

## Oak Processionary Moth

*Thaumetopoea processionea* (Notodontoidea Thaumetopoeidae)

The oak processionary moth is a major defoliator of oak in Europe. The larvae (caterpillars) feed on the foliage of many species of oaks, including English, Sessile and Turkey oaks (*Quercus robur*, *Q.petraea* and *Q.cerris*). Hornbeam, hazel, beech, sweet chestnut and birch are also reported to be attacked, although mainly when growing next to severely defoliated oaks.

Oak processionary moth is also a risk to human health. The larvae (caterpillars) are covered in irritating hairs that contain a toxin and contact with these hairs, or their inhalation, can result in skin irritation and allergic reactions. These problems are significant because oak processionary is often most abundant on urban trees, along forest edges and in amenity woodlands.

Oak processionary moth is a native species of central and southern Europe, where it is widely distributed, but its range has been expanding northwards, presumably in response to climate change. It is now firmly established in northern France and the Netherlands, and has been reported from southern Sweden. More recently, colonies of larvae have been found in parts of London.

### Life Cycle

#### Egg stage

Eggs are laid from July to early September. Each female lays between 100 and 200 eggs on twigs and small branches in the canopy. The eggs are deposited in rows in a single layer to make up a plaque. The plaques are covered with greyish scales and remain on the branches over the winter. The first stage larvae (1<sup>st</sup> instar) hatch from the eggs in April.



Newly hatched larvae on egg mass. *L-M Nageleisen, Dépt. Santé Forêts, France. www.forestryimages.org*

#### Larval stage

Oak processionary larvae can be found from April to June. The newly hatched larvae have a uniformly brown body and dark head. As they grow they lighten in colour so that, by the time they are mature,



Larvae defoliating oak. *L-M Nageleisen, Dépt Santé Forêts, France. www.forestryimages.org.*

they have a grey body and dark head. These older larvae have a single dark stripe running down the middle of the back and a whitish line along each side. Clumps of extremely long white hairs arise from reddish-orange warts (pinacula) along the length of the body. Less easy to see are the many thousands of short hairs that also cover the larvae. It is these short hairs that contain the irritant toxin.

The larvae feed together in groups and, when not feeding, they congregate in communal nests made of white silk webbing spun up under a branch or on the trunk. The larvae typically follow one another head-to-tail in long 'processions' to and from the nest and from one feeding position to another, which gives rise to the common name.



Small, webbing nest on the trunk of an oak.  
*L Moraal, Wageningen URC, The Netherlands*



Larger, abandoned nest with shed skins, pupal cases and hairs. *L. Moraal. Wageningen URC. Netherlands*

Small larval nests are typically the size of a tennis ball, but they can be very much larger. The larvae pass through six growth phases (instars), shedding their skin between each stage as they grow. The larvae moult inside the nests and the cast skins and hairs accumulate so that, as time passes, the nests take on an orange-brown colour. Larvae complete their development within 9-12 weeks and pupate, inside the nests, during late June or early July. The adult moths emerge 1-2 weeks later.

### Adult moth

Adult moths fly at night from July until early September and are attracted to light. They have a wingspan of around 30-32mm and grey forewings suffused with white and some darker grey markings. This coloration provides an effective camouflage against the bark of oak trees on which the adults often rest.



Adult moth. *P. Harris, ukmoths.org.uk*

### Health Risks

Hairs present on the larger larvae (third to sixth instars) contain an urticating defensive toxin, thaumetopoein, a chemical potentially harmful to humans. Contact with the hairs can provoke allergic reactions manifested as skin rashes, conjunctivitis and respiratory problems such as pharyngitis and asthma. Health problems can occur even if the larvae are not handled as the hairs break off readily and are dispersed in air currents. Abandoned nests contain shed skins, pupal cases and vast numbers of detached hairs and should be treated with extreme caution.

### Control

If oak processionary moth becomes established in Britain it will pose a new and difficult management problem for arboriculturalists, local authorities, contractors and tree owners. Chemical and biological insecticides approved for use against brown tail moth, *Euproctis chrysorrhoea*, frequently the subject of control measures because its larvae also have easily detached, extremely irritating hairs, are likely to be effective against oak processionary. However, larvae concealed inside nests will be well protected from chemical sprays and consequently the timing of spraying in relation to the moths' life cycle and behaviour will be critical. Nests can also be destroyed, after they have been stabilised. These and other control options are currently being reviewed.