

BARK BEETLE *POLYGRAPHUS PROXIMUS*: A NEW AGGRESSIVE FAR EASTERN INVADER ON *ABIES* SPECIES IN SIBERIA AND EUROPEAN RUSSIA

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ABSTRACT

Polygraphus proximus Brandford (Coleoptera: Scolytidae) is a common feeder on Far Eastern firs: *Abies nephrolepis*, *A. hollophyll*, and *A. sachalinensis*. Its native range occupies northeastern China, Korea, Japan, Kurile and Sakhalin Islands, and the southern part of the Russian Far East (Primorskiy and Khabarovskiy Krays). The beetle attacks fresh logs and trees, weakened by fires, pathogens, or defoliation.

In 1999, *P. proximus* was found on spruce on the western Russian border, on the Baltic Sea coast near St. Petersburg (Mandelshtam and Popovichev 2000). This finding was evaluated as a small incidental introduction. It was never repeated and eventually forgotten. After 10 years, the species was found in five distantly located places around Moscow (Chilahsayeva 2008). Beetles infested many trees of *Abies sibirica* and *A. balsamea* planted along highways. They also were found under the bark of fallen trees of spruce (*Picea abies*) in forest stands.

Polygraphus proximus differs from other co-occurring *Polygraphus* species on conifers by its six-segment antenna. Other species have only five segments.

In spring 2009, *P. proximus* was found in two locations in Krasnoyarsk Kray (Southern Siberia) in the Bogotolskiy and Kozulskiy regions. There were two outbreak areas of about 3,000 ha each in a pure Siberian fir taiga forest stand. Outbreak foci were at least 3 years old with a lot of freshly infested fir trees

at the periphery of the foci. Trees crowns were visually healthy, but stems were fully covered by drops and streams of resin exuded from beetle entrance holes. In autumn, all infested trees were dead with yellow crowns. Each nest consisted of two to three female galleries up to 8 cm long, horizontally oriented on surviving trees. Larval galleries were always oriented along the tree stem and reached 7 cm in length. Adults prefer to overwinter somewhere out of stems: there were only dead beetles under the bark of freshly killed firs.

In June 2009, several *P. proximus* adults were found in pheromone traps not far from the city of Tomsk (Western Siberia). Traps were located in Siberian pine (*Pinus sibirica*) stands to monitor pine bark beetle *Ips sexdentatus* populations. *P. proximus* was found in traps only in one place with a low concentration of firs in the stand.

Before 2009, there was no information on *P. proximus* from Siberia and it was generally believed that *P. proximus* could not develop on *Abies sibirica*.

Now, *P. proximus* is considered to be the most aggressive bark beetle ever found on firs in Siberia. Previously, only *Monochamus urussovi* Fish., a cerambycid species, was known to be able to attack and kill healthy firs. For a successful attack and rapid weakening of the host tree, *M. urussovi* used spores of blue-stained fungi. In Japan *P. proximus* is also known

to infest *Abies* with spores of a few aggressive phytopathogenic *Ophiostoma* fungi (Yamaoka et al. 2004).

Special studies should be planned to study distribution and ecology of *P. proximus*, a new aggressive invader and a possible threat for both Asian and European conifer forests.

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Literature Cited

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