



Please note, for more information/ details on the described organisms, please scan the QR code to access the accompanying factsheet.



Pine processionary moth (*Thaumetopea pityocampa*)

Pine processionary moth is present in North Africa and Southern Europe. It has also recently been spreading northwards through France and has been found in the Paris region. Pine processionary moth caterpillars feed on the needles of pine trees and some other conifer species, and in large numbers they can severely defoliate trees. This can weaken trees and make them more vulnerable to attack to other pest/diseases and to environmental stress such as drought or flood.

The main symptoms are described below:

- The larvae can form conspicuous oval tents (20-30cm) which can lead to large scale defoliation in pines (Fig. 1)



Figure 1. Caterpillars oval silken nests and needle defoliation (D.D. Cadahia, Subdirección General de Sanidad Vegetal, Bugwood.org).

- Adult moths (May-July) have cream coloured forewings and white hind wings (Fig. 2). Females have a wingspan of 35-50mm and males 30-40mm.



Figure 2. Adult pine processionary moth (D.D. Cadahia, Subdirección General de Sanidad Vegetal, Bugwood.org)

- Larvae have red-orange protrusions bearing tufts of extremely irritant white hairs (Fig. 3)

Figure 3. Processionary moth caterpillars (François-Xavier Saintonge, Forest Health Department, Bugwood.org)



Pine tortoise scale (*Toumeyella parvicornis*)

Pine tortoise scale is a Nearctic pest of pine occurring from Mexico, throughout the United States (except the north-west) and into south-central Canada. It was first reported in Italy in 2015 and has spread to Abruzzo, Campania, Lazio and Apulia regions. In 2021 it was found in France Provence-Alpes-Cote d'Azur region. It is contributing to the decline and mortality of stone pine (*P. pinea*), particularly in urban areas. In the Caribbean it is a highly invasive pest and in recent decades it has decimated the native Caicos pine forests (*P. caribaea* var. *bahamensis*) in the Turks and Caicos Islands. It is not yet known how susceptible Scots pine is to *T. parvicornis* but it was not recorded on *P. pinea* until it was introduced to Italy.

The main symptoms are described below:

- Females can be seen feeding on bark and needles (Fig 4a/b)



Figure 4. a) bark-feeding adult females with orange first instars (crawlers); b) needle-feeding adult female.

- Thick black sooty moulds develop on the honeydew turning the bark and needles black (Fig. 5). The ground and objects below the infestation can also turn black.



Figure 5. *Pinus pinea* bark covered in sooty mould growing on honeydew excreted by Pine tortoise scale.

- New growth may turn white due to large quantities of wax secreted by the young females although this quickly disappears with wind and rain (Fig. 6).

Figure 6. New growth in *Pinus caribaea* white due to a conspicuous covering of wax secreted by Pine tortoise scale.



- There is also yellowing, needle loss and flagging (die back) indicating general decline in the health of the tree and eventually death (Fig. 7).



Figure 7. *Pinus pinea* infested with Pine tortoise scale showing needle loss.

Black pine sawyer beetle (*Monochamus galloprovincialis*)

The Black pine sawyer beetle is widespread in Europe but is not in the UK. It is a vector for pine-wood nematode (*Bursaphelenchus xylophilus*) which causes a condition called pine wilt disease resulting in widespread tree loss. The nematode is currently present in Northern Portugal near Lisbon.

The main symptoms of the beetle are described below:

- Adult beetles are black with large antennae, twice the length of their body (Fig. 8)



Figure 8. Adult male of black pine Sawyer beetle (U.Schmidt, 2014)

- Feeding larvae form galleries as they burrow through the wood (Fig. 9)



Figure 9. Larvae and galleries of black pine Sawyer beetle (D.D. Cadahia, Subdirección General de Sanidad Vegetal, Bugwood.org)