

Data Sheets on Forest Pests

## *Adelges lapponicus*

### IDENTITY

- Name:** *Adelges lapponicus* Kholodkovskii (= Cholodkovskij)
- Synonym:** *Chermes lapponicus* var. *praecox* Kholodkovskii (= Cholodkovskij)  
*Adelges laplanicus* Kholodkovskii (= Cholodkovskij)
- Taxonomic position:** Insecta: Hemiptera, Homoptera, *Adelgidae*
- Common name:** Lapland gall aphid, Early spruce gall aphid, Early gall aphid (English);  
Лапландский хермес, ранний еловый хермес, ранний хермес (Russian)
- Bayer computer code:** ADLGLP

### HOSTS

*A. lapponicus* develops on different species of spruce. The pest prefers *Picea abies* (= *P. excelsa*) but may develop on *P. obovata* (= *P. alpestris* = *P. pechtorica*), *P. glauca* (= *P. canadensis*), *P. mariana*, *P. schrenkiana* (*P. tianschanica* = *P. prostrata* = *P. robertii*), *P. pungens* (= *Abies menziesii*), *P. ajanensis* (= *P. jezoensis*) and other spruce species (Pavlovskii & Shtakelberg, 1955; Shaposhnikov, 1964; Gabrid, 1981; Haggman & Rousi 1986; Maslov, 1988).

### GEOGRAPHICAL DISTRIBUTION

**EPPO region:** Estonia (in parks), Finland, Kyrgyzstan (introduced), Russia (North of the European part), (Pavlovskii & Shtakelberg, 1955; Shaposhnikov, 1964).

**Asia:** Kyrgyzstan (introduced) (Gabrid, 1981).

**EU:** Absent.

### BIOLOGY

N. A. Kholodkovskii (1915) described two forms of *A. lapponicus*. Galls of the pest mature in different time: one of them opens in June, others – from the end of July to the middle of September. This explains the existence of two forms: early (*Chermes lapponicus* var. *praecox*) and late (*Chermes lapponicus* var. *tardus*). Later, the last form received a status of a separate species – *Adelges tardus* Dreyf., which occurs throughout all the Europe (Kholodkovskii, 1915; Pavlovskii & Shtakelberg, 1955; Kozhanchikov, 1955; Shaposhnikov, 1964; Sinadskii, 1982).

*A. lapponicus* is a non-migrating (from one host to another) gall-forming adelgid. The pest has 2 generations per year and reproduces parthenogenetically. Larvae and females suck sap on growing buds. Damaged buds are deformed and transformed into galls situated at the end of branches. Larvae overwinter at the basis of buds, then continue to feed there in spring at the basis of needles and turn into females (“female-founders”). Each needle is transformed into a gall. Females lay eggs. Neonate larvae continue to suck sap inside galls, which join together

and take a cone-shape form. Larvae continue to feed and turn into nymphs. Galls open at that time (in June), nymphs go out of them and turn into winged females (“female-spreaders”), which lay eggs (as egg masses) on the underside of needles of the same tree or neighbouring trees. Hatched larvae overwinter at the basis of buds (Shaposhnikov, 1964; Sinadskii, 1982; Maslov, 1988).

## DETECTION AND IDENTIFICATION

### Symptoms

The main symptom of spruce infestation by *A. lapponicus* is the presence of cone-shaped galls at the end of branches (Fig. 1) similar to those of *A. laricis* Vallot (= *Chermes strobilobius* Kaltenbach), but *A. lapponicus* doesn't migrate from one coniferous host to another. Galls are well visible and easily detected.



Fig. 1 Galls of *Adelges lapponicus* (Kozhanchikov, 1955)

### Morphology

#### Eggs

Eggs of *A. lapponicus* are yellow-red and are laid by 20 to 30 and are slightly covered by wax.

#### Larva

Larvae of *A. lapponicus* have a long loop of proboscis bristles, which nevertheless don't reach the end of the abdomen.

#### Pupa

No information available.

#### Adult

Winged adults of *A. lapponicus* are bright red, 1,6 mm long. They have antennae (Fig. 2) a little different from those of *A. laricis*. They don't produce wax down and lay eggs only slightly covered by wax coating.



Fig. 2 Antennae of *Adelges lapponicus* (Kholodkovskii, 1915)

## MEANS OF MOVEMENT AND DISPERSAL

The introduction of eggs, larvae, nymphs and adults of *A. lapponicus* to new areas is possible with plants for planting and cut branches (including Christmas trees) of spruce originating in areas of its distribution. Winged females may spread themselves to short distances.

## PEST SIGNIFICANCE

### Economic Impact

*A. lapponicus* stresses much spruce trees because its larvae damage needles and buds. The pest damages the same trees during many consecutive years, which leads to losses in vigour and decrease of ornamental quality of city trees in parks and other plantations. *A. lapponicus* and other non-migrating adelgids causes much more damage than migrating adelgids, e.g. *A. laricis* (Sinadskii, 1982; Maslov, 1988).

### Environmental Impact

Damaging needles and buds of widely used ornamental spruce species, *A. lapponicus* disturbs city ecology and city environment. Forming galls, the pest considerably decreases ornamental quality of spruce trees (Sinadskii, 1982).

### Control

Chemical treatments may be used against “larvae-founders” of *A. lapponicus* in spring and against “nymphs-spreaders” - when galls open. Systemic pesticides may be used in the beginning of gall formation (Sinadskii, 1982; Maslov, 1988).

### Phytosanitary risk

As far as it is known, *A. lapponicus* is not declared a quarantine pest by any regional plant protection organization. The pest causes serious damage to spruce species in countries and areas where it occurs. The pest entered and established in new area in Kyrgyzstan (Gabrid, 1981) and is able to establish in many EPPO countries, and very likely to cause serious damage to spruce species, which are economically and ecologically important plants there.

## PHYTOSANITARY MEASURES

To prevent introduction of *A. lapponicus* to many EPPO countries, the effective measure would be to prohibit import of plants for planting and cut branches (including Christmas trees) of *Picea* from countries and areas of its present distribution. Phytosanitary inspection at the borders can detect pest galls on the imported regulated articles.

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