Department
for Environment,
Food & Rural Affairs

Diaprepes abbreviatus:

Details of pest's presence in Great Britain and summary of its pest risk analysis conclusions

July 2025

Adult *Diaprepes abbreviatus* (colour and pattern diversity) © C. Malumphy

Background

Diaprepes abbreviatus (*Citrus* root weevil) is a major pest of *Citrus*, root vegetables, ornamentals, and other commercial crops in the Caribbean and a few of the most southern states of the USA where it was unintentionally introduced. Attempts to eradicate it from Gran Canaria are ongoing, and it appears to have also been introduced to Madeira (Andrade & Stüben, 2020; iNaturalist 2025). It is known to be present in England, Great Britain (GB) at one tropical indoor site – the rainforest biome at the Eden project, Cornwall.

During a commodity risk assessment of *Ligustrum* spp. (privet) from the UK conducted by EFSA (European Food Safety Authority), this pest was short listed as a possible pest of concern (EFSA PLH Panel, 2022). A UK pest risk analysis (PRA) was undertaken to indicate whether this pest could establish elsewhere in the UK and whether statutory action is required by GB.

History and findings in the UK

There have been several UK interceptions of this pest over the last few decades. As the interceptions have been made over a large time span, the sources of data (interception databases) have changed and so the details are patchy but are summarised here:

- four interceptions in the 1980s on bananas from the Caribbean
- two interceptions in the 1990s associated with imported plants (one recorded as *Musa*; no host recorded on the other)
- one dead adult in 2023 found in the mulch layer of a *Ficus* sp. (an ornamental fig tree) inside a hospital atrium that had been imported from the Netherlands a few months earlier.

Diaprepes abbreviatus was first discovered at the Eden project (Cornwall, southwestern England) circa 2002. The Eden project was a ‘Millennium’ project, and it is believed that the pest would have been introduced with the original plants for planting in the year 2000. In 2004, the population was large enough for it to be considered a serious pest and control measures were taken to manage the population (C. Malumphy, pers. comms. 2023). For several years now, weevil numbers have been thought to have been low based on few adults being observed and no plants being damaged enough to warrant them being discarded (Eden project, pers. comms., December 2023) (to note: although the adults are relatively large and colourful, they are nocturnal and hide during the day, so they can be overlooked). No control measures are currently being applied. The last specimen was submitted to Fera (the diagnostic service for England and Wales) in 2014, until a site visit by the Plant Health and Seed Inspectorate in October 2023 confirmed the continued presence of the pest through DNA sequencing.

There have been no reports of *Diaprepes abbreviatus* findings anywhere else in the UK.

There are two records of the pest on iNaturalist.org dated July 2023 and March 2025, both are at the Eden project.

Relevant conclusions of PRA

Risk of establishment

UK air and soil temperatures are too low to support the development of *D. abbreviatus* outdoors.

In laboratory experiments, Lapointe *et al*. (2007) found the egg and pupal stages of *D. abbreviatus* to be the most sensitive to low temperatures. At a constant 12°C, it took an average of 4 days for 95% mortality of eggs (eggs are laid between leaves); at a constant 6°C, it took an average of 15 days for 95% mortality of larvae (these were 11 days old at the start of the treatment) (larvae are soil-dwelling); and at a constant 9°C, it took an average of 12.5 days for 100% mortality of pupae (though there were only three replicates per treatment hence a mortality curve could not be fitted, and mortality was defined as dead pupae or deformed teneral adults resulting from the surviving pupae)(pupae are soil-dwelling). There are only a few areas of the UK where average winter soil temperatures are above 6°C (data range 1981-2010). Across the UK, all average soil temperatures are below 8°C (data range 1981-2010). Even taking account of climate change, the sustained cold temperatures would very likely be inhospitable for the larval and pupal stages of *D. abbreviatus*.

In other experiments, Lapointe (2001) estimated that the lower developmental threshold temperature (LDT, the temperature below which no development occurs) for eggs was 12°C. The LDT for neonate larvae was estimated to be 15°C by Lapointe (2000). His reasoning being that at 12°C mortality was over 90% during the experiment, whereas at 15°C, mortality was 56%. The most conservative estimate for the required sum of degree days (DD) was 1226 (accumulated DD are a measure of time and temperature required by poikilothermic organisms to complete a lifecycle or stage – it is a thermal constant that can be used to model development). Even if eggs were laid in the spring when UK air temperatures rise above 12°C, the larval stage would not accumulate enough DD to complete development by spring the next year. For context, London (one of the warmest places in the UK) accumulated < 800 DD above an LDT of 15°C in 2022 (one of the warmest years on record).

The risk of *D. abbreviatus* establishing outdoors was therefore rated as **very unlikely** with **high confidence**.

As *D. abbreviatus* is a known pest of potted ornamental plants and has established at one indoor site in the UK, the likelihood of this pest establishing in glasshouses with tropical/subtropical temperature regimes was rated as **likely** with **medium confidence**. The risk rating was not scored higher because of the assumption that incursions would be noticed relatively early by importers quarantining plants before introducing them to their

principal glasshouses/collections, and that incursions in glasshouses with containerised plants (as opposed to plants planted directly into plant beds) would be relatively straightforward to eradicate.

Dispersal from the established indoor UK population

Adults are reported not to fly far from the spot where they emerge from the soil – estimated to be less than 300 m (Weissling *et al*., 1998;CDFA, No Date).

The Eden project is situated in a steep-sided disused clay quarry which is 60 to 80 m deep. Whether the adult weevil would fly to such a height is not known. Approximately 350 m to the north of the rainforest biome and outside of the quarry, is a nursery owned by the Eden project. To infest plants in this nursery, a gravid female/several weevils would need to escape the rainforest biome, fly to a considerable height and distance, and then find a way into the protected nursery. This seems an improbable scenario. This nursery supplies the Eden project's online shop with plants, and these plants are not sold outside of the UK.

Plant debris, pruning debris and (very infrequently) dead plants are removed from the biome to be composted in an outdoor area onsite. Pruned material is inspected as it is cut, it is then shaken and dropped, which reduced the chance of adults being associated with the material (Eden project, pers. comms., December 2023). The climate surrounding this site (and the outdoor climate of the UK) is unsuitable for the establishment of this pest, so in the event of adults escaping, it is very unlikely that a population could establish outdoors.

The likelihood of this pest dispersing from the current established population in England (adults escaping the Eden project's rainforest biome and transferring to a suitable new environment) was considered **very unlikely** with **high confidence**.

Spread

Apart from a project in 2023, the movement of living plants from the rainforest biome of the Eden project does not occur. The one-off movement of plants in 2023 was for a temporary outdoor show garden. The plants were thoroughly inspected by Eden project staff and either bare rooted and washed so that they were free of soil before being potted and grown on in a nursery building, or cuttings or seeds were taken. The plants destined for the show garden were then inspected by Plant Health and Seed Inspectors.

This pest is very unlikely to establish outdoors and is only expected to be able to establish within tropical/subtropical glasshouses. If the pest were to establish in other glasshouses, spread would be a very rare event between these glasshouses which are limited in number in the UK. Natural spread was therefore not scored and spread with trade was scored as **very slowly** with **high confidence**.

Potential economic, environmental and social impact in the UK

Tropical and subtropical glasshouses are the only environments in which this pest is predicted to be able to establish in the UK. As these types of glasshouses are limited in number, the potential economic loss nationally would be low. Losses to individual glasshouses could be moderate if this pest is not discovered quickly and if the plants within the glasshouse are of high value.

The current population of *D. abbreviatus* at the Eden project is not under any control and numbers are thought to be low based on few adults being observed and no plants being damaged enough to warrant them being discarded (Eden project, pers. comms., December 2023). The potential economic impact of *D. abbreviatus* to the UK was rated as **very small** with **high confidence**.

Neither potential environmental nor potential social impacts in the UK could be rated. Impacts in the wider environment are not expected as this pest can only establish in tropical/sub-tropical glasshouses in the UK. Social impacts cannot be scored separately from economic impacts, as tropical glasshouses open to the public will take measures (at an economic cost) to ensure the site remains attractive to paying visitors.

Endangered area

This pest is not expected to establish outdoors in the PRA area (the UK), neither is it expected to result in economically important losses on a national scale in areas where it could establish (in tropical/sub-tropical glasshouses). Therefore, no endangered area was identified.

Official status

The conclusion of the UK PRA was that taking statutory action on *D. abbreviatus* would not be appropriate. Therefore, this pest remains unregulated for GB.

References

Andrade MM & Stüben PE (2020): New and interesting weevil species (Coleoptera: Curculionoidea) from the archipelago of Madeira. *Weevil News* 84, 12.

CDFA (No Date) California Department of Food and Agriculture. Diaprepes root weevil pest profile. Available at: https://www.cdfa.ca.gov/plant/pdep/target_pest_disease_profiles/diaprepes_PestProfile.html (accessed 01/11/ 2023).

Defra (2024) Rapid Pest Risk Analysis (PRA) for: *Diaprepes abbreviatus*

EFSA Panel on Plant Health, Bragard C, Baptista P, Chatzivassiliou E, Di Serio F, Jaques Miret JA, Justesen AF, MacLeod A, Magnusson CS, Milonas P, Navas-Cortes JA, Parnell S, Potting R, Reignault PL, Stefani E, Thulke H-H, Van der Werf W, VicentCivera A, Yuen J, Zappala L, Battisti A, Mas H, Rigling D, Faccoli M, Iacopetti G, Mikulova A, Mosbach-Schulz O, Stancanelli G, Stergulc F & Gonthier P (2022): Scientific Opinion on the commodity risk assessment of *Ligustrum delavayanum* topiary plants grafted on *Ligustrum japonicum* from the UK. *EFSA Journal* **20** (11) DOI: 10.2903/j.efsa.2022.7593.

iNaturalist (2025) https://www.inaturalist.org/observations?subview=map&taxon_id=132094

Lapointe SL (2000): Thermal requirements for development of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). *Environmental Entomology* **29** (2), 150-156.

Lapointe SL (2001): Effect of temperature on egg development of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). *Florida Entomologist* **84** (2), 298-298.

Lapointe SL, Borchert DM & Hall DG (2007): 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.

Weissling TJ, Pena JE, Giblin-Davis RM & Knapp JL (1998) Diaprepes root weevil, *Diaprepes abbreviatus* (Linnaeus) (Insecta: Coleoptera: Curculionidae). Entomology and Nematology Department. University of Florida. Available at: https://www.growables.org/information/LowChillFruit/documents/DiaprepesRootWeevil.pdf.

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