European and Mediterranean Plant Protection Organization
Organisation Européenne et Méditerranéenne pour la Protection des Plantes

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

Ips hauseri

Identity

Name: *Ips hauseri* Reitter
Taxonomic position: *Insecta*: *Coleoptera*: *Scolytidae*
Common names: Kyrgyz mountain engraver, Hauser's engraver (English); горный киргизский короед, короед Гаузера (Russian)
EPPO code: IPSXHA
Phytosanitary categorization: EPPO A2 action list no. 326

Hosts

Ips hauseri attacks certain species of *Picea*, *Pinus* and *Larix*. In Kyrgyzstan, this species was considered as a monophagous pest of *Picea schrenkiana* but, after the introduction in 1930/1932 of *Pinus sylvestris*, *Pinus pallasiana* and *Larix sibirica* into this area, it became a serious pest of these trees, especially of *P. sylvestris* (Prutenskii & Romanenko, 1954; Pavlovskii & Shtakelberg, 1955; Makhnovskii, 1966; Maslov, 1988).

Geographical distribution

EPPO region: Kyrgyzstan, Russia (Altai Krai)
Asia: Kazakhstan, Kyrgyzstan, Russia (Altai Krai), Tajikistan (Pavlovskii & Shtakelberg, 1955; Makhnovskii, 1966; Maslov, 1988; Yanovskii, 1999)
EU: absent

Biology

I. hauseri occurs essentially in mountainous areas of Central Asia. Its rate of development depends very much on altitude, and also on the position and exposure of the tree. The developmental cycle takes one year at altitudes of 2200–3200 m, whereas at 1200–1400 m, the pest develops two complete generations per year. The flight period of *I. hauseri* lasts from the beginning of May to the end of June. Adults make emergence holes, leave pupation cells and begin additional feeding. They usually fly during sunny days. The number of emergence holes is usually less than the number of emerging beetles because some use holes already made by other individuals. Where there are two generations per year, the development of the first generation (from eggs to adults) takes an average of 40 days. The additional feeding of young beetles takes place in the bark of trees where larval development occurred and lasts longer than the larval feeding, approximately 40–50 days. Additional feeding galleries have irregular shapes and are oriented along the trunk. When the bark is thin, the insects are sometimes obliged to move to another feeding site but, where the bark is thick, they usually finish the feeding phase in the same area. At altitudes of 1200–1400 m, young beetles of the first generation begin to lay eggs at the beginning of August. Young adults of the second generation appear in September/October. The species usually overwinters in the adult stage, less often in the larval stage. Young adults overwinter under the bark, close to the site of larval development.

The pest may attack trees without symptoms of stress, but also stressed, dying and recently cut trees. It prefers to attack trunks and large branches of mature trees situated in well illuminated locations but, at a high population level, it may also attack young trees 5–6 cm in diameter. It usually begins to attack the top parts of trunks, and branches larger than 5–6 cm in diameter in the top of the crowns. Then, its attacks move down along the trunk. Finally the pest occupies the entire trunk from the root collar to the top. By comparison with other spruce bark beetles, *I. hauseri* increases its population numbers very rapidly (Parfentiev, 1951; Prutenskii & Romanenko, 1954; Makhnovskii, 1966; Toktoraliev, 1979; Toktoraliev *et al*., 1984; Maslov, 1988).

I. hauseri is polygamous. Each pest family usually includes one male and 2–8 females (more often 3–5 females). Female galleries (Fig. 1) start from a common copulation chamber and go either downwards (most frequently) or upwards in the tree. The female gallery may reach 8–14 cm in length and 1.5–3.0 mm in width. Galleries are free from frass. One female lays 20–45 eggs, and one family produces 40–160 eggs (80 on average). Eggs are laid in special holes made by the female on both sides of the female gallery. The intervals between these holes are shorter at the beginning of the female gallery and longer at the end. Some holes are without eggs. Larval galleries are short, they reach 3–4 cm in length, are much widened at the end and finish with pupation cells. Galleries are made mainly in the phloem and bark on lower trunk parts of *P. schrenkiana* but in the sapwood and phloem of upper parts. On young *P. sylvestris*, galleries are only in the sapwood and phloem. At low altitudes, egg development takes 9–15 days, larval development takes

Fig. 1 Galleries of *Ips hauseri* (Parfentiev, 1951).

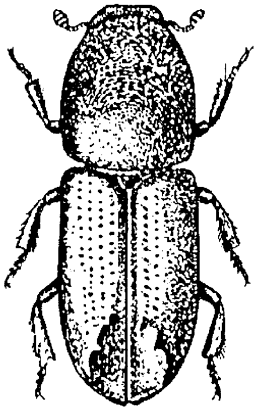

Fig. 2 Adult of *Ips hauseri* (Makhnovskii, 1966).

20–25 days, and pupae take 8–13 days. At high altitudes, the development of the different stages takes much longer (Parfentiev, 1951; Prutenskii & Romanenko, 1954; Makhnovskii, 1966; Toktoraliev, 1979; Maslov, 1988).

Detection and identification

Symptoms

The characteristic symptoms of *I. hauseri* are: flow of resin coming from the places where attempts have been made to enter the bark, species-diagnostic gallery systems with a central chamber and radial female and larval galleries, and sparse crowns of coniferous trees with partly dead tops and branches. The needles of attacked trees often show yellowing or reddening and wilting beginning from the tops of trees.

Morphology

Larva
Typical *Ips* larva (see Kalina, 1969).

Adult
The adult of *I. hauseri* is reddish-black, bright, with an elongated body, 3.5–5.0 mm long (Fig. 2). The whole body is covered by sparse yellowish-brown hairs. Intervals between longitudinal fissures on the elytra are not punctuated. At the tail end, each elytrum has four teeth situated around the elytral declivity. For males, the third, finger-shaped tooth is the widest and longest. Female teeth are smaller than male teeth and are almost uniform in size. The surface of the elytral declivity is mat (Prutenskii & Romanenko, 1954).

Pathways for movement

Natural spread of the pest by adult flight is limited. All life stages of *I. hauseri* may be easily transported with untreated coniferous (mainly spruce, pine and larch) wood commodities carrying bark, and possibly on cut branches (including Christmas trees). It would be unlikely to be transported in plants for planting since any infested material would certainly show symptoms and would be rejected for sale.

Pest significance

Economic impact

I. hauseri is considered by many authors as the most important xylophagous pest of *P. schrenkiana* in the region of its present distribution. Its importance is considered comparable to that of *Ips typographus* (EPPO/CABI, 1997) on other species of spruce. After introduction of *P. sylvestris*, *P. pallasiana* and *L. sibirica* into Central Asia in the 1930s, it became an important pest of these trees, particularly of *P. sylvestris*. The pest may attack slightly stressed and apparently healthy trees of different ages but it prefers to attack mature trees and, even when it does not kill them, the infestation results in significant loss of vigour and decrease of wood and seed production as well as reduction in wood marketability. The pest mainly occurs in mountain forests, which are very important for soil protection against erosion and it often causes the death of forests. Its capacity for very fast development, with rapid population build-up, increases the injuriousness of *I. hauseri*. The pest is usually the first to attack almost healthy or slightly stressed trees, and then is often followed by outbreaks of other wood borers, particularly the cerambycids *Tetropium staudingeri*, *Dokhtouroffia nebulosa* and *Dokhtouroffia baeckmanni*, the scolytids *Pityophthorus kirgisicus*, *Ips spessivtsevi*, and of other pests. It is particularly dangerous in years of drought (Parfentiev, 1951; Prutenskii & Romanenko, 1954; Pavlovskii & Shtakelberg, 1955; Marikovskii, 1956; Makhnovskii, 1966; Toktoraliev, 1979; Toktoraliev *et al*., 1984; Maslov, 1988; Vorontsov, 1995). In addition, *I. hauseri* often kills plantation trees of *P. sylvestris* in Kazakhstan and Kyrgyzstan (Prutenskii & Romanenko, 1954; Kostin, 1964).

Control

Official control efforts are undertaken in the area of the present distribution of *I. hauseri*. Control measures include silvicultural and sanitary measures (improving the resistance of forests, cutting and elimination of all infested trees, cutting of 'trapping trees' followed by their treatment), treatments with chemical and biological products (lindane, phoxim, dichlorvos). Entomophages do not apparently play a significant role in regulation of *I. hauseri* populations (Toktoraliev *et al*., 1984).

Phytosanitary risk

The natural range of *I. hauseri* includes mountainous regions in central Asia, with a climate similar to that in many parts of north and central Europe. This pest is therefore likely to find suitable conditions and susceptible host plants (notably, *P. sylvestris*) in many areas within the EPPO region. If introduced, it is likely to be a serious forest pest, as in the areas where it now occurs.

Phytosanitary measures

I. hauseri was added in 2004 to the EPPO A2 action list of pests recommended for regulation as quarantine pests. Measures used for other *Ips* spp. (OEPP/EPPO, 2005) would also be suitable for *I. hauseri*.

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