Dynamics of bark beetle ips typographus l. reproduction in central Russia in 2010–2013 and 2014 forecast

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In 2010–2013 there was a pandemic bark beetle reproduction in Central Russia, and favourable weather and lack of the pest control radical measures contributed. Total area of dieback spruce woods affected by the bark beetle was over 150 thousand ha and covered coniferous-broadleaved forest zone and south taiga subzone in European Russia as well as some regions in the south Urals. This outbreak onset and its follow-up development until mid-2011 is detailed earlier [1, 2].

The bark beetle reproduction dynamics was monitored in several ways: pheromone supervision, there was a detailed visual record of the bark beetle infestations in spruce stands and stationary plots located in the Moscow region, there was an annual record of the bark beetle evolution in control trap trees by systematic opening and analysis of record panels.

In comprehensive surveys and studies it was found that the bark beetle population growth started in May-June 2010. The outbreak 2nd phase (maximum population) covers the period from June-August 2010 until May–June 2013. In July-August 2013 the bark beetle outbreaks were in crisis phase due to unfavorable weather and partly bark insect competitors, parasites and predators.

So the bark beetle mass outbreak took 4 years. If the crisis phase continues in 2014 then its duration will take 5 years. This is a common duration of the bark beetle pandemic mass outbreak [3].

Annually beetles of the 1st and sister generations played a crucial role in infestations and mortality of spruce stands. Precisely this time (May and June) the whole bark beetle population was in infested spruce trees. Thus extreme sanitary recovery operations should aim at elimination of these generations in particular sampling if freshly infested trees, mass catch of the bark beetles and their elimination with trap trees and pheromones. Their applications in initial period of the bark beetle mass propagation and population growth enable the greatest forest protective effect.

Clear sanitary cuts should be assigned during outbreak 2nd year their delay results in mass losses of valuable spruce timber. During crisis phase and follow-up years forest protective operations should be limited to removal of debris that is rather costly.

References

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