

IMPACT

integrated management of forest
pests addressing climate trends

Pest profile – Great spruce bark beetle

Scientific name: *Dendroctonus micans* (Kugelann)
Taxonomic position: Coleoptera: Scolytidae
Common name: Great spruce bark beetle



Hosts: Norway spruce (*Picea abies*); Scots pine (*Pinus sylvestris*); Larch (*Larix decidua*) and Fir (*Picea* spp.). It attacks the root and stem of plants and breeds in the bark; already damaged areas preferred. They tunnel to form galleries within the bark of living trees where their larvae feed and develop, ultimately killing the tree.

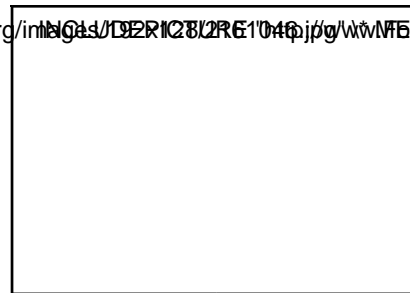
Threats: A well-established pest that was accidentally introduced from continental Europe concealed in imported timber pallets. As spruce is our most important commercial tree species managing this pest is a high priority.

Distribution and spread: First detected in Shropshire in 1982, it has since spread and became common enough to cause economic damage to forestry in Wales and parts of north-west England and Galloway, Scotland. It has not been recorded in Ireland other than as an occasional accidental import with forest products.

Climate change: Trees are generally healthier with more moisture and therefore more resistant to attack. Cold and wet springs and summers will actually slow bark beetle progression. With a high reproductive potential warmer summer's can result in two bark beetle generations per year instead of one, giving bark beetles the opportunity to attack forests twice in a single year.

Control: Restrict spread by annual surveys around the edge of a quarantined area followed by destruction of infested trees especially those attacked by root fungi or other pests. Wounds on living trees during harvesting operations should be avoided and the breeding and release of a host-specific predatory beetle, *Rhizophagus grandis*, a 'classical' biological control with its link to the Great Spruce Bark beetle by semiochemical signals (which is a generic term for a chemical substance or mixture that carries a message which is an attractant). An artificial breeding and mass release programme was started in 1984, and still continues today with releases into newly discovered infected sites.

Monitoring: The current labour-intensive visual survey methods is not cost-effective, however a biological programme of a predator at the edge of its expanding range to locate its prey even when there may be only a few infested trees in the forest would be a cost effective alternative.



Life Cycle:

- Female bores into live bark, excavates chamber & lays ~100 eggs
- Young hatch & feed on living bark en masse; the wood frass from the tunnels is dispersed behind and mixed with spruce resin, is expelled from the entrance holes and creates 'resin tubes' which can be seen and indicate an infestation.
- Pupate in frass
- Adult beetle cut emergence hole long prior to emerging
- Breed Mar - Oct
- Life cycle 10mths-2yrs

The **IMPACT** project, with partners Forest Research in Wales, Swansea University and the National University of Ireland, Maynooth is looking at improved pest control measures. Top of the agenda for the *Integrated Management of forest Pests Addressing Climate Trends (IMPACT)* team is assessing how changing climate will influence the damage caused by pests and pathogens. The project is part funded by the European Regional Development Fund through the Ireland – Wales Programme (INTERREG IVA) and Forestry Commission Wales. For more information log on to:

www.impactproject.eu

