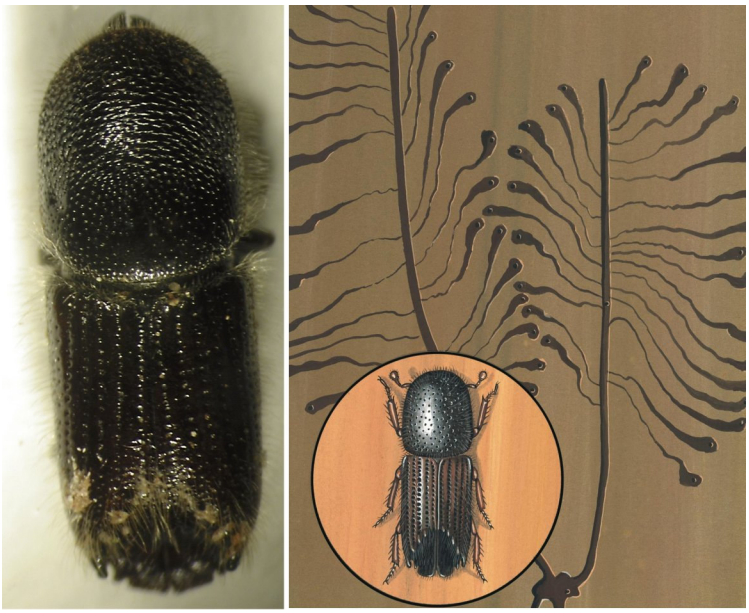
FOREST PEST SPECIES PROFILE

November 2007

Ips sexdentatus (Börner, 1767)

Other scientific names: *Dermestes sexdentatus* Börner; *Bostrichus pinastri* Bechstein; *Tomicus stenographus* Duftschmidt; *Ips typographus* De Geer
Order and Family: Coleoptera: Scolytidae
Common names: six-spined engraver beetle; six-toothed bark beetle; twelve-spined ips; pine stenographer beetle

Ips sexdentatus is a pest of conifer tree species in its native range of Asia and Europe. While it typically attacks stressed or weakened trees it has been known to attack and cause the death of healthy trees of commercial importance.



***Ips sexdentatus* adults and galleries**
(Photos: Bugwood.org (L-R) – L-M. Nageleisen, Département de la Santé des Forêts; R. Dzwonkowski)

DISTRIBUTION

***Native*:** mainland Asia, Europe

***Introduced*:** No records to date

IDENTIFICATION

At approximately 5.5-8.2 mm in length, *Ips sexdentatus* is the largest species of its genus (Cavey, Passoa and Kucera, 1994; Kimoto and Duthie-Holt, 2006). They are cylindrical, robust, shiny, brown or brownish-black beetles with erect yellow hairs protruding from the body. The head is covered by a thoracic shield and is not visible when viewed dorsally (Kimoto and Duthie-Holt, 2006). This beetle is named for the six spines or teeth found on each side of the posterior portion of the forewings (Cavey, Passoa and Kucera, 1994).

HOSTS

Pinus spp. – *P. brutia*, *P. heldrichii*, *P. nigra*, *P. pinaster*, *P. sylvestris*; *Abies* spp. – *A. alba, A. normanndiana*; *Larix* spp. – *L. decidua*, *L. sibirica*; *Picea* spp. – *P. abies*, *P. orientalis*; *Pseudotsuga menzeisii.*

BIOLOGY

Attacks are initiated by the males, who construct nuptial chambers under the bark, emit aggregation pheromones and are subsequently joined by 2-5 females (Kimoto and Duthie-Holt, 2006). After mating, each female constructs a longitudinal egg gallery, typically 15-35 cm long and 4-5 mm wide, and deposits eggs in individual niches along each side of the gallery.

Young larvae feed in galleries perpendicular to the egg galleries which are usually found in the inner bark of the lower stem. Larval galleries increase in size as the larvae grow. Pupation takes place in round chambers constructed at the ends of the larval galleries. Adults require maturation feeding before reaching sexual maturity. Round exit holes measuring approximately 4 mm in diameter are apparent on the tree trunk after adults emerge (Kimoto and Duthie-Holt, 2006).

The number of generations per year and the timing of the life cycle depend on climate. This insect typically has two generations per year, one generation north of the Arctic Circle, with adult flight periods from April to May and July to August. In the Mediterranean region and other areas with a long, warm summer season, *I. sexdentatus* can undergo four to five generations (EPPO/CABI, 1997).

SYMPTOMS AND DAMAGE

Ips sexdentatus is considered a secondary pest, often found in association with other forest pests such as *I. acuminatus* and *Tomicus piniperda*, that usually attacks trees that have been otherwise stressed or weakened and occasionally attacks freshly felled trees or windthrown trees (EPPO/CABI, 1997). It prefers to attack large trees with thick bark. It rarely attacks healthy, vigorously growing trees though it is capable of killing trees of commercial importance.

Damage caused by *Ips sexdentatus*: L - pitch tubes; R - discoloured needles of Austrian pine, *Pinus nigra*, France (Photos: Louis-Michel Nageleisen, Département de la Santé des Forêts, Bugwood.org)

Breeding attacks by *Ips sexdentatus* are characterized by the presence of reddish-brown frass on the bark surface of host trees, freshly cut logs or windthrow (Kimoto and Duthie-Holt, 2006). If healthy, vigourous trees are attacked, pitch tubes can be found on the main stem (Kimoto and Duthie-Holt, 2006). The needles of attacked trees turn from green to yellow and then reddish-brown. As with other conifer bark beetle species, *Ips sexdentatus* is a vector for blue-stain fungi (*Ophiostoma* spp.) which hastens the death of trees, discolours the wood and can result in loss of lumber grade and value.

DISPERSAL AND INTRODUCTION PATHWAYS

Adult *Ips* beetles are capable of flying up to 4 km in search of suitable host material and they are also subject to wind dispersal. Transport of unprocessed logs, wood products, wooden packing materials, dunnage or pallets containing bark strips can provide a means of introduction of immature stages and adults.

CONTROL MEASURES

Removal of trees from infested areas
(Photos: Louis-Michel Nageleisen, Département de la Santé des Forêts, Bugwood.org)

The most effective control measure against damage by *Ips sexdentatus* is to remove infested trees before the new generation of adult beetles emerge (EPPO/CABI, 1997). Debarking infested trees may also help to prevent further infestations. The use of trap trees may be helpful in controlling high density populations.

References

Cavey, J., Passoa, S. & Kucera, D. 1994. Screening aids for exotic bark beetles in the Northeastern United States. NA-TP-11-94, Northeastern Area, USDA Forest Service.

European and Mediterranean Plant Protection Organization (EPPO)/CAB International (CABI). 1997. *Quarantine pests for Europe*, 2nd edition, Smith, I.M., McNamara, D.G., Scott, P.R. & Holderness, M., eds., Wallingford, UK, CABI International, 1425 pp.

Kimoto, T. & Duthie-Holt, M. 2006. *Exotic Forest Insect Guidebook 2006*. Ottawa, Canadian Food Inspection Agency, originally published in 2004. (also available at: www.inspection.gc.ca/english/plaveg/pestrava/exot/introe.shtml)