

Data Sheets on Forest Pests

Tetropium staudingeri

IDENTITY

Name:	<i>Tetropium staudingeri</i> Pic
Synonym:	<i>Tetropium tjanshanicum</i> Semenov <i>Tetropium staudingeri</i> Plavilstshikov
Taxonomic position:	Insecta: Coleoptera: Cerambycidae
Common Name:	Seven-river spruce borer, Staudinger spruce borer (English); Семиреченский еловый усач, дровосек Штаудингера (Russian).
Bayer computer code:	TETOST

HOSTS

Tetropium staudingeri attacks spruce, especially *Picea schrenkiana* (*P. tianschanica* = *P. prostrata* = *P. robertii*) (Maslov, 1988). Many authors note only *Picea schrenkiana* as a host plant (Plavilshchikov, 1940; Pavlovskii & Shtakelberg, 1955; Makhnovskii, 1966).

GEOGRAPHICAL DISTRIBUTION

EPPO region: Kyrgyzstan.

Asia: Northwestern China, Kazakhstan, Kyrgyzstan, Uzbekistan (Pavlovskii, Shtakelberg *et al.*, 1955; Makhnovskii, 1966; Maslov, 1988).

EU: Absent

BIOLOGY

The mass flight of *T. staudingeri* occurs in May-June in the southern parts of its area and in low altitudes, and in the first half of July in the northern parts of its area and in high altitudes. The pest attacks stressed, dying and recently cut trees and stumps. *T. staudingeri* usually lays eggs in cracks in the bark on the butt part of trunks of mature trees. On cut trees, it lays eggs on the lower side of the trunk. The larvae make large irregular galleries in the sapwood and overwinter once or twice. For pupation, the larva comes to a depth of 1.5-2.5 cm in the wood and makes a vertical 6-7 cm long gallery going downwards and curved at the end. The pupation cell is oriented horizontally in the direction of the bark. Before pupation, the larva makes the emergence hole and closes it with frass (Parfentiev, 1951; Makhnovskii, 1966).

T. staudingeri often attacks spruce trees together with the cerambycid beetle *Dokhtouroffia baeckmanni* and bark beetles *Ips hauseri* and *Pityogenes spessivtsevi*. If the level of infestation is high (8-10 larvae of *T. staudingeri* per 1 dm²), it supplants bark beetles (which normally occupy the upper parts of the trunk) in the competition for food. On stumps, the pest often lives together with the longhorn beetle *Asemum striatum*. The developmental cycle of the pest takes one year in the southern parts of its area and in low altitudes, and two years in the northern parts of its area and in high altitudes. (Parfentiev, 1951; Makhnovskii, 1966; Vorontsov, 1995).



Fig. 1. Gallery of *Tetropium staudingeri* larva in wood (Parfentiev, 1951)

DETECTION AND IDENTIFICATION

Symptoms

Characteristic symptoms are: large entrance and emergence holes in trunks, peeling bark, borings at the basis of infested trees, beetles sitting on the trunks and tunnels made by big larvae. The needles of attacked trees often show yellowing and wilting.

Morphology

Eggs

The egg is elongated, rounded at the ends, and covered at the ends by small cells.

Larva

The larva is yellowish-white with a darker pronotum and head, and black mandibles. The head is chordate and has a longitudinal fissure in the middle. The ninth abdominal tergite has a pair of small thorns at the top.

Pupa

The pupa has an elongated body. The abdominal tergite has multiple acute thorns from both sides of a longitudinal fissure. The top of the abdomen has a pair of urogomphal outgrowths, which finish in sclerotised thorns.

Adult

The adult of *T. staudingeri* is slightly flattened, 11-17 mm long, has elongated elytra and long antennae with knotted tops of the second to the fifth segments. The head is widely punctuated and covered by long hairs, and has a wide and deep longitudinal fissure between the antennae and between the eyes. This fissure sometimes reaches the rounded back border of the head. The male antennae extend longer than the mid length of the elytra; the female antennae reach one third of the length of the elytra. The eleventh segment of the female antenna is shorter than the fourth segment. The pronotum has a variable shape and variable fissures and depressions; it is widely punctuated and covered by long hairs, bright in the middle part and mat at the borders. The male pronotum is usually longer than wide; the female pronotum usually has equal length and width, but sometimes much wider than long. The scutellum is elongated, covered by punctuation from both sides of a wide longitudinal fissure. The elytra have parallel borders and are covered by fine punctuations and small hairs. The thorax and the abdomen are covered by fine punctuations and yellowish or brownish hairs. The fifth female abdominal segment is much elongated. The colour of the beetle varies considerably. For the typical form, the entire beetle is black, but very often the body is black and the elytra, legs and antennae are brown or reddish-brown (Plavilshchikov, 1940).

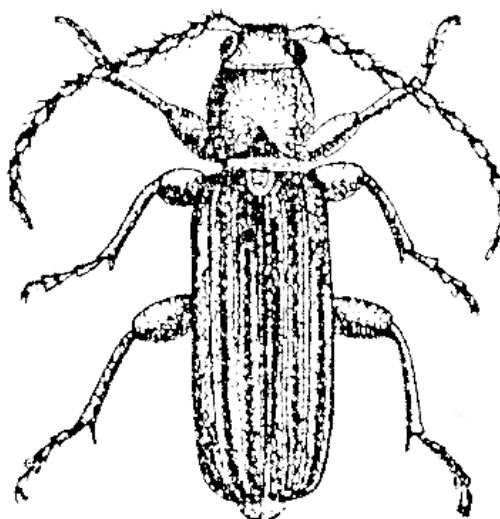


Fig. 2. Adult of *Tetrodium staudingeri* (Makhnovskii, 1966)

MEANS OF PEST MOVEMENT AND DISPERSAL

The natural spread of the pest with flying adults is fast. Because *T. staudingeri* may be hidden in the wood and therefore difficult to detect, it may be easily transported with untreated spruce wood products moving in trade. The pest may also be carried as a hitchhiker on planting material.

PEST SIGNIFICANCE

Economic Impact

T. staudingeri is one of the most important and common pests of spruce in the region of its present distribution. It may attack slightly stressed and healthy trees of different ages and continues to damage the same trees during several consecutive years causing their death. This species prefers to attack mature trees and, even in cases when it does not kill them, the infestation results in significant loss of vigour and of wood marketability (because of the bore holes). The pest mainly occurs in mountain forests, which are very important for soil protection against erosion. It is one of the most frequent and dangerous pests of spruce forests, stressed by defoliators or damaged by diseases or forest fires. Its outbreaks sometimes lead to the death of trees and forests, either itself or in association with the longhorn beetle *Dokhtouroffia baeckmanni*, bark beetles *Pityophthorus kirgicus*, *Ips hauseri*, *Ips spessivtsevi* and/or other pests. (Parfentiev, 1951; Makhnovskii, 1966; Maslov, 1988; Vorontsov, 1995).

Environmental Impact

Because it is a tree-killer, *T. staudingeri* is able to alter ecological relationships where spruce is an important component of the ecosystems. The pest mainly damages mountain forests and may alter mountain environment.

Control

Control efforts are undertaken in the area of the present distribution of *T. staudingeri*. Control measures include forestry 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 preparations (Maslov, 1988; Vorontsov, 1995).

Phytosanitary risk

T. staudingeri is not a quarantine pest for any individual country (as far as is known) or any regional plant protection organization. It is considered as a very serious forest pest in areas where it occurs. It is likely to establish in all coniferous areas within EPPO region if it will develop on European species of spruce. It is unlikely to be transported in planting material since the species does not attack branches, small trunks or root stocks which constitute planting material. Adults may, however, be resting on the surface of such material. Spruce is an important forest tree in many parts of the EPPO region.

PHYTOSANITARY MEASURES

The major risk of spreading of *T. staudingeri* is with spruce wood in which eggs, larvae, pupae and young adults may be under the bark and in the wood. Adults may also be transported on the surface of trunks. Wood should be debarked and inspected for bore holes. Cut branches and plants for planting should be inspected.

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