecticides are reported. The potential efficacy of the biocontrol agents that could be used against the pest in the UK is unknown. Further guidance on management options can be provided from the relevant authorities below.

Suspected outbreaks of *Platynota stultana* or any other non-native plant pest should be reported to the relevant authority:

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, York.

Tel: 0300 1000 313

Email: planthealth.info@apha.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit:**

Email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DAERA Plant Health Inspection Branch:**

Tel: 0300 200 7847  Email: planthealth@daera-ni.gov.uk

Web: https://www.daera-ni.gov.uk/topics/plant-and-tree-health

For additional information on UK Plant Health please see:

https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/

https://planthealthportal.defra.gov.uk/

https://www.gov.uk/plant-health-controls

http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases

https://www.daera-ni.gov.uk

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