



## *Diaprepes abbreviatus*

An evaluation of the information regarding its presence in Sweden



*Diaprepes abbreviatus*, Photo: Keith Weller, Public domain, via Wikimedia Commons

## Background

*Diaprepes abbreviatus* is a root-boring weevil that cause damage to citrus, ornamental plants, and some other crops (EPPO 2016). It is native to the Caribbean and has been introduced into the southern part of USA (EPPO 2016; 2023a).

In a commodity risk assessment of *Ligustrum delavayanum* topiary plants grafted on *L. japonicum* from the UK it was assessed that *D. abbreviatus* required further evaluation (EFSA 2022). According to CABI (2023), *D. abbreviatus* is present in Sweden and the Swedish NPPO was therefore asked by EFSA to determine its pest status. SLU Risk Assessment of Plant Pests was requested by the Swedish Board of Agriculture to provide all information available on the presence of *D. abbreviatus* in Sweden.

## Methods

A broad approach was used to find information about observations of *D. abbreviatus* (EPPO Code: DPREAB) in Sweden. Searches were performed in: Web of Science (2023) (filtering for “Sweden”), the search engine Google (restricting the search to Swedish webpages and the top 100 hits), Google Scholar (including “Sweden” in the search string and restricting the screening to the top 100 hits), and in different specific databases, i.e., Beetlebase (2023), Catalogus Coleopterorum Sueciae (Lundberg 1995), Catalogue of Palaearctic Coleoptera (Löbl & Smetana 2011; 2013), Cooperative catalogue of Palaearctic Coleoptera Curculionoidea (Alonso-Zarazaga et al. 2017), Enumeratio nova Coelopterorum Fennoscandiae, Daniae et Baltiae, Sahlbergia (Silfverberg 2004), EPPO Global Database (EPPO 2023a), EPPO Platform on PRAs (EPPO 2023b), Fauna Europaea (2023), Global Biodiversity Information Facility (GBIF 2023), iNaturalist (2023), NOBANIS (2023), SLU Artfakta (SLU Swedish Species Information Center 2023a), Traces NT (European Commission 2023), UK Plant Health Risk Register (FERA 2023).

The searches included the species preferred name according to EPPO Global Database, i.e. *Diaprepes abbreviatus*, but also other scientific names of the pest, i.e. *Curculio abbreviatus*, *Diaprepes festivus*, *Diaprepes irregularis*, *Diaprepes quadrilineatus*, *Diaprepes spengleri*, and *Exophthalmus abbreviatus* (CABI 2023; EPPO 2023a). It should be noted that *Diaprepes abbreviatus* is a very variable species and some sources consider *D. spengleri* to be a separate species (e.g. CABI 2023; Haseeb et al. 2019). In this evaluation however, to use a precautionary approach, *D. spengleri* was considered a synonym of *D. abbreviatus*.

The following experts on Swedish species within the family Curculionidae were asked for their knowledge of findings of *D. abbreviatus* in Sweden: Mats Jonsell and Åke Lindelöw (both associated with the Swedish University of Agricultural Sciences).

## Results and discussion

CABI (2023) lists *D. abbreviatus* as present in Sweden based solely on a reference to Seebens et al. (2017). In that article, the status of invasion (casual or established) was assessed based on information from other sources. In the most recent version of a database developed by Seebens et al. (2017), the status of *D. abbreviatus* (originally registered as *D. spengleri*) in Sweden was assessed as “causal” (Seebens et al. 2021) with a reference to NOBANIS (2023). According to NOBANIS, *D. abbreviatus* was recorded in Sweden in 1993 in a habitat classified as “Under human management <sup>1</sup>” and its status was classified as “Not established <sup>2</sup>”. NOBANIS cite three sources for their assessment. The first and second source are Catalogus Coleopterorum Sueciae by Lundberg (1995) and Enumeratio nova Coleopterorum Fennoscandiae, Daniae et Baltiae, by Silfverberg (2004). Both these sources list *D. abbreviatus* (under the name *D. spengleri*) as “i”, referring to “introduced”, in Sweden based on a finding in Scania (Skåne) (see Appendix 1 for a detailed description of how “i” should be interpreted). Similarly, both SLU Swedish Species Information Center (2023) and BeetleBase (2023) refer to a finding in Scania, the former categorize the species as “occasional occurrence (or remaining)” and the later as “temporary”. According to notes kept at SLU Swedish Species Information Center, the specimen in Scania was found by Stig Lundberg, who is an internationally recognized expert on Coleoptera (pers. com. Håkan Ljungberg; Pettersson & Sörensson 2020). This is also the third source listed by NOBANIS, which refers to personal communication with Stig Lundberg the 11<sup>th</sup> of January 2007, for their assessment of *D. abbreviatus* in Sweden as “Not established” and “Under human management”. Accordingly, our assessment is, taking all available sources into account, that the specimen registered by Stig Lundberg<sup>3</sup> was not found in a natural environment and thus does not provide support for that the pest should be present in Sweden.

GBIF (2023) refers to two preserved specimens of *D. spengleri* located at the Museum of Evolution in Uppsala, Sweden. A search of the museums digitized zoology collections generated in total five specimens, two under the name *D. spengleri* and three specimens under the name *D. abbreviatus* (Uppsala University 2023). However, according to Hans Mejlon, the museum curator, all these specimens are between 200 – 250 years old and there are no indications that they were collected in Sweden.

None of the other sources found during the literature search include Sweden in the distribution range of *D. abbreviatus* (i.e. EPPO 2023; California Department of Food & Agriculture 2013; Lapointe et al. 2014; O’Brien and Kovarik 2011; Suffert et al. 2016; Australian Government 2021; USDA 2021). Neither was *D. abbreviatus* included in the Cooperative catalogue of Palaearctic Coleoptera Curculionoidea (Alonso-Zarazaga et al. 2017) or in the Catalogue of Palaearctic Coleoptera (Löbl & Smetana 2011; 2013).

*Diaprepes abbreviatus* belongs to the order Coleoptera, which is the second most popular order of insects among hobby entomologists (after Lepidoptera) in Sweden (SEM 2023), it is large and colourful (Andrade & Stüben 2020), and there are no native species within the Genus *Diaprepes* in Sweden (SLU Swedish Species Information Centre 2023). All these factors

<sup>1</sup> Defined as “Inside houses and warehouses, inside furfarms, in closed aquacultural sites, in closed aquaria”

<sup>2</sup> Defined as “The species has not formed self-reproducing populations (also called casual or incidental)”

<sup>3</sup> Stig Lundberg passed away in 2020 (Pettersson & Sörensson 2020).

increase the likelihood that *D. abbreviatus* would be detected and reported if it was present in Sweden.

Finally, it should be taken into account in the determination of the pest status that *D. abbreviatus* is a (sub)tropical species and thus very unlikely to establish due to the colder conditions in Sweden (IPPC 2021a; CABI 2023; see also Lapointe et al. (2014) for effects of low temperatures on mortality).

In conclusion, based on the information described above, our assessment is that the most suitable pest status category for *D. abbreviatus* in Sweden would be “Absent: pest records invalid” according to ISPM 8 (IPPC 2021a, b) or “Absent, invalid record” according to the presence/absence categories used by EPPO (2022). Note, however, that the pest status is officially determined by the Swedish NPPO, i.e. Swedish Board of Agriculture (IPPC 2021b).

## Acknowledgements

We would like to thank Mats Jonsell and Åke Lindelöw (both associated with the Swedish University of Agricultural Sciences) for sharing their knowledge about Coleoptera species in Sweden, Hans Mejlon, museum curator at Uppsala University for information about specimens in their collection, Håkan Ljungberg for additional information about the report of the pest in Artfakta, as well as Muriel Suffert at EPPO and Lesley McGillivray at CABI for providing information about *D. abbreviatus* from their respective organisations.

## Authors

This report was prepared by SLU Risk Assessment of Plant Pests at the Swedish University of Agricultural Sciences:

Niklas Björklund, Dept. of Ecology, Swedish University of Agricultural Sciences, P.O. Box 7044, SE-750 07 Uppsala, Sweden. Visiting address: Ullsväg 16, E-mail: [Niklas.Bjorklund@slu.se](mailto:Niklas.Bjorklund@slu.se)

Johanna Boberg, Dept. of Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, PO Box 7026, SE-750 07 Uppsala, Sweden. Visiting address: Almas allé 5, E-mail: [Johanna.Boberg@slu.se](mailto:Johanna.Boberg@slu.se)

Readers of this report are encouraged to contact the authors if they are aware of additional information that was missed in the report or that has become available after the publication of it.

## References

Alonso-Zarazaga, M.A., Barrios, H., Borovec R. et al. & Yunakov, N.N.. (2017) Cooperative catalogue of Palaearctic Coleoptera Curculionoidea, 1st Edition, Vol. 8. Monografias electrónicas S.E.A., Zaragoza, Spain, 729 pp. [http://sea-entomologia.org/PDF/MeSEA\\_8\\_Catalogue\\_Palaeartic\\_Curculionoidea.pdf](http://sea-entomologia.org/PDF/MeSEA_8_Catalogue_Palaeartic_Curculionoidea.pdf)

Andrade, M.M. & Stüben P.E. (2020) New and interesting species of weevils (Coleoptera: Curculionidea) from the Archipelago of Madeira – Weevil News, No. 84: 12 pp [https://curci.de/data/weevilnews/weevilnews\\_84.pdf](https://curci.de/data/weevilnews/weevilnews_84.pdf)

Australian Government (2021) Final Pest Risk Analysis for Cut Flower and Foliage Imports - Part 2, Department of Agriculture, Water and the Environment, Canberra. Available from EPPO Platform on PRAs <https://pra.eppo.int> [Accessed 2023-09-11]

Beetlebase (2023) Beetlebase is an online catalog of Coleoptera in the Nordic countries, [www.beetlebase.com](http://www.beetlebase.com) (only available for registered users). <http://www.beetlebase.com/catalogus.asp?overslakte=Tanymecini> [Accessed 2023-08-25]

CABI (2023) CABI Compendium - Crop Protection, *Diaprepes abbreviatus* (citrus weevil), Datasheet, Enhanced. Available from <https://doi.org/10.1079/cabicompendium.19691> (requires a subscription) [Accessed 2023-08-24]

California Department of Food & Agriculture (2013) California Pest Rating for *Diaprepes abbreviatus* (Diaprepes Root Weevil), Available from <https://blogs.cdfa.ca.gov/Section3162/?p=3014> [Accessed 2023-08-25]

EFSA Panel on Plant Health (PLH), Bragard, C., Baptista, P., Chatzivassiliou, E., Di Serio, F., Jaques Miret, J. A., ... & Gonthier, P. (2022). Commodity risk assessment of *Ligustrum delavayanum* topiary plants grafted on *Ligustrum japonicum* from the UK. EFSA Journal, 20(11), e07593. <https://efsa.onlinelibrary.wiley.com/doi/pdf/10.2903/j.efsa.2022.7593>

EPPO (2016) *Diaprepes abbreviatus* (Coleoptera: Curculionidae). Short description prepared in the framework of the EU FP7 project DROPSA (grant agreement no. 613678). [https://gd.eppo.int/download/doc/1178\\_minids\\_DPREAB.pdf](https://gd.eppo.int/download/doc/1178_minids_DPREAB.pdf)

EPPO (2022) How to use the EPPO Global Database? - General contents and search tips - EPPO (Paris, 2022-04) <https://gd.eppo.int/reporting/article-6564> [Accessed 2023-09-13]

EPPO (2023a) EPPO Global Database (available online). <https://gd.eppo.int> [Accessed 2023-08-24]

EPPO (2023b) EPPO Platform on PRAs, the complete version that requires login, <https://pra.eppo.int/> [Accessed 2023-08-25]

European Commission (2023) Traces NT, CHEDPP Rolling TNTDW 6.5.4.0, interceptions within EU from May 2020, Only available to registered users, <https://webgate.ec.europa.eu/tracesnt> [Accessed 2023-09-04]

Fauna Europaea (2023) Fauna Europaea - all European animal species on the web, <https://fauna-eu.org/> [Accessed 2023-08-30]

FERA (2023). UK Plant Health Risk Register. Department for Environment, Food & Rural Affairs. <https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/index.cfm> [Accessed 2023-08-30]

GBIF (2023) Global Biodiversity Information Facility (GBIF) [https://www.gbif.org/fr/occurrence/search?taxon\\_key=5010182](https://www.gbif.org/fr/occurrence/search?taxon_key=5010182) [Accessed 2023-08-25]

Haseeb, M., Dosunmu, O. G., Kanga, L. H., O'Brien, C. W., & Zhang, R. (2019). Development of a training program to identify invasive weevils in the Caribbean basin and the United States. *Florida Entomologist*, 102(3), 469-474. <https://doi.org/10.1653/024.102.0304>

iNaturalist (2023) iNaturalist, California Academy of Sciences och National Geographic Society, database available from <https://www.inaturalist.org> [Accessed 2023-08-30]

IPPC (2021a) Food and Agriculture Organization of the United Nations, IPPC (International Plant Protection Convention) Secretariat. 2021. Pest status guide: Understanding the principal requirements for pest status determination. Rome. FAO on behalf of the Secretariat of the International Plant Protection Convention. <https://doi.org/10.4060/cb6103en>

IPPC (2021b). Food and Agriculture Organization of the United Nations, IPPC (International Plant Protection Convention) Secretariat. Determination of pest status in an area. International Standard for Phytosanitary Measures No. 8. Rome. FAO on behalf of the Secretariat of the International Plant Protection Convention. <https://www.fao.org/3/x2968e/x2968e.pdf>

IPPC (2023) Food and Agriculture Organization of the United Nations, IPPC (International Plant Protection Convention) Secretariat. 2021. Glossary of phytosanitary terms. International Standard for Phytosanitary Measures No. 5. Rome. FAO on behalf of the Secretariat of the International Plant Protection Convention. <https://www.ippc.int/en/core-activities/standards-setting/ispms/>

Lapointe, S. L., Borchert, D. M., & Hall, D. G. (2014). Effect of low temperatures on mortality and oviposition in conjunction with climate mapping to predict spread of the root weevil *Diaprepes abbreviatus* and introduced natural enemies. *Environmental Entomology*, 36(1), 73-82. <https://academic.oup.com/ee/article-abstract/36/1/73/492866>

Löbl, I., & Smetana, A. (2011). Catalogue of Palaearctic Coleoptera. Volume 7: Curculionoidea I. Brill. ISBN: 9788788757934

Löbl, I., & Smetana, A. (2013). Catalogue of Palaearctic Coleoptera. Catalogue of Palaearctic Coleoptera. Volume 8: Curculionoidea II. Brill. ISBN: 9789004252066

Lundberg, S. (1995). *Catalogus Coleopterorum Sueciae*. Redigenda Curavit B. Gustafsson, Naturhistoriska Riksmuseet & Entomologiska föreningen i Stockholm, Stockholm, ISBN 91-86510-40-1

NOBANIS (2023) The European Network on Invasive Alien Species (NOBANIS), available from <https://www.nobanis.org/national-species-info/?taxaid=10107&countryID=SE> [Accessed 2023-08-29]

O'Brien, C. W., & Kovarik, P. W. (2011). The genus *Diaprepes*: its origin and geographical distribution in the Caribbean region. Center for Biological Control, Florida A&M University Tallahassee, FL 32307-4100 USA

[https://irrec.ifas.ufl.edu/flcitrus/short\\_course\\_and\\_workshop/diaprepes/genus\\_diaprepes.shtml](https://irrec.ifas.ufl.edu/flcitrus/short_course_and_workshop/diaprepes/genus_diaprepes.shtml)  
[Accessed 2023-08-30]

Pettersson, R. M., & Sörensson, M. (2020). Till minne av Stig Lundberg (1928–2020). Entomologisk tidskrift, 141(4), 129-148. <https://publications.slu.se/?file=publ/show&id=109812>

Seebens H, Blackburn T M, Dyer E E, et al., (2017). No saturation in the accumulation of alien species worldwide. Nature Communications. 8 (2), 14435.  
<http://www.nature.com/articles/ncomms14435>

Seebens H. (2021) Alien Species First Records Database (Version 2) [Data set]. Zenodo.  
<https://doi.org/10.5281/zenodo.4632335>

SEM (2023) Skalbaggar (Coleoptera), Sveriges Entomologiska Förening (SEM), Webpage available from <https://www.sef.nu/guide-till-insektsgrupperna/egentliga-insekter-insecta/coleoptera-skalbaggar/> [Accessed 2023-09-06]

Silfverberg, H. (2004). Enumeratio nova Coleopterorum Fennoscandiae, Daniae et Baltiae, Sahlbergia 9:1 pp. 1-111. Helsingfors, Dataset available from the homepage of the Swedish Museum of Natural History <http://www2.nrm.se/en/CATCOL2004.xls>

SLU Swedish Species Information Center (2023) Artfakta, <https://artfakta.se/artbestamning>  
[Accessed 2023-08-24]

Suffert M, Grousset F, Petter F, Steffen K, Schrader G and Wilstermann A, (2016). Work package 1. Pathways of introduction of fruit pests and pathogens Deliverable 1.3. PART 7-REPORT on Oranges and Mandarins-Fruit pathway and Alert List (Dropsa EU project number 613678). Available from EPPO Platform on PRAs <https://pra.eppo.int> [Accessed 2023-09-11]

Uppsala University (2023) The Museum of Evolution Zoology, Digitized zoology collections, available from <https://databas.evolutionsmuseet.uu.se/zoologi/home.php> [Accessed 2023-08-24]

USDA (2021) Importation of dieffenbachia (*Dieffenbachia maculata* and *D. seguine*) for planting from Guatemala into the United States and territories - A Qualitative, Pathway-Initiated Pest Risk Assessment, Animal and Plant Health Inspection Service, U.S. Department of Agriculture. October 19, 2021, Version 2. Available from EPPO Platform on PRAs <https://pra.eppo.int/pr/28cfe5a5-e5ad-4529-9e1a-4521aa11a6af>

Web of Science (2023) Clarivate, Web of Science,  
<https://www.webofscience.com/wos/alldb/basic-search> [Accessed 2023-08-29]



## APPENDIX 1- DEFINITIONS OF INTRODUCED USED BY LUNDBERG (1995) AND SILFVERBERG (2004)

Below are descriptions of how the term “introduced” was used in Lundberg (1995) and Silfverberg (2004):

Lundberg (1995) writes the following in the preface of his book “Införda arter finns endast undantagsvis medtagna i Enumeratio. Ett stort antal arter har under de senare åren införts med virke till Sverige. Huvuddelen av dessa har medtagits eftersom det i några fall hänt att arter har påträffats utan anknytning till införseln. Sådana fynd noteras för aktuellt landskap som spontant medan det i landspalten markeras med ”i” vad gäller Sverige. I vissa fall har säkerligen några av dessa arter även påträffats i övriga länder men där har Enumeratio följts.”.

Silfverberg (2004) writes the following in the preface of his book “For species introduced but not established the letter i has been used in the corresponding column: not all such species are included, but mainly recurrent ones and beetles associated with stored products. It should be observed that except for the imports, no comment on status has been given – natural strays and species that have recently disappeared are included in the respective faunas.”.