

Express PRA for *Sinoxylon unidentatum*

– Interception –

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Initiation: Interception of packaging wood from Malaysia by the Plant Protection Service of the Federal State Brandenburg

Express Pest Risk Analysis	<i>Sinoxylon unidentatum</i> (Fabricius, 1801)		
Phytosanitary risk for Germany	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Phytosanitary risk for EU MS	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Certainty of assessment	high <input type="checkbox"/>	medium <input checked="" type="checkbox"/>	low <input type="checkbox"/>
Conclusion	<p>The origin of the powder-post beetle <i>Sinoxylon unidentatum</i> (synonym: <i>Sinoxylon conigerum</i>) presumably is the Orient and so far, it does not occur in Germany. The establishment in Italy and Spain could not be confirmed, due to the currently available data. So far, the beetle is listed neither in the Annexes of Directive 2000/29/EC nor by EPPO. At least in Ukraine, Japan, Ecuador and Venezuela the beetle is listed as a quarantine pest.</p> <p><i>Sinoxylon unidentatum</i> is polyphagous and infests the sap wood of fresh and dry dead/felled woody plants inclusive wooden packaging. The beetle infests deciduous and coniferous trees as well as bamboo. Occasionally, adult beetles bore into living plant parts.</p> <p>Due to non-appropriate climate conditions, it is assumed that <i>S. unidentatum</i> is not capable to establish outdoors in Germany. Currently, the establishment in South European EU Member States cannot be completely ruled out. Indoors, the establishment is possible everywhere.</p> <p>Due to its low damage potential for living plants, <i>S. unidentatum</i> does not pose any phytosanitary risk for Germany and other EU Member States.</p> <p>Thus, <i>S. unidentatum</i> is not classified as a quarantine pest and § 4a of the Plant Inspection Order does not apply.</p> <p>It has to be considered that the presence of <i>S. unidentatum</i> possibly can be traced to inadequate treatment of packaging wood according to ISPM No. 15.</p> <p>As a precaution measure, it is recommended to destroy infested material because the beetle has a considerable potential to destroy wooden products and the infestation of further articles has to be prevented.</p>		

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Have the conditions for an express pest risk analysis (PRA) been met?	Could be a pest, it is not listed. So far, it is not established in the area covered by the reporting plant protection service.
Taxonomy, trivial name, synonyms	Class: Insecta; Order: Coleoptera; Family: Bostrichidae; Species: <i>Sinoxylon unidentatum</i> (Fabricius, 1801); Synonym: <i>Sinoxylon conigerum</i> (Gerstäcker, 1855); Common name: conifer auger beetle
Does a relevant earlier PRA exist?	No
Distribution and biology	<p>The origin of <i>S. unidentatum</i> presumably is in the Orient. By now, the species is established in tropic habitats of Oceania (American-Samoa), Asia, North, Central and South America and Africa (including Madagascar) through introduction by humans. The information on the establishment and wide distribution of the beetle in Spain and Italy (EPPO, 2001) could not be confirmed, based on the currently available data. So far, there is no evidence for the establishment in the EU (NARDI & MIFSUD, 2015; SALVODELLI & REGALIN, 2009). In Japan, the species is listed as quarantine pest as <i>Sinoxylon conigerum</i>. Thus, it is assumed that the beetle is not widespread there either. In 2009, infested pallets from Sri Lanka reached a storehouse in Italy where the beetles could complete their development and infest further pallets (SALVODELLI & REGALIN, 2009). The exact distribution of the beetle is difficult to identify, as some information on the distribution obviously relies on interceptions.</p> <p>On average, the adult beetles of <i>S. unidentatum</i> live for app. 50 days. The females lay 10 to 50 eggs (KANKAMANEE <i>et al.</i>, 2011). The beetles and larvae bore galleries in the wood. Further biological characteristics relate to the genus <i>Sinoxylon</i> because the biology of <i>S. unidentatum</i> is little researched (SALVODELLI & REGALIN, 2009). Mostly, the beetles and larvae of <i>Sinoxylon</i> sp. feed on sapwood of dead or dying woody plants (LIU <i>et al.</i> 2008). The development of the closely related species <i>S. anale</i> may last from 3 months to more than 4 years, independent of the ambient temperature. The emergence may take place all year long (LIU <i>et al.</i>, 2008).</p>

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	Occasionally, the adult beetles ring small shoots or burrow into in green shoots and twigs for hibernating or maturation feeding (LYKIDIS <i>et al.</i> , 2016).
Are there host plants in the pest-risk analysis area? If yes, what kind?	<p>So far, known host plant families whose wood is infested by <i>S. unidentatum</i> are Anacardiaceae, Asparagaceae, Bromeliaceae, Caricaceae, Casuarinaceae, Combretaceae, Dipterocarpaceae, Euphorbiaceae, Lamiaceae, Lauraceae, Leguminosae, Lythraceae, Malvaceae, Meliaceae, Moraceae, Myrtaceae, Pinaceae, Bambusoideae, Primulaceae, Rubiaceae, Rutaceae, Sapindaceae, Ulmaceae and Vitaceae (LYKIDIS <i>et al.</i>, 2016). Bostrichidae like <i>S. unidentatum</i> prefer wood with a moisture content between 8 % and 30 % (KANKAMANEE <i>et al.</i>, 2011).</p> <p>The broad range of host plants includes a range of families that are present in the PRA-area. Thus, a potential distribution of <i>S. unidentatum</i> in the EU would not be limited by the availability of host plants.</p>
Transfer of the pest from the consignment → to a host plant	<i>S. unidentatum</i> can spread locally on other wood packaging material or other wooden products (SALVODELLI & REGALIN, 2009).
Does the pest require a vector / another plant to change host? What vector / plant? Distribution?	The beetle needs no vector and does not need to change the host.
Climate in range of distribution comparable with pest-risk analysis area?	<p>The species is present in tropic climate regions. Currently, the establishment outdoors in Germany has not to be expected.</p> <p>The establishment outdoors in the Member States in the Mediterranean region cannot be completely ruled out (LYKIDIS <i>et al.</i>, 2016).</p>
If not, are there host plants being cultivated in protected conditions?	<i>Sinoxylon unidentatum</i> infests a broad range of woods. Appropriate wood for the development can be found in storehouses (pallets, boards) or as wood in constructions (flooring, logs, furniture, toys, picture frames etc.) in private and public buildings.
Is damage in the pest-risk analysis area to be expected?	In Germany and the EU, no damage has to be expected on living plants. Considerable damage could arise on logs, stored wood, wood packaging material, cultural objects,

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	<p>timber, furniture and other wooden products (LYKIDIS <i>et al.</i>, 2016).</p> <p>At least the ISPM-15 marking must be removed from infested packaging material and the contact with other wooden packaging and packaging material from bamboo has to be prevented. The transportation to third countries where <i>S. unidentatum</i> is listed as quarantine pest (e.g. the Ukraine, Japan, Ecuador and Venezuela) must be prevented. In case of the establishment of the beetle, economic burden must be expected for the general export economy and the export of wood products through additional requirements and measures of affected target countries.</p>
<p>Is an infestation easy to eradicate?</p>	<p>The genus <i>Sinoxylon</i> sp. is often found in wood packaging material. An infestation is recognizable through the powdery sawdust that is shoved out the wood by the beetles and larvae through the boreholes (GUMOVSKY, 2010). An identification key for the differentiation from other powder post beetles can be found at SITTICHAYA <i>et al.</i> (2009).</p> <p>An indoor-infestation should be completely eradicated through destruction or disinfection of all infested wooden objects.</p>
<p>Remarks</p>	<p>Little specific studies are available on the biology of the species. The actual distribution of the species is difficult to evaluate because of the mixing in the literature of interceptions and occurrences.</p>
<p>Literature</p>	<p>EPPO, 2001: <i>Sinoxylon unidentatum</i> (SINOCO). EPPO Global Database. https://gd.eppo.int/taxon/SINOCO (accessed on: 09-07-2019; last update: 16-01-2001)</p> <p>GUMOVSKY, A. V., 2010: A record of <i>Sinoxylon anale</i> Lesne in Ukraine with notes on false powder-post beetles (Coleoptera: Bostrichidae) and their chalcidoid parasitoids (Hymenoptera). <i>Ukrainska Entomofaunistyka</i>1: 1–8.</p> <p>KANGKAMANEE, T., W. SITTICHAYA; A. NGAMPONGSAI, S. PERMKAM, R. A. BEAVER, 2011: Wood-boring beetles (Coleoptera: Bostrichidae, Curculionidae, Platypodinae and Scolytinae) infesting rubberwood sawn timber in southern Thailand. <i>J. For. Res.</i> 16, 302-308.</p> <p>LIU, L.-Y., K. SCHÖNITZER, J.-T. YANG, 2008: A review on the life history of Bostrichidae (Coleoptera). <i>Mitt. Münch. Ent. Ges.</i> 98, 91-97.</p>

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	<p>LYKIDIS, C. T., G. NARDI, P. V. PETRAKIS, 2016: First record of <i>Sinoxylon anale</i> and <i>S. unidentatum</i> in Greece, with an updated account on their global distribution and host plants (Coleoptera: Bostrichidae). <i>Fragmenta Entomologica</i>, 48(2), 102-121.</p> <p>NARDI, G., D. MIFSUD, 2015: The Bostrichidae of the Maltese Islands (Coleoptera). <i>Zookeys</i> 481, 69-108.</p> <p>SALVOLETTI, S., R. REGALIN, 2009: Infestation of wood pallets by <i>Sinoxylon unidentatum</i> (Fabricius) (Coleoptera, Bostrichidae) in Italy. <i>Boll. Zool. Agr. Bachic. Ser. II</i> 41(3): 235-238.</p> <p>SITTICHAYA, W., R. BEAVER, L. LAN-YU, A. NGAMPONGSAI, 2009: An illustrated key to powder post beetles (Coleoptera, Bostrichidae) associated with rubberwood in Thailand, with new records and a checklist of species found in Southern Thailand. <i>ZooKeys</i> 26, 33-51.</p>