

FOREST PEST SPECIES PROFILE



November 2007

Thaumetopoea processionea (Linnaeus, 1758)

Other scientific names: *Bombyx pityocampa* Denis & Schiffermüller; *Cnethocampa pityocampa*; *Thaumetopoea wilkinsonii* Tams

Order and Family: Lepidoptera: Thaumetopoeidae

Common names: oak processionary moth

Thaumetopoea processionea is a major defoliating pest of oak in Europe. Native to central and southern Europe, its range has been expanding northwards where it is causing significant problems in other European countries.



Oak processionary caterpillars

(Photos: Bugwood.org - L-M. Nageleisen, Département de la Santé des Forêts; H. Ovidiu, University of Oradea)

DISTRIBUTION

Native: central and southern Europe. Its distribution is expanding northwards and it is now firmly established in Belgium, northern France and the Netherlands, and has been reported from southern Sweden and the UK.

Introduced:

IDENTIFICATION

Adults have a wingspan of 30-32 mm and grey forewings with white and some darker grey markings (UK Forestry Commission, n.d.).

Newly hatched larvae have a uniformly brown body and dark head which lightens as they grow to become greyer in colour (UK Forestry Commission, n.d.). These mature larvae have a single dark stripe on the middle of the back and a whitish stripe along each side. The length of the body is covered by thousands of short hairs and reddish-orange warts with clumps of very long white hairs.

HOSTS

Oak trees (*Quercus* spp.) are the main hosts however other broadleaved trees, such as hornbeam (*Carpinus* spp.), hazel (*Corylus* spp.), beech (*Fagus* spp.), sweet chestnut (*Castanea* spp.) and birch (*Betula* spp.), have been attacked by this pest although mainly when they are grown next to severely defoliated oaks.

BIOLOGY

Thaumetopoea processionea has one generation per year (Dajoz, 2000). Females lay their eggs, between 100-200, from July to early September on twigs and small branches in the canopy (UK Forestry Commission, n.d.). They are deposited in groups forming plaques of a single layer of eggs which are covered with greyish scales and remain on the branches over the winter.

Larvae can be found from April to June. They feed in groups and congregate in communal white silk nests under branches or on the trunk when not feeding. Larval nests are typically small, about the size of a tennis ball, but much larger ones have been reported. They pass through 6-10 instars, shedding their skin inside the nests between each stage as they grow (UK Forestry Commission, n.d.; Dajoz, 2000). The accumulations of cast skins and hairs accumulate in the nests leads them to take on an orange-brown colour over time. The larvae typically migrate in procession; following one another head-to-tail in long lines to and from the nest and from one feeding position to another, which gives rise to the common name.

Pupation takes place in the nest typically during late June or early July (UK Forestry Commission, n.d.). Adults typically emerge in August. They are nocturnal and live for only a day or two (Dajoz, 2000).

SYMPTOMS AND DAMAGE

Larvae feed on the leaves of host trees causing significant defoliation. Trees are not usually killed but repeated attacks can severely reduce health and vigour.



**Oak (*Quercus* sp.) branch defoliated by the oak processionary caterpillar
(Photo: Louis-Michel Nageleisen, Département de la Santé des Forêts, Bugwood.org)**

Thaumetopoea processionea larvae have urticating hairs that can cause skin irritation, conjunctivitis, respiratory congestions and asthma in humans. Contact with dead larvae, cocoons, nests and debris from infested oak forests can also cause dermatitis and other symptoms throughout the year. These hairs are also carried on air currents and therefore direct contact is not necessary to cause health problems. The oak processionary moth tends to be more abundant on urban trees and along forest edges where there is a high probability of it coming into contact with people.

DISPERSAL AND INTRODUCTION PATHWAYS

Adult males are strong fliers and are thus capable of natural dispersal to new areas. Larval processions are also known to travel some distance to find suitable hosts.

Important possible pathways of introduction include the movement of nursery stock, live oak trees, branches and roundwood (with bark) which is infested with the eggs or even larvae.

CONTROL MEASURES

If detected, egg masses can be destroyed before they hatch the following spring. The application on chemical pesticides against the larval stages soon after they hatch in the spring can be effective. Destruction of the nests during the brief pupal stage in the summer can reduce the number of adult moths that will emerge. Debarking of roundwood can help prevent the spread of this pest to new areas.

A number of species are known enemies of the oak processionary moth (Dajoz, 2000). Non-specific predators include the beetles *Xylodrepa quadripunctata*, *Calasoma sycophanta* and *C. inquisitor*, the heteropterans *Picromerus bidens* and *Troilus luridus*, and the dipteran predator *Xanthandrus comptus*. Non-specific parasitoids include species of flies such as *Ctenophorocera pavidata*, *Zenilia libatrix*, *Phorocera agilis* and *Compsilura concinnata*, and the wasps, *Pimpla examinator*, *Theronia atalantae* and *Trichogramma*, *Anastatus* and *Phobocampe* species. The dipteran *Carvelia processionae* is a host specific parasite. Other predators include some species of birds and small mammals.

References

Dajoz, R. 2000. *Insects and forests. The role and diversity of insects in the forest environment*. Paris, Intercept Ltd/Editions Technique et Documentation/Lavoisier Publishing, 668 pp.

United Kingdom (UK) Forestry Commission. *Oak processionary moth* *Thaumetopoea processionea* (*Notodontoidea Thaumetopoeidae*). Tree Pest Advisory Note, Farnham, Surrey, Forest Research, UK Forestry Commission.

