

***Tomicus minor* (Hartig)**

Coleoptera: Curculionidae

Lesser pine shoot beetle

Host(s)	CAPS-Approved Survey Method
<p>Major hosts <i>Pinus</i> spp. (Pine), <i>Pinus brutia</i> (Brutian pine), <i>Pinus densiflora</i> (Japanese umbrella pine), <i>Pinus halepensis</i> (Aleppo pine), <i>Pinus koraiensis</i> (Fruit pine), <i>Pinus mugo</i> (Mountain pine), <i>Pinus nigra</i> (Black pine), <i>Pinus pinaster</i> (Maritime pine), <i>Pinus sylvestris</i> (Scots pine), <i>Pinus thunbergii</i> (Japanese black pine), <i>Pinus uncinata</i> (Mountain pine), <i>Pinus yunnanensis</i> (Yunnan pine)</p> <p>Other hosts <i>Larix</i> spp. (Larch), <i>Picea</i> spp. (Spruce), <i>Picea abies</i> (Norway spruce), <i>Pinus armandii</i> (Armand pine), <i>Pinus contorta</i> (Lodgepole pine), <i>Pinus strobus</i> (Eastern white pine)</p> <p>(Lundgren, 2004; CABI, 2010)</p>	<p>Visual</p>

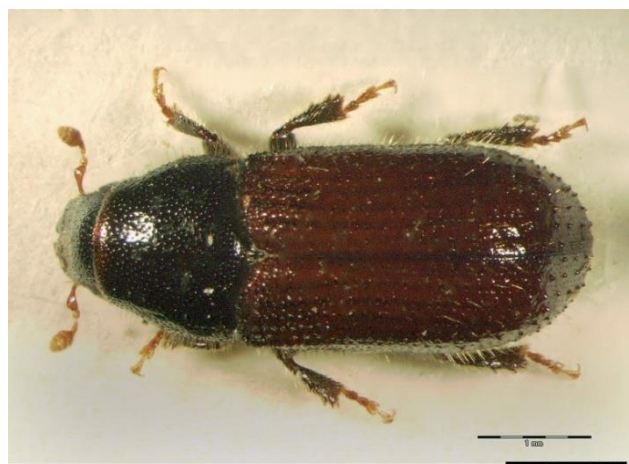
Reason for Inclusion in Manual

Tomicus minor was a target species in the original EWB/BB National Survey Manual.

Pest Description

Eggs:

Eggs are pearly white in color (Lundgren, 2004).



T. minor adult. (Maja Jurc, University of Ljubljana, Bugwood.org).

Larvae:

Larvae are white in color, C-shaped and legless grubs; the head capsule is amber in color (Lundgren, 2004).

Pupae:

Pupae are white and mummy-like with some adult features (Lundgren, 2004).

Adults:

Adults are 3.5 to 4 mm (approx. $\frac{1}{8}$ to $\frac{3}{16}$ in) long and dark brown in color with reddish brown antennae and legs (Lundgren, 2004).

Biology and Ecology

T. minor has one generation a year. Adults begin flying in early spring. They usually attack dying or stressed trees and may be found attacking trees after other bark beetles, including *T. piniperda*. *T. minor* prefers the thinner barked sections of the tree, attacking high on the boles and branches of host trees (reviewed in Lundgren, 2004).

Females prefer to oviposit underneath trunks of fallen host plants. Females tunnel into the tree where they construct a nuptial chamber and mate with one or more males. The female will then construct two horizontal egg galleries opposite from one another laying eggs along the side. Eggs hatch between March and May. Larvae then feed in galleries perpendicular to the egg galleries (reviewed in Lundgren, 2004).

Emergence of adults occurs through holes constructed in the bark from early to mid summer. Adults will then disperse and feed on the shoots of healthy host plants by constructing tunnels inside the shoots. These are approximately 4 to 7 cm (approx. $1\frac{1}{2}$ to $2\frac{3}{4}$ in) long (reviewed in Lundgren, 2004).

Overwintering occurs in the adult stage from November to January in either the tree shoots or forest floor or litter (reviewed in Lundgren, 2004).

Countries of Origin

This species is widely distributed in both Asia and Europe (Lundgren, 2004).

Current Distribution

This species is present in: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, China, Corsica, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Macedonia, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, and the United Kingdom (Alonzo-Zarazaga, 2004; Lundgren, 2004; CABI, 2010).

Distribution in United States

T. minor is not known to occur in the United States.

Pathway

T. minor is likely to move internationally through transfer of dunnage, crating and other wooden material.

Pathogens Vectored

T. minor vectors several *Ophiostoma* species including *O. minus* and *O. canum* (Lundgren, 2004; Solheim et al., 2001).

Damage

Breeding attacks are characterized by adult emergence holes in the bark of trunks and large branches as well as characteristic galleries (Lundgren, 2004). Damage is also caused by adult maturation feeding which may lead to new shoots dropping to the ground during winter (Lundgren, 2004).



T. minor galleries. (Gyorgy Csoka, Hungary Forest Research Institute, Bugwood.org).

Survey

CAPS-Approved Method

The CAPS-Approved survey method is visual inspection. There are no known attractants for *T. minor*.

Time of year to survey

Emergence and flight begins in early spring (Lundgren, 2004).

Identification

CAPS-Approved Method

Morphological. Examination by a taxonomist with expertise in the weevil subfamily Scolytinae is required for identification. Examine specimens under a microscope with 70-110X magnifications and gooseneck lighting sources.

1. To determine if the specimen is *Tomicus*, use Passoa and Cavey (1994) followed by Brodel, (2005-rev 2009).
2. To determine species of *Tomicus* (*destruens*, *minor*, or *piniperda*), use Brodel (2005-rev 2009) with Brodel (2000).
3. To separate *T. minor* from *T. piniperda*, use Brodel (2000).

Mistaken Identities

T. minor can be mistaken with other families and genera of small beetles with the naked eye. *T. minor* can be mistaken for *T. piniperda* which is currently present in parts of the United States. It may also be mistaken for *T. destruens* which is not currently present in the United States.

Resources and High Resolution Images

Images

<http://www.forestpests.org/hungary/weevilstmh.html>

<http://www.invasive.org/browse/subject.cfm?sub=4160>

<http://www.forestryimages.org/browse/subimages.cfm?SUB=4160>

Screening Aids

Brodel, C. F. 2000. Distinguishing *Tomicus minor* from *T. piniperda*.

<http://caps.ceris.purdue.edu/dmm/125>.

Brodel, C. F. 2005 (rev. 2009). *Tomicus* Bark Beetles: A Key for Separating Program Species *piniperda* from European Exotics *destruens* and *minor*.

<http://caps.ceris.purdue.edu/dmm/126>.

Passoa, S. and J. Cavey. 1994. Key to help screen *Tomicus piniperda* (L.) from other North American Scolytidae (Coleoptera). USDA, APHIS, PPQ. NA-TP-06-93

<http://www.barkbeetles.org/exotic/tmcsnpne.html>.

References

- Alonzo-Zarazaga, M. A. 2004.** Fauna Europaea: *Tomicus minor*. Fauna Europaea version 2.4, <http://www.faunaeur.org>
- CABI. 2010.** *Tomicus minor*. Crop Protection Compendium. Accessed May 24, 2011 from: <http://www.cabi.org/cpc>.
- Lundgren, J. G. 2004.** Exotic Forest Pest Information System for North America: *Tomicus minor*. North American Forest Commission.
- Solheim, H., Krokene, P., & Langstrom, B. 2001.** Effects of growth and virulence of associated blue-stain fungi on host colonization behaviour of the pine shoot beetles *Tomicus minor* and *T. piniperda*. Plant Pathology 50(1), 111-116.