



Sunflower Maggot

Strauzia longipennis



Fig. 1. Adult female *Strauzia longipennis*, showing characteristic F patterns at wing tips. Washington, USA. © Katja Schulz.

Background

Strauzia longipennis (Wiedemann) (Diptera: Tephritidae), commonly known as the sunflower maggot, is a fly species that is a pest of *Helianthus annuus* (sunflower). It is native to North America, and is now also present in Germany, likely since 2008. It has been found in both private gardens in Berlin and sunflower fields of nearby Brandenburg. In view of these findings and the importance of sunflower cultivation in Europe, *Strauzia longipennis* was added to the EPPO Alert List in 2011 but was deleted from the list in 2019. *Strauzia longipennis* has not spread beyond Berlin or Brandenburg in the intervening years.

Geographical Distribution

Strauzia longipennis is widespread in its native range of the USA and Canada. In 2010, two females were found in Treptow-Köpenick, a district of Berlin, Germany. This was the first record of the species in Europe and was followed by three more records in other districts of Berlin that same year. *Strauzia longipennis* was subsequently recorded in fields of nearby Brandenburg in 2011 and 2012, but populations in Brandenburg saw significant reductions following severe frost in the winter of 2012/13. As of 2020, a low abundance was found in Brandenburg, though it remains widespread in Berlin in gardens. Given its native climate and the range of its host, there is potential for *Strauzia longipennis* to spread throughout Europe and into the UK, though populations likely cannot survive severe frosts in open fields.

Host Plants

Strauzia longipennis' primary host plant is *Helianthus annuus* (sunflower). It has also been observed on other *Helianthus* species, such as *H. maximiliani* (Maximilian sunflower) and *H. tuberosus* (Jerusalem artichoke), and on other species of the Asteraceae family, including *Ageratina altissima* (white snakeroot).

Description

The eggs of *Strauzia longipennis* are around 1 mm in length and are white, with an elongated shape. The larvae (maggots) are up to 7 mm long (in the final larval stage) and have a creamy white colour (Fig. 2). The pupae are slightly elongate and white-brown (Fig. 3). The adults are approximately 6 mm in length, with a wingspan of 13 mm. Their bodies are yellow to orange in colour and their eyes are red and/or green. Their wings are covered in light and dark brown bands, which towards the wing tips usually form a characteristic "F" like pattern (Figs. 4 and 5).



Fig. 2. *Strauzia longipennis* larva.
© Peter Baufeld



Fig. 3. *Strauzia longipennis* pupa. © Peter Baufeld



Fig. 4. Adult male *Strauzia longipennis*. © Peter Baufeld



Fig. 5. Adult female *Strauzia longipennis* laying eggs into a sunflower stem. © Peter Baufeld

Biology

Strauzia longipennis has one generation per year in North America and follows a similar lifecycle in Germany. Adults emerge in June and are active until the end of July. They lay individual eggs within the stem of young sunflower plants. After a week, the eggs hatch and larvae feed within the pith (the soft central tissue of the stem). Larvae produce long tunnels as they feed up and down the pith (Fig. 7). Over the next six weeks, the larvae develop through three instars (larval stages). Mature larvae then often leave the plant in mid-August to find a suitable spot to overwinter, usually within plant debris or the upper soil layer. In Canada, the larvae pupate, and winter is spent in the pupae stage and this has also been reported in Jerusalem artichoke in the USA, where it overwinters as pupae in the root tissue. Larvae also pupated before winter in breeding stock in Berlin, suggesting that they are most likely to be the Canadian biotype.



Fig. 6. Necrotic spots/discoloured tissue on stem. © Peter Baufeld



Fig. 7. Larval tunnelling in sunflower stem. © Peter Baufeld



Fig. 8. Exit hole produced by larvae leaving the stem for pupation. © Peter Baufeld



Fig. 9. Severe damage to stem caused by *Strauzia longipennis* infestation. © Peter Baufeld

Dispersal and Detection

Adults of *Strauzia longipennis* are good fliers and likely able to fly over several kilometres between host plants, and so can disperse effectively locally. Long distance movement of *Strauzia longipennis* is possible via cut sunflowers or plants for planting, and larvae and pupae could also be transported with infested soil. Symptoms associated with *Strauzia longipennis* include discoloured scar tissue on plant stems, caused by the adult puncturing the stem to lay eggs (Fig. 6), feeding tunnels caused by the larvae within the stem (Fig. 7), and exit holes in the stem produced when larvae leave for pupation (Fig. 8). Larval feeding within the stem can cause destroy the pith and leave the stem susceptible to breakage in heavy infestations (Fig. 9). The wounds caused by *Strauzia longipennis* can also lead to infection by fungi, such as *Sclerotinia*.

Economic Impact

Strauzia longipennis is generally considered a minor pest in North America. Even when *Strauzia longipennis* is found in high numbers, economic damage is rare. This is partly due to its biology; it seldom enters the roots and spends much of its lifecycle in the pith of the

stem, a region that is principally a supporting structure of the plant with little nutritional value. Nonetheless, there have been reports of up to 37% yield loss in sunflower seed in Canada. In 2014, trial fields in Berlin suffered heavy damage from *Strauzia longipennis* infestation and associated secondary infection, with at least 85% of sunflower plants affected (Peter Baufeld, pers. comm., 2015). *Strauzia longipennis* therefore has the potential to cause considerable harm to sunflower cultivation in Europe, particularly in areas with milder winters.

Pest Management and Reporting

Suspected outbreaks of ***Strauzia longipennis*** 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: www.daera-ni.gov.uk/topics/plant-and-tree-health

For additional information on UK Plant Health please see:

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

planthealthportal.defra.gov.uk/

www.gov.uk/plant-health-controls

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

www.daera-ni.gov.uk

Authors

M. Everatt (Defra), H. Anderson (Defra), Laura Cooper (Defra) and C. Malumphy (Fera)

Version 2

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