

White peach scale

Pseudaulacaspis pentagona



Figure 1. *Pseudaulacaspis pentagona* male tests and first instars on *Catalpa bignonioides*

Background

Three outbreaks of the non-native plant pest *Pseudaulacaspis pentagona* (Hemiptera: Diaspididae) have occurred in England during 2006-7. Two of the infestations occurred on single peach (*Prunus persicae*) trees grown under protection in Dorset and Oxfordshire (one of the trees was imported from The Netherlands approximately 4 or 5 years previously; the origin of the other tree is unknown). More significant was the infestation on several *Catalpa bignonioides* trees grown outdoors in Kent. The trees had been imported from Italy approximately 4 or 5 years previously. This is the first known occurrence of *P. pentagona* breeding and over-wintering outdoors in the UK. It seems likely that the *Catalpa* and *Prunus* plants were infested with *P. pentagona* when they were first imported, as the insect does not occur in Britain, has a low natural dispersal potential and can take several years before the populations become large enough to cause detectable damage. Action was taken in all three cases to control/eradicate the pest.

Pseudaulacaspis pentagona has been previously intercepted on imported plant material on many occasions in England and Wales, most commonly on peach and kiwi fruit. Infested lilac (*Syringa*) plants, imported to a commercial plant nursery in West Sussex from France in March 2007, were destroyed.

Geographical Distribution

Pseudaulacaspis pentagona originates from eastern Asia and has spread widely to all warmer regions of the world, including all the major continents. It was accidentally introduced to Italy in the nineteenth century and within Europe it now occurs in Azerbaijan, Bulgaria, France, Georgia, Germany, Greece, Hungary, Italy, Macedonia, Malta, Netherlands, Portugal, Russia, Serbia and Montenegro, Spain, Sweden, Switzerland, Turkey and Ukraine. In the past 20 years it has spread northwards in Europe, perhaps as a result of climate change. In colder countries it is restricted to glasshouses.



Figure 2. Mulberry tree in Budapest, Hungary exhibiting dieback due to an infestation of *Pseudaulacaspis pentagona*
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Figure 3. Mulberry branches killed by a heavy infestation of *Pseudaulacaspis pentagona*
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Figure 4. *Pseudaulacaspis pentagona* adult female scale on *Syringa*



Figure 5. *Pseudaulacaspis pentagona* with cover removed to show adult female



Figure 6. *Pseudaulacaspis pentagona* adult females and swarming first instars on *Catalpa bignonioides*



Figure 7. *Pseudaulacaspis pentagona* colony almost completely covering the bark of *Catalpa bignonioides*

Host Plants

Pseudaulacaspis pentagona is one of the most polyphagous scale insect species in the world, being recorded from well over 100 plant genera, including numerous crop and ornamental plants. The following list includes only some of the host genera of commercial significance in the UK: *Buddleia*, *Camellia*, *Capsicum*, *Catalpa*, *Celtis*, *Clematis*, *Cornus*, *Cucurbita*, *Euonymus*, *Ficus*, *Fraxinus*, *Geranium*, *Hedera*, *Hibiscus*, *Hydrangea*, *Ilex*, *Juglans*, *Ligustrum*, *Magnolia*, *Malus*, *Morus*, *Nerium*, *Pelargonium*, *Philadelphus*, *Piper*, *Pittosporum*, *Populus*, *Prunus*, *Pyrus*, *Rhamnus*, *Rhus*, *Ribes*, *Rubus*, *Salix*, *Solanum*, *Sorbus*, *Syringa* and *Vitis*.

Description

Adult female scale covers (Fig. 4) are convex, circular to oval, dull white with a sub-central yellow spot (shed skins), 2.0–2.5 mm in length. They are often obscured beneath bark flakes on tree trunks (especially mulberry) or beneath the epidermis on fruit (especially kiwi). The male cover (test) (Fig. 1) is smaller, felted, white, elongate, often ridged with a terminal yellow spot (shed skin), 1.0–1.5 mm in length. The male tests often occur in conspicuous masses (Fig. 7), occasionally smothering the bark and turning it white (they are often described as looking like snow). The adult males are winged and mobile in order to locate a mate.

Pest Biology, Dispersal and Detection

Each female lays between 100 and 150 eggs, depending largely on host plant species. Male eggs are orange and female eggs are white. The eggs hatch three or four days after being laid and the first instars (Fig. 6) actively swarm over the host, searching for a suitable feeding site. The females have three instars and males five. There are from one to four generations per year, depending upon climate, although in the UK one is most likely. In the USA a generation is completed in 36 to 40 days during the summer at 25°C average temperature and in 80 to 90 days during the winter. The adult females over winter and can survive temperatures as low as –20°C although there is high mortality at such temperatures.

Like other diaspidids, the main dispersal stage of *P. pentagona* is the mobile first instar (Fig. 6), which can disperse up to 1 m, but are distributed across much greater distances by wind, flying insects and birds. Ornamental plants can be important in facilitating the spread of this pest since they are not so well protected on nurseries, i.e. compared to the quantity of chemical sprays applied to cut flowers. A batch of infested ornamental shrubs from a single nursery can easily spread the pest widely since such hosts could be planted in private and public gardens.

Economic Importance and Damage

Pseudaulacaspis pentagona is one of the most important armoured scale insect pests in the world. It removes sap from the host plant, which reduces vigour. Foliage of infested trees may become sparse and yellow. Fruit size may be reduced and premature fruit drop is likely to occur, especially if scale feeding is accompanied by other stresses. Heavy infestations can result in the drying out and death of twigs, branches, and even large mature trees if left unattended. Young plants can die very quickly after infestation.

Pseudaulacaspis pentagona has caused major problems in areas where it was accidentally introduced in the absence of its natural enemies. The efficiency of natural enemies is reduced in urban areas by pollution; consequently, *P. pentagona* can cause severe damage to ornamental plants in towns and cities. In the southeastern USA, *P. pentagona* is a serious pest of *Prunus* spp. (especially peach) and *Pyrus* (pear) where infestation can become significant and thousands of dollars are spent each year on the control of the pest. In the northeastern USA it is a very destructive pest, especially on flowering cherry, mulberry, peach and other deciduous fruit trees. Heavy outbreaks have occurred on ornamental plants in Hungary where infested *Morus* trees exhibit dieback and can be killed after a few years (Figs. 2 & 3). The pest has also caused significant damage in France, Greece, Italy and Switzerland. It is also known as a glasshouse pest in cooler countries such as Sweden.

Advisory Information

Infested hosts can be trimmed/ pruned to remove infested parts, which can then be burned. Chemical options are available but the waxy covering of the organism affords it some protection. Repeated application of chemical insecticides over more than one season may be required. Sticky tape erected with its stickiness facing outwards on the trunk and branches could help to optimise spray timings. In the spring, the best time to spray is when the very young larvae ('crawlers') are active and these would have a dusty appearance on the tape. For professional use, insecticides containing acetamiprid, deltamethrin or petroleum oil would be effective, for home and garden situations, products containing natural plant extracts could be used.

Suspected outbreaks of *P. pentagona* or any other non-native plant pest should be reported to your local Fera Plant Health and Seeds Inspector, or

Tel: 01904 465625

Email: planthealth.info@fera.gsi.gov.uk

Web: www.defra.gov.uk/fera/plants/plantHealth

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