

Data sheets on quarantine pests
Fiches informatives sur les organismes de quarantaine

Malacosoma parallela

Identity

Name: *Malacosoma parallela* Staudinger

Taxonomic position: Insecta: Lepidoptera: Lasiocampidae

Common names: mountain ring silk moth (English); горный кольчатый шелкопряд (Russian)

EPPO code: MALAPA

Phytosanitary categorization: EPPO A2 action list no. 320

Hosts

M. parallela is extremely polyphagous and causes most damage in its native range to *Quercus* spp. (the native *Quercus boissieri* and *Quercus macranthera*, planted *Quercus robur*), *Prunus* spp. (especially *Prunus bucharica* and *Prunus dulcis*) and *Malus* spp. (*Malus domestica*, *Malus sieversii*). Significant damage also occurs on various other woody species, including many native species of Central Asia: *Berberis integerrima*, *Chaenomeles japonica*, *Cotoneaster insignis*, *Cotoneaster suavis*, *Crataegus hissarica*, *Crataegus pontica*, *Crataegus turkestanica*, *Cydonia oblonga*, *Prunus armeniaca*, *Prunus avium*, *Prunus cerasus*, *Prunus divaricata*, *Prunus mahaleb*, *Prunus padus*, *Prunus persica*, *Pyrus communis*, *Rosa canina*, *Rosa corymbifera*, *Rosa kokanica*, *Rosa maracandica*, *Salix excelsa*, *Salix tenuijulis*, *Sorbus persica*, *Sorbus turkestanica*. Other native and planted deciduous trees and shrubs are damaged occasionally: *Atraphaxis pyrifolia*, *Elaeagnus angustifolia*, *Fraxinus sogdiana*, *Hippophae rhamnoides*, *Juglans regia*, *Lonicera korolkowii*, *Lonicera nummulariifolia*, *Myricaria bracteata*, *Populus alba*, *Populus tremula*, *Ribes nigrum*, *Ribes rubrum*, *Rubus idaeus*, *Rubus turkestanicus*, and *Ulmus minor* (Pavlovskii & Shtakelberg, 1955; Grechkin, 1956; Degtyareva, 1964; Sarkissyan, 1972; Romanenko, 1981; Maslov, 1988).

Geographical distribution

EPPO region: Armenia, Kazakhstan (eastern), Kyrgyzstan, Russia (North Caucasus – Dagestan and Chechnya), Turkey, Uzbekistan

Asia: Iran (northern), Kyrgyzstan, Syria, Tajikistan, Turkmenistan, Uzbekistan

EU: absent

Biology

The main outbreaks of *M. parallela* occur in mountain forests at an altitude of 1000–1800 m where the pest finds optimal conditions for its development. It can occur up to 2400 m.

Mass flight of *M. parallela* usually occurs from the beginning of June to the end of July. Its timing depends on altitude. Each day, the flight begins in the twilight and lasts throughout the night. The rest of the day, moths stay without movement in shade on trunks, branches and leaves. Copulation occurs 2–3 h after hatching of the adults. Males die after copulation, females live for 2–3 days and lay eggs. Egg masses (Fig. 1) encircle thin branches of host plants similar to the egg masses of the closely related European species *Malacosoma neustria*, but they are covered by a thick layer of special female secretion (spumaline), which is shining whitish grey and silvery when fresh and then turns dark. This layer of secretion protects eggs against unfavourable conditions during overwintering. One female usually makes one egg mass, but sometimes two or three. An egg mass usually contains from 100 to 400 eggs.

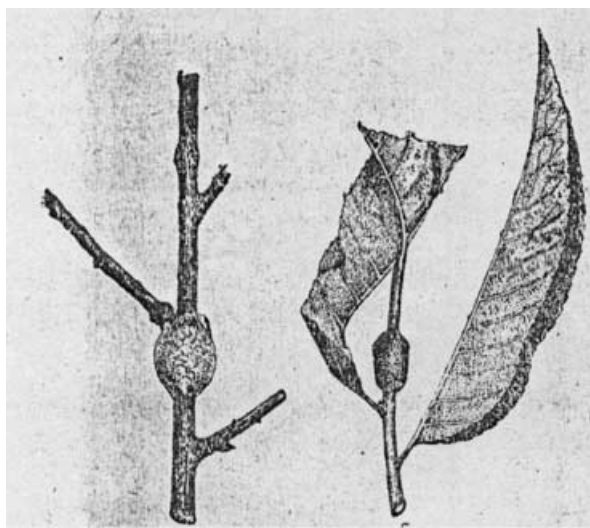


Fig. 1 Egg masses of *Malacosoma parallela* (Degtyareva, 1964).

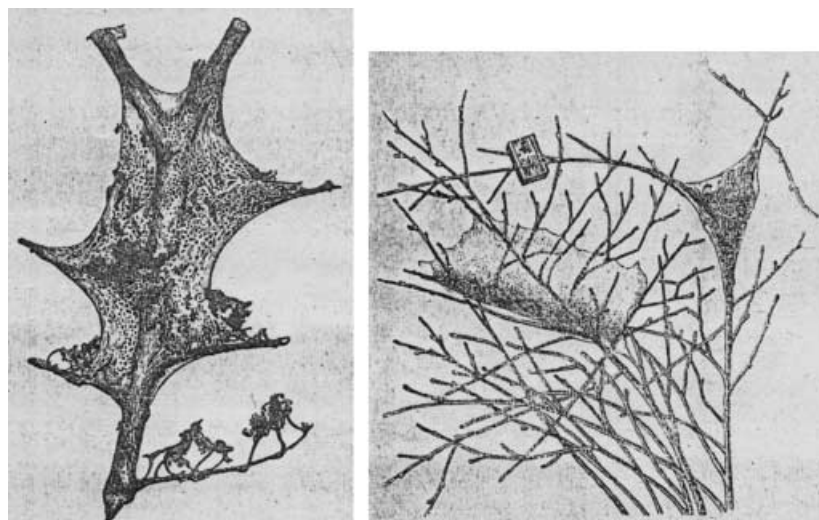


Fig. 2 Nests of *Malacosoma parallela* (Degtyareva, 1964).

Neonate caterpillars appear from the end of March at the same time as young leaves of host plants. They usually all hatch during 1–2 days and begin to make a web nest on branches. They feed on young leaves around the nest. The nest (Fig. 2) is usually constructed by the group of individuals hatched from one egg mass. It can reach up to 25 cm long and 17 cm wide. When caterpillars reach 3rd or 4th instar, the group usually leaves the first nest and constructs new ones (2 or 3) in places where there is more food. Caterpillars moult inside nests and feed on leaves around the nest during the evening, the night and the morning. They stay inside the nest during the hot time of the day. They leave the nests at the 5th or 6th instar and then continue to live individually. The length of their development time depends much on the altitude and host plant. Caterpillars moult five times before making cocoons on leaves and in other different places at the end of May and in June. The full life cycle takes one year (Grechkin, 1956; Degtyareva, 1964; Sarkissyan, 1972; Romanenko, 1981; Maslov, 1988).

Detection and identification

Symptoms

Defoliation of host plants is usually very spectacular. The presence of egg masses, nests and individual caterpillars is easily detected. Moths are attracted by sources of light.

Morphology

Eggs

The egg is grey, elongated, about 1.1 mm long and 0.8 mm wide, flat at the base side. In the egg mass (Fig. 1), eggs are situated close to each other, they encircle thin branches and are covered by thick layer of special female secretion, which is shining whitish grey and silvery when fresh and then turns dark.

Larva

The neonate caterpillar is brown-black, 2–2.5 mm long, with black head 0.3 mm wide. The caterpillar of the 6th instar before pupation is 40–50 mm long with a head of 4.0–4.5 mm wide. A large ochre-orange stripe runs along all the dorsal surface of the body. This stripe is crossed in different directions by multiple thin sinuous black strokes and lines. Each segment has, on the lateral side, from each site of the stripe, a black spot with a bundle of black hairs. Behind each pair of these spots, another pair of spots exists, which are less visible and separated from each other by a slightly larger distance. The body on both sides of the stripe is dove-blue coloured. A thin ochre stripe runs along the lateral side of the body close to the dorsal side and is limited from the dorsal side by a black line. Below this stripe, there are many small black spots. The ventral surface is separated from the lateral side by a black stripe. A large black spot is situated in the middle of each ventral segment. All the body is covered by long light-grey hairs. In addition, there are three lines of bundles of grey hairs along each lateral side. Prolegs are light-ochre, legs are black shining light-ochre at the bases. The head is dull dove-blue coloured with small black dots.

Pupa

The pupa is brown with a dove-coloured bloom, 15–18 mm long and 4.8–6.0 mm wide, and situated in an elongated, dense, light-yellow cocoon. The cocoon (Fig. 3) is 19–30 mm long and 9–14 mm wide.

Adult

The wingspan of the adult (Fig. 4) is 30–45 mm. The colour of the front wings varies from yellowish ochre to brown-red with two transverse stripes.

Pathways for movement

M. parallela can spread by flights of adult moths. All stages of the life cycle can be transported on host plants moving in



Fig. 3 Cocoon of *Malacosoma parallela* on leaf (Degtyareva, 1964).

trade, particularly plants for planting and cut branches. Eggs, larvae and pupae (cocoon) may be associated with wood carrying bark and may be present as contaminants on other commodities.

Pest significance

Economic impact

M. parallela is an important defoliator of many deciduous trees in different countries of the former USSR. Outbreaks often last for two consecutive years. It was especially noted as a very dangerous pest of oak in the mountains of Armenia (Sarkissyan, 1972) and of forests, fruit trees and shrubs of *Rosaceae*, *Fagaceae* and *Elaeagnaceae* in the mountains of Tajikistan (Grechkin, 1956; Degtyareva, 1964). It attacks both stressed and healthy trees of different ages. Outbreaks occur throughout large mountain areas, often resulting in 100% defoliation and sometimes leading to the death of trees and forests. Damage may be caused by this species alone, or in association with *Yponomeuta padellus*, *Euproctis kargalica*, *Erschoviella musculana*, *Lymantria dispar* or other defoliators. Attacks may result in serious changes in the environment over large areas, including problems of erosion.

Control

Significant control efforts (mainly manual destruction of egg masses and nests by collecting and burning, but also aerial treatments with chemical and bacterial products) are undertaken against *M. parallela* during outbreak years (Degtyareva, 1964) throughout the range of the pest. Natural

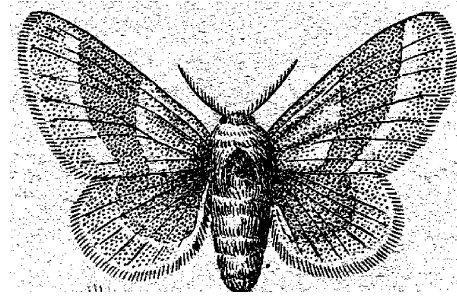


Fig. 4 Moth of *Malacosoma parallela*.

enemies of *M. parallela* play an important role in regulation of its populations (Degtyareva, 1964). The most important of these is the egg parasitoid *Geniocerus* sp., but other natural enemies also play a role, e.g. the pupal parasitoids *Brachymeria intermedia*, *Epiurus* sp., *Pimpla instigator*, *Pimpla turinellae*, *Itoplectis viduata*, the larval parasitoid *Apanteles difficilis* and some other parasitoids, predators and diseases.

Phytosanitary risk

M. parallela is considered as a serious defoliator of deciduous trees in many southern countries of the former USSR. It is very likely to be able to establish in many EPPO countries, particularly those in the south and east of the European part of the EPPO region where its host plants are important forest, ornamental and fruit trees.

Phytosanitary measures

M. parallela was added in 2003 to the EPPO A2 action list, and endangered EPPO member countries are thus recommended to regulate it as a quarantine pest. A recommended phytosanitary measure would be to require plants for planting and cut branches of its host plants to originate in a pest-free area. Wood should be debarked or heat-treated.

References

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