Express PRA for *Lyctus sinensis* – Interception –

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Inititation: Interception of wooden packaging material from China by the Plant Protection Service of the Federal State Bremen

Initiation for the revision: *Request for an update of the risk analysis by the Plant Protection Service of the Federal State Brandenburg*

Express PRA	***Lyctus sinensis* Lesne, 1911**		
Phytosanitary risk for Germany	**high** ☐	**medium** ☐	**low** ☒
Phytosanitary risk for EU Member States	**high** ☐	**medium** ☐	**low** ☒
Certainty of the assessment	**high** ☒	**medium** ☐	**low** ☐
	The beetle *Lyctus sinensis* is endemic to Asia (China, Korea, Japan). Currently, it is present in Europe only on several British islands and in Kent/UK. So far, it is listed neither in the Annexes of Decision (EU) 2019/2072 nor by EPPO. The beetle infests only dry wood: outdoors, in stores as well as wood in constructions. One report describes it also in stored grain. Due to appropriate climatic conditions in Germany, it is assumed that *L. sinensis* can establish outdoors in Germany. Establishment in Southern European EU-Member States is possible, too. The beetle only infests dry wood and stored grain. Thus, it is a storage pest. *L. sinensis poses a high damage potential for dry stored wood or wood in constructions.* Based on this risk assessment, it is assumed that the pest can establish in other parts of Germany or in Member States that currently are not infested and cause not insignificant damage. *However, the damage is limited to dead plant parts.* *Thus, L. sinensis is not classified as a potential quarantine pest and Article 29 of the Decision (EU) 2016/2031 does not apply. The user is advised to destroy or disinfect the infested material to avoid damage.*		
Precondition for Express-PRA fulfilled?	Yes.		
Taxonomy, common name, synonyms	Coleoptera, Lyctidae, Lyctinae, Lyctini, *Lyctus* Fabricius, 1792		

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	Hickin (1960) published an identification key for various *Lyctus* species (adult specimens) including *L. sinensis*.
Does a relevant earlier PRA exist?	No
	South East Asia (Korea (Becker, 1969), China (Yan et al. 2010, Shi & Tan, 1987), Japan (endemic and wild occurrence on Honshu and Shikoku; Iwata, 1989, Mito and Uesugi, 2004)). So far, in Europe only reported as established in Great Britain (Fauna Europaea). Allen A.A. (1969) describes the occurrence in an oak stand in Kent/UK. *Lyctus sinensis* has one generation per year. It overwinters in the larval stage, and needs a cold period for conclusion of the diapause and pupates in spring (Iwata, 1989). Examinations under British climate conditions by means of introduced *L. sinensis* (Parkin 1934) showed a hatching period for the larvae from the egg of 8-10 days, a development period of 10 months of the larvae in the wood, followed by the pupation near to the wood surface. Pupae stage 3 weeks. Main hatch period: June-August. At temperatures above 20°C, the beetles were very active. Dry wood beetle, in China in stored grain (Yan et al., 2010).
Are host plants present in the PRA area? If so, which?	Dry wood as dead or sawn wood of endemic as well as of imported wood species and stored grain are present in Germany and the EU. In various reports on interceptions of consignments infested with *L. sinensis, Quercus* species are cited as hosts. Parkin (1932) assumes that under British climate conditions, *L. sinensis* could be able to establish in the sapwood of dried sawn wood of *Quercus robur*. Potential host plants (dry / sawn wood): • Quercus robur (Parkin, 1932) Becker (1969) describes *Quercus serrata* in Korea as a host species. Shi & Tan (1987) report on 168 species of deciduous trees with 103 genera out of 39 families that are appropriate as host for *L. sinensis*. Coniferous woods are not susceptible. For the genus *Lyctus* (previously introduced species like *L. brunneus*, *L. cavicollis*), Geis (2002) describes a variety of tropical woods (in Germany only as stored wood) as well as

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	North-American hardwoods (partly also planted in Germany) as appropriate for an infestation: • *Quercus petraea* • *Q. robur* • *Q. rubra* • *Fraxinus excelsior* • *Ulmus carpinifolia* • *Prunus avium* • *Juglans regia* • *Vitis vinifera* • *Platanus acerifolia* • *Castanea sativa* • *Robinia pseudoacacia* • *Acer pseudoplatanus* • *Fagus sylvativa*
Transfer pest consignment →host plant	No transfer to living wood tissue because the beetle only infests dry wood and stored grain. Possibly, dry branches of the host plants may be infested outdoors (see above, wild occurrence on Honshu, Japan). Geis (2002, 2012), described this for other introduced *Lyctus*-species.
Is a vector/ further plant needed for host alternation? Which? Distribution?	No
Climate in the distribution area comparable to PRA-area?	Yes, a cold period is necessary for the diapause. Because of the origin of *L. sinensis* from regions with comparable climate, Parkin (1932) assumes that the establishment in UK is possible. The closely related species *L. cavicollis* was introduced from the USA via wooden products, too, and could establish in South German mixed oak forests (Bogenschütz 1996 cited in Geis, 2002). Geis (2012) describes the detection of a multi-annual population of another closely related species, *Lyctus brunneus* (most probably endemic to Australia (Geis, 2002), in a close-to-nature-habitat in Southwest Germany (occurrence in vine wood in the south of Freiburg), and ascribes the establishment to the climate change.
If no, are host plants present in protected cultivation?	Not relevant, because a cold period is necessary.

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Damage to be expected in the PRA area?	Yes. Damage on dry wood (problem for joineries) and stored grain possible. Geis (2002) describes the following commodities as eligible for infestation and passive dispersal. Hence, these are to be regarded as potential infestation material in Germany that can be damaged: • Hardwood of different species as logs and sawn wood • Thick veneer • Semi-finished products like doors, doorframes, panels, plywood, strips • Finished products like furniture, interior work, objects of art, souvenirs, wooden floors • Wooden packaging • Bamboo products • Grain and grain products • Starchy foods Damage by other *Lyctus* species are only reported for starchy wood (Cymorek, 1984).
Is an infestation easy to eradicate?	Shi & Tan (1987) describe the following procedures for the control of Lyctidae in wood: • Removal of the starch from the wood by storing it in water for one year • Treatment with active ingredients containing Boron • Spraying with Permethrin • Fumigation with methyl bromide or sulfuryl fluoride • Heat treatment Valuable woods (e.g. works of art) that do not tolerate a chemical or thermic treatment can be treated with ionizing radiation. In general, infested objects in stores can easily be disinfected through heat treatments. However, even in small wood pieces numerous beetles can be present so that infested wood stores have to be cleansed intensively. An -infestation outdoors is rather difficult to eradicate dependent on the infestation extent and due to the host plant range. In case the beetle is already widespread with infestation outdoors as described for *L. cavicollis,* the eradication is impossible, according to Geis (1996).
Remarks	-

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	Parkin, E.A. (1932): Note on two species of Lyctus (Powder Post Beetles) imported into Great Britain. Entomologist's Monthley Magazine, 823: 277. Parkin, A.A. (1934): Observation on the biology of the Lyctus Powder-post Beetles, with special reference to oviposition and the egg. Annals of Applied Biology, 21 (3): 495-518. Shi, Z.H., Tan, S.Q. (1987): The susceptibility of Chinese hardwoods to powder post beetles attack and methods of control. Scientia Silviae Sinicae, 23 (1): 109-114. Yan, X., Zhou, H., Shen, Z., Li, W., Guo, D., Song, Y., Lan, S., Zhang, J. (2010): National investigations of stored grain arthropods in China. Julius-Kühn-Archiv, 425: 212-218.