Introduction

Ips typographus, also known as the eight-toothed spruce bark beetle, is a small brown bark beetle found throughout mainland Europe and northern Asia (including Russia), primarily affecting *Picea* species. Although widely present on the continent the beetle is a quarantine pest in UK.

Life Cycle

In late spring to early summer when temperatures reach 11–16°C over wintering adult male *I. typographus* beetles start to fly in search of new host trees. Volatile substances are emitted from stressed host tree and guide the beetles to areas containing this suitable breeding material. On landing in this material, the male will bore a nuptial chamber and begin to emit an aggregation pheromone to attract up to 3 or 4 females. The first mated female will bore a longitudinal maternal gallery towards the top of the tree, and all subsequent females will bore longitudinal galleries down the tree. The females will make egg niches, which will contain a small (<1mm) whitish-grey ovate single egg, on both sides of the longitudinal maternal galleries. Each female can lay between 30 – 80 eggs in total.

Once the egg hatches the larvae will widen and lengthen the egg niche and terminate the gallery with a pupal chamber, where it will pupate under the bark surface. Freshly pupated beetles are a lighter brown colour than the older adults that are dark brown in colour. In favourable conditions a generation can be completed in two and a half months.

All developmental stages can overwinter in galleries on the host tree, and the adults can also overwinter in stumps, litter, and soil

Description

Adult *I. typographus* beetles are approximately 5 mm long, cylindrical in shape, shiny and hairy, and are dark brown in colour on maturity. The posterior of the elytra (wing cases) forms a collar known as a 'declivity' which is encircled by a total of eight teeth, four on each elytra. The third tooth down from the top is cylindrical and capitate.

Pupae are multi-segmented, white in colour and about the same size as the adult at 5 mm.

Larvae are white, legless, cylindrical in shape, with brown head and mandibles, and are also a comparable size to the adults.

Hosts

The main European host of *I. typographus* is *Picea abies* (Norway spruce), but other *Picea* species are susceptible as seen in trans-Palearctic Asia outbreaks. Infestation has also been observed on *Abies, Pinus,* and *Larix* species, but only in an outbreak situation.

Ips typographus, larvae

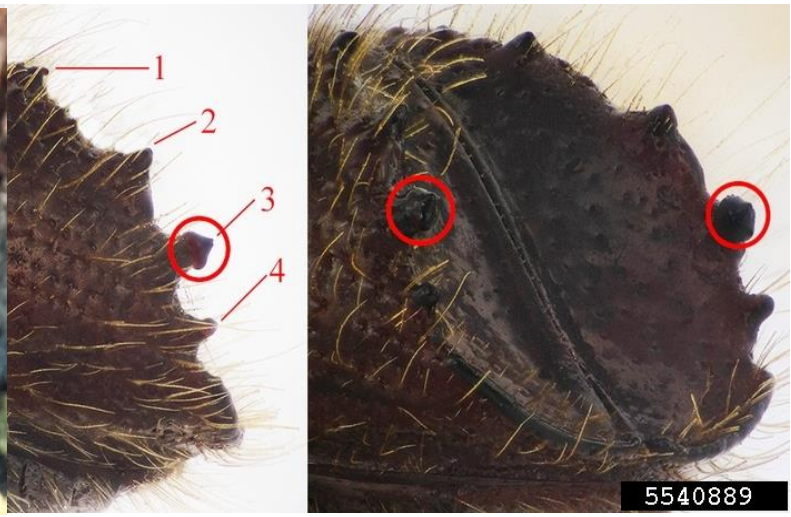
Source: Daniel Adam, Office National des Forets, Bugwood.org

Pupa of *Ips typographus*

Source: Ben Jones, Tree Health Team, FC England

Adult *Ips typographus,* note scale bar

Source: Alan Ockenden, Tree Health Team, FC England



View of the declivity and the eight teeth on the elytra

Source: Joseph Benzel, Screening Aids, USDA APHIS PPQ, Bugwood.org

Nuptial chamber with first female traveling up and the following two traveling down

Source:
Milan Zubrik
Institute Slovakia, Bugwood.org

Fully formed galleries with larval chambers branching off the larger maternal gallery

Source:
Milan Zubrik
Institute Slovakia, Bugwood.org

Entrance holes, note small size 2 – 2.5mm diameter
Source: Milan Zubrik, Forest Research Institute Slovakia, Bugwood.org

Stand level symptoms, note the windthrown trees
Source: Milan Zubrik, Forest Research Institute Slovakia, Bugwood.org

The two links below are for YouTube videos detailing *I. typographus* symptoms

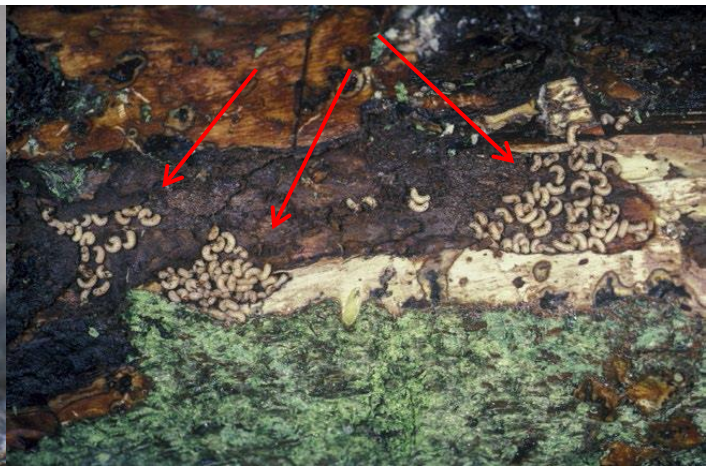
https://youtu.be/Sg2bB9USb8Q
Short video detailing nuptial and maternal gallery formation

https://www.youtube.com/watch?v=P55k8aWYeBI
Video detailing all life stages of *I. typographus*

Look-alikes

The great spruce bark beetle, *Dendroctonus micans*, is present in many areas of Great Britain and has an overlapping host range so might be encountered during surveys for *I. typographus*. There are however differing diagnostic features that can be observed in the field, these include the larval galleries and the morphology of adults as seen below. For more information please refer to Forestry Commission Practice Note 17 - Minimising the impact of the great spruce bark beetle.

Dendroctonus micans adult, note scale bar
Source: Adapted from Martin Jukes, Forest Research



Aggregation of *Dendroctonus micans* larvae in brood chamber
Source: Adapted from Martin Jukes, Forest Research