

EMERALD ASH BORER IN RUSSIA: 2009 SITUATION UPDATE

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ABSTRACT

The emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is a beetle native to East Asia and the Russian Far East where it is considered a minor pest, attacking weakened or dying ash trees. In 2006, EAB was found to be responsible for enormous damage of ash species in Moscow, which causes serious concern for Europe. Recently we reviewed the EAB situation in Russia and made recommendations for research and management strategies in Europe (Baranchikov et al. 2008). Here we report the results of a 2008-2009 survey of further EAB distribution in the Russian Federation.

Agrilus planipennis in the Asian Part of Russia

In the eastern part of Russia, the EAB is distributed through nearly all regions occupied by native ash species *F. chinensis* and *F. mandshurica*. It was found from Vladivostok in the South to the village of Dzhonka on the Amur River in Khabarovskiy Kray in the North. There were no signs of EAB at South Sakhalin Island, although there are native stands of *F. mandshurica* there.

In the Russian Far East, the beetle completes its life cycle in 1 (Southern Primoriye) or 2 years depending on the climate. Larvae are exclusively found in live cambium where they compete with bark beetles *Hylesinus eos*, *H. singulatus*, *H. laticollis*, and, in particular, *H. chlodkovskyi*. In the last case, the bark beetle was found to be about five times more abundant than *A. planipennis*. Two braconoid species (*Spathius depressithorax* Belokobylskiy and *S. generosus* Wilkinson) and an undetermined eulophid (*Tetrastichus* sp.) were found parasitizing EAB in the Far East.

Surveys showed that the beetle is extremely rare on *F. chinensis* and *F. mandshurica* occurring in natural stands of various ages. It is more common, albeit not a serious pest, in sparse plantations near cities or villages or ornamental trees along streets or in parks. In mixed oak-ash forests, it was found infesting mature trees stressed by fire damage and infested by root rusts. No obvious difference was observed in the level of attack between the two native ash species, but EAB eliminated all trees of *F. pennsylvanica* planted in cities.

Current Situation in European Russia

In January 2007, EAB was officially registered in Moscow as a main source of tremendous ash mortality in the Russian capital. Hundreds of dead trees were cut as a result of the *A. planipennis* outbreak. In Moscow, ash trees play an important role in urban forestry. It is the sixth most abundant tree genus planted in the city. The introduced American species *F. pennsylvanica* largely dominates, but European ash *F. excelsior* is occasionally planted. Most infestations of *A. planipennis* were observed on *F. pennsylvanica*, but *F. excelsior* is obviously also very susceptible.

In Moscow, *A. planipennis* was often found infesting ash trees along with the bark beetle *Hylesinus fraxini*. No parasitoid was found associated with the buprestid beetle, and the woodpecker *Dendrocopus major* was the only observed predator of larvae. The diameter of infested ash stems ranged from 5 to 46 cm at breast height, and the number of trees with exit holes ranged from 35 to 100 percent. On the infested trees, the average density of exit holes at breast height ranged

from 1 to 2.4 per square decimeter. In Moscow, EAB completes its life cycle during 1 year.

In 2009, numerous site surveys were performed using visual inspection and dissection of infested trees within a ~150-km radius from Moscow. It was found that the EAB distribution area is limited by the cities of Mytishchi in the North (20 km from Moscow); Bykovo in the East, 30 km from Moscow; Serpukhov in the South, 90 km from Moscow; and Mozhaisk in the West, 95 km from Moscow. If it is agreed that EAB was introduced to Moscow approximately 10 years before it was registered,

the speed of its distribution was ≤ 4 km per year.

Spread of the pest in firewood should be minimal in Russia because (a) wood for camping fires as a rule is prepared only near camping areas and (b) people do not use ash wood to heat houses, preferring conifers and birch.

In 2008 and 2009, surveys were also made on *F. pennsylvanica* stands in streets and parks of the South Siberian cities of Tomsk, Novosibirsk, Krasnoyarsk, Abakan, Ulan-Ude, and Yekaterinburg (Central Urals), but no sign of *A. planipennis* infestation was found.