Department for Environment Food & Rural Affairs

Rapid Pest Risk Analysis (PRA) for:

Diabrotica balteata

Draft 2: October 2014

Stage 1: Initiation

1. What is the name of the pest?

Diabrotica balteata LeConte (Insecta: Coleoptera: Chrysomelidae). Common name: banded cucumber beetle.

2. What initiated this rapid PRA?

A PRA was initially carried out in 2002 because the related pest *Diabrotica virgifera virgifera* had arrived and begun to spread in Europe and the assessment of similar pests was therefore deemed prudent (MacLeod 2002). It was included in the UK Plant Health Risk Register and identified as a priority to update the PRA to resolve uncertainties about the risk to the UK.

3. What is the PRA area?

The PRA area is the United Kingdom of Great Britain and Northern Ireland.

Stage 2: Risk Assessment

4. What is the pest's status in the EC Plant Health Directive (Council Directive 2000/29/EC[1]) and in the lists of EPPO[2]?

The pest is not listed in the EC Plant Health Directive and is not recommended for regulation as a quarantine pest by EPPO, nor is it on the EPPO Alert List

5. What is the pest's current geographical distribution?

Diabrotica balteata ranges from southern USA, throughout Central America and into South America. Its northern limit in the USA is related to its inability to survive freezing temperatures (Krysan 1986). A population was first noted on the Hawaiian island of Maui in October 2008 and was being monitored for potential establishment. Other species of *Diabrotica* that have previously entered Hawaii have failed to establish (State of Hawaii Department of Agriculture, 2010). There have been no updates on this pest's status in Hawaii since the report was published in 2010 and so its continued presence there is uncertain.

Table : Distribution of *Diabrotica balteata* (CABI, 2014)	
North America:	USA (Alabama, Arizona, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Texas), Mexico
Central America:	Belize, Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Nicaragua, Panama
South America:	Colombia, Venezuela
Europe:	Absent
Africa:	Absent
Asia:	Absent
Oceania:	Absent

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000L0029:20100113:EN:PDF

[2] https://www.eppo.int/QUARANTINE/quarantine.htm

6. Is the pest established or transient, or suspected to be established/transient in the UK/PRA Area?

Diabrotica balteata is not established in the UK, nor has it been intercepted in the UK or Europe (Europhyt data search, 16.10.2014). As a conspicuous beetle it is unlikely to have undetected populations in the UK.

7. What are the pest's natural and experimental host plants; of these, which are of economic and/or environmental importance in the UK/PRA area?

Diabrotica balteata is a highly polyphagous species. Larvae feed on roots whereas adults are foliage feeders. Though adults will feed on over 50 plant species from over 23 families, laboratory studies have showed that fecundity varies between hosts indicating that there is some host preference (Saba 1970).

The following hosts were described in feeding trials by Saba (1970) as good or very good for adult *D. balteata*. *Allium porrum* (leek), *Arachis hypogaea* (peanut), *Avena sativa* (oats), *Begonia, Beta vulgaris* (beets), *Brassica oleracea* (broccoli, cauliflower, cabbage etc.), *Brassica rapa* (turnips), *Capsicum annuum* (fruit rather than foliage, peppers), *Citrus sinensis* (orange), *Crataegus monogyna* (common hawthorn), *Crotalaria spectabilis* (showy rattlebox), *Cucumis sativus* (cucumber), *Cucurbita maxima* (squash), *Echinochloa crus-galli* (cockspur grass), *Glycine max* (soybean), *Gossypium hirsutum* (upland cotton), *Hibiscus rosa sinensis* (Chinese hibiscus), *Hordeum vulgare* (barley), *Humulus lupulus* (hops), *Ipomoea batatas* (sweet potato), *Lepidium sativum* (garden cress), *Malus domestica* (apple), *Mentha piperita* (peppermint), *Phaseolus vulgaris* (green beans), *Pisum sativum* (peas), *Prunus domestica* (plum), *Oryza sativum* (rice), *Rosa* (roses), *Solanum lycopersicum* (tomato), *Stellaria media* (chickweed*), Urtica urens*, *Vicia faba* (broad bean), *Vitis vinifera* (grape vine), *Zea mays* (maize)

Adult beetles have also been recorded as pests of *Manihot esculenta* (cassava) (Peña & Waddill 1982) and *Vigna unguiculata* (cowpea) (Moreno 1979). It is likely there are more hosts than recorded here.

The recorded larval hosts of *D. balteata* are fewer. Based on the behavior of other members of the *Diabrotica* genus it is likely that larvae feed on fewer hosts than the adults. However, larval hosts may be under recorded as they feed underground and so are difficult to detect. It is difficult to tell the difference between different species of *Diabrotica* larvae (Krysan 1986), or it may be that low levels of infestation are unnoticed and thus unreported (Cardona *et al.* 1982). Known larval hosts include: *Phaseolus vulgaris* (common bean), *Zea mays* (maize) (Cardona *et al.* 1982), *Solanum lycopersicum* (tomato) (León *et al.* 2001), *Ipomoea batatas* (sweet potatoes) and *Glycine max* (soybean) (Pitre *et al.* 1962). Potato (*Solanum tuberosum*) (Teng *et al.* 1984) was considered to be a poor host for adults by Saba (1970). In *The Invertebrate Pests of Annual Food Crops in Central*

America larval hosts are described as “maize, sorghum and other Graminaceous crops” (King & Saunders 1984).

Important hosts to the UK include tomatoes and cucumbers (usually grown within protected cultivation), potatoes, maize, peas and beans (green and broad).

8. What pathways provide opportunities for the pest to enter and transfer to a suitable host and what is the likelihood of entering the UK/PRA area?

Although *D. balteata* has expanded its range in the USA there is little evidence that this was via pathways other than natural spread. The populations found in Hawaii are likely to be an exception, though the pathway of entry in this case is not known. The lack of interceptions in Europe (Europhyt database search, 16.10.2014) suggests that this pest is not regularly moving in trade.

Plant Produce

Due to their polyphagous nature, the adults may be associated with a wide range of plant produce including cut flowers. Eggs of *D. balteata* are laid in the soil, which is also where larvae develop and pupate, and these life stages could be associated with host roots and tubers imported from the pest’s current area of distribution, such as sweet potatoes, but larvae are not thought to burrow into tubers reducing the likelihood of this occurrence. These pathways offer very little opportunity for the pest to transfer to a suitable host. Adults are also relatively conspicuous, and would be likely to be detected during routine inspections. *Diabrotica balteata* has never been intercepted in the UK or elsewhere in Europe. Given the lack of transfer opportunities and lack of evidence that the pest is moving in trade, entry via plant products is considered unlikely with medium confidence.

Soil

Eggs of *D. balteata* are laid in the soil. Larvae, as root feeders, are also present in the soil – however in general they are closely associated with the roots (Fisher & Bergman 1986) so would be likely only be found in soil that contained plant material. The distribution of pupae in the soil is less well understood, but is not always in close association with hosts (Fisher & Bergman 1986).

Current EU plant health legislation prohibits the import of soil or other growing medium from all areas within the current distribution of *D. balteata*, and thus entry on this pathway is rated as very unlikely with high confidence.

Plants for Planting

As described above, adult beetles may hitchhike on the leaves of planting material. All planting material from 3rd countries must enter the UK with a phytosanitary certificate – the conspicuous adults are likely to be detected during export inspections or during any inspections that take place in the UK. The known larval hosts are not routinely traded as plants for planting. Sweet potatoes are grown from slips (Lerner, 2001), rather than tubers that larvae attack. Beans (*Phaseolus*), soybean (*Glycine max*) and Maize (*Zea mays*) are grown from seed. The exception is *Solanum lycopersicum*, but solanaceous plants for planting are prohibited under current EU legislation from *D. balteata*'s current range. Given this, and the lack of European interceptions of the pest, entry on plants for planting is rated as unlikely with medium confidence – as additional larval hosts may be traded and, as plants for planting, may contain soil sufficient for the vitality of the plants.

Plant Produce	Very unlikely	☐	Unlikely	☑	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

Soil	Very unlikely	☑	Unlikely	☐	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐				

Plants for planting	Very unlikely	☐	Unlikely	☑	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

9. How likely is the pest to establish outdoors or under protection in the UK/PRA area?

The genus *Diabrotica* is split into two groups: the *fucata* group, to which *D. balteata* belongs and the *virgifera* group. Whilst the *virgifera* group overwinter in the soil as eggs with a single generation per year, the *fucata* group has multiple generations per year, and overwinters as adults (Branson & Krysan 1981). Though members of the *virgifera* group

have adapted to survive the cooler winters of the northern United States by employing different overwintering strategies, no member of the *fucata* group can overwinter in this area (Krysan 1986).

Studies on the temperature development requirements of *D. balteata* were carried out by Saba (1970), and showed that the beetles are unable to survive sub-zero temperatures. The beetle overwinters as an adult, and shows no diapause behaviour (Pitre et al. 1962, Saba 1970). At 0°C, a third of adults died after 2 days and 98% after 5 days and at 4°C only 1% of adults survived more than 10 days (Saba, 1970). These data fit with the distribution of *D. balteata* in the United States. Records of the distribution of *Diabrotica* in North America from the 19th Century show that the pest was only present in Texas (Webster 1895), but during the 20th Century expanded its range to many other states in the Southern USA. However, it has yet to spread to the northern states that have very cold winters providing a strong indication that its range is restricted by climate.

Larvae are also negatively impacted by cool temperatures. In experiments by Saba, 1970, 90% of first instar larvae were killed by five days exposure at temperatures of 7°C and half of all pupae failed to produce adults after being stored at 7°C for 2 days. Such conditions are common in the UK and establishment outdoors in the UK is therefore rated as very unlikely, with high confidence.

There are no records of *D. balteata* as a pest of protected cultivation – and only one *Diabrotica*, *D. undecimpunctata*, has been reported as attacking glasshouse grown crops in Canada. However,in this instance the population moved into the glasshouses from surrounding fields (EPPO 1999). Eggs of *D. balteata* are laid into the soil, where larvae also develop as root feeders. Though hosts are grown under protection in the UK, such as cucumbers and tomatoes, this is usually within hydroponic systems rather than in the soil. It is uncertain if larvae could survive in alternative substrates such as rock wool or coir, but it has not been reported elsewhere. Establishment under protection is rated as very unlikely with high confidence.

Outdoors	Very unlikely	☑	Unlikely	☐	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐				

Under Protection	Very unlikely	☑	Unlikely	☐	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐				

10. If the pest needs a vector, is it present in the UK/PRA area?

This is a free living organism and a vector is not required.

11. How quickly could the pest spread in the UK/PRA area?

There are very little data on the spread capabilities of *D. balteata*, with studies on the flight capacity of *Diabrotica* species largely confined to members of the *virgifera* group. It is unlikely that *D. balteata* would spread faster than related pests such as *D. virgifera virgifera* whose females have been shown to be able to fly up to 40 km in 24 hours (Coats et al. 1986). When introduced to Europe the rate of spread was approximately 20 km/year. Outbreaks over 4 years in the UK showed little movement of *D. v. virgifera* away from the outbreak sites (MacLeod et al. 2007). Movement via natural spread is rated as slowly, with low confidence due to the lack of data on the flight capacity of *D. balteata*.

Spread in trade is also rated as slowly. Adult beetles, though small, are brightly coloured and conspicuous and their presence on foliage is likely to be noted. Larvae and pupae could move with the roots and in soil associated with planting material, but most of the known larval hosts are not traded as plants and most tomato plants are moved when they are very young, and unlikely to have been infested. Larvae are also associated with potato tubers. However the damage incurred on such tubers would make them unmarketable, reducing their chances of spreading along this pathway. Confidence associated with this rating is medium, as there may be additional larval hosts moved extensively in trade in the UK that have not been identified.

Natural Spread	Very slowly	☐	Slowly	☑	Moderate pace	☐	Quickly	☐	Very quickly ☐
Confidence	High Confidence	☐	Medium Confidence	☐	Low Confidence	☑			

With trade	Very slowly	☐	Slowly	☑	Moderate pace	☐	Quickly	☐	Very quickly ☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐			

12. What is the pest's economic, environmental and social impact within its existing distribution?

Damage caused by larvae to roots/tubers and adults to foliage and flowers has been recorded on a number of crops throughout the range of *D. balteata*. In Central America *D. balteata* has been described as "a ubiquitous pest of minor to major importance, especially as adults in seedlings or larvae on maize roots" (King & Saunders 1984). In South America it is considered one of the most common pests of beans (Phaseolus) (Altieri et al. 1978; Cardona et al. 1982). Under experimental conditions larvae were shown to feed on germinating seeds, severely reducing emergence and those plants that did emerge showed damage to primary leaves. However, the infestation of plants more than 14 days old showed no damage from larval feeding and larval infestations were rarely noted in the field. In the same study the effect of adult feeding on yield was also studied, and the levels required to cause significant yield reductions (2 to 4 beetles per plant) were higher than

the population levels usually seen in the field (0.6 to 1 beetle per plant) (Cardona et al. 1982).

In the southern United States it is particularly noted as a pest of sweet potato (*Ipomoea batatas*). The feeding behaviour of the larvae creates holes in the developing tuber, which expand as the tuber continues to grow. This reduces the quality of the tubers and affects their marketability, rather than having an effect on overall yield (Pitre et al. 1962, Smith et al. 2007). Similar damage can be caused by other *Diabrotica* spp. and several other pests including wireworms and flea beetles, and, since the pest is often no longer present at harvest, it is difficult to be certain exactly which pest is responsible for such damage (Jackson & Bohac 2007), making assessments of the impacts caused by *D. balteata* on its own difficult. Damage has been noted in potato (*Solanum tuberosum*) production in Florida, where wounds created by the larvae can also act as an entry point for secondary pathogens (Teng et al. 1984). Also in Florida it has been recorded as a pest of cassava (though this has not been seen elsewhere in its range), observations in the field showed beetles had a preference for feeding on foliage that was infected by cassava bacterial blight (Xanthomonas manihotis) (Peña & Waddill 1982).

In Cuba, *D. balteata* has been noted as causing "considerable damage" to tomato, through the feeding activity of both larvae on the roots and adults on foliage, buds and flowers. Holes left in foliage can lead to the entry of secondary pathogens (León et al. 2001).

Diabrotica balteata also causes impacts in its role as a virus vector, particularly in cowpea production, however many of the viruses it vectors are also spread by other *Diabrotica* spp. or other Chrysomelidae beetles making its specific impacts as a vector difficult to judge. This is discussed further in section 14.

A lack of publications relating to the impacts of *D. balteata* in the past 20 years implies that this pest may now be adequately controlled. There has been significant research into IPM control of *Diabrotica* pests in sweet potato including the production of resistant varieties (Jackson & Bohac 2007). Impacts in the current area of distribution are rated as small, with medium confidence. There are few studies that looked specifically at yield losses or economic impacts caused by *D. balteata* in the field, and damage by this beetle is often reported in conjunction with similar pest species.

Impacts	Very small	☐	Small	☐	Medium	☑	Large	☐	Very large ☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐			

13. What is the pest's potential to cause economic, environmental and social impacts in the UK/PRA area?

The unsuitable climate of the UK and the fact that it has never been found in protected cultivation is likely to ensure that no direct impacts, even from transient summer populations, will occur in the UK from this pest. If some summers are hot enough to

complete its life cycle, the number of generations possible will be much fewer than in areas of the world where it is known to cause significant damage.

Many of the hosts on which *D. balteata* has the greatest recorded economic impacts (such as cowpea and sweet potatoes) are not widely grown in the UK. Though it is a pest of potatoes in Florida, the lack of literature concerning impacts in this crop elsewhere in its distribution suggests that impacts on potato are relatively rare. Although there is uncertainty concerning the host range of *D. balteata* in the UK, the direct potential economic impacts would be rated as very small with high confidence because of the unsuitable climate. However, the economic rating is given as small because it is possible that transient summer populations of *D. balteata* infected with viruses could transmit these viruses to UK crops from which native Chrysomelid beetles could maintain the outbreak.

The unsuitable climate, the lack of environmental or social impacts within its native range, and the fact that no significant UK native species are recorded as hosts, indicates expected environmental and social impacts to be very small with high confidence.

Economic Impacts	Very small	☐	Small	☑	Medium	☐	Large	☐	Very large	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				
Environ - mental Impacts	Very small	☑	Small	☐	Medium	☐	Large	☐	Very large	☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐				
Social Impacts	Very small	☑	Small	☐	Medium	☐	Large	☐	Very large	☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐				

14. What is the pest's potential as a vector of plant pathogens?

Nine viruses known to be vectored by *D. balteata* (Gergerich et al. 1986) are described in the text below. None are listed in the EU Plant Health Directive and are all absent from the EU with the exception of *Squash Mosaic Virus.* A number of these viruses belong to the comovirus group. Many of these viruses are also transmitted by other Chrysomelidae.

Bean curly dwarf mosaic

Reported from El Salvador and Costa Rica, this virus is probably widespread in Central America, where at least 5 different vectors are known to transmit it including *D. balteata* (Hobbs 1981). It is a virus of green bean (*Phaseolus vulgaris*) and symptoms include dwarfing, mosaic and leaf curling (Meiners *et al.* 1977).

Bean mild mosaic

As with *Bean curly dwarf mosaic*, this virus of green bean is transmitted by at least 5 beetle vectors and is likely to be present throughout Central America (Hobbs 1981) and is also known from the USA (Sepulveda & Saettler 1990). It has symptoms similar to *Bean curly dwarf mosaic* and is also seed transmissible (Sepulveda & Saettler 1990).

Bean pod mottle

Bean pod mottle is a largely North America disease though it has been reported elsewhere, it causes disease on green beans, soy bean and cowpea (Edwardson & Christie 1991). Severe outbreaks in soybean production have been reported in the USA, with yield reductions of up to 52% reported (Giesler *et al.* 2002).

Bean rugose mosaic

This virus has been reported from the USA, Central America and Brazil and Columbia, where it is a virus of green beans transmitted by at least 3 beetles (Edwardson & Christie 1991). Symptoms on bean include severe mosaicking and leaf malformation (Acosta *et al.* 1986).

Bean yellow stipple

Bean yellow stipple is also known as *Cowpea chlorotic mottle* and, as well as green bean and cowpea, has also been isolated from the wild legume *Desmodium laevigatum* (Fulton *et al.* 1975). It has at least three beetle vectors (Hobbs & Fulton 1979). In bean it is recorded as a mild disease, causing yellow stippling and slight malformation of the leaves – it is largely found in Central America (Gamez 1972).

Cowpea mosaic

The main host is cowpea (*Vigna unguiculata*) though 11 other legumes that have been reported as naturally infected in the field include green bean and red clover (Edwardson & Christie 1991). At least 5 other beetles in the Chrysomelidae act as vectors with varying efficiency (Jansen & Staples 1971), and there is a low rate of seed transmission (1-5%). Symptoms vary depending on the cultivar and can range from severe mosaic and death of the plant to mild mottle (Singh & Allen 1979). Its distribution includes Brazil, Cuba, India, Kenya, Nigeria, Puerto Rico, Suriname, Tanzania and the USA (Edwardson & Christie 1991).

Cowpea severe mosaic

Cowpea severe mosaic virus is reported from several countries in Central and South America and in the USA, with 13 hosts recorded in the field including cowpea, peas and

green bean (Edwardson & Christie 1991). It causes mosaics of varying severity, and has been responsible for up to 80% yield losses in cowpea in Brazil (Singh & Allen 1979).

Muskmelon necrotic spot

This is a virus of uncertain taxonomy that has only been shown to be transmitted experimentally by *D. balteata,* and is also seed borne (Coudriet *et al.* 1979). The published range of the virus does not overlap with *D. balteata*.

Squash mosaic

Squash mosaic virus is transmitted both by beetle vectors and in seed (Nolan & Campbell 1984). It causes disease in both melons and squash with symptoms that include mosaicking and blistering on leaves and a mottle pattern on infected fruits (Zitter *et al.* 1984). It is found in many countries across the globe but is absent from the UK.

Virus transmission by beetles is relatively poorly understood. The amount of time an adult *D. balteata* remains viruliferous varies depending on the virus and how soon feeding occurs post-acquisition, but up to 4 weeks has been recorded for *D. balteata* (Wang *et al.* 1994), meaning that there is a probability of infected beetles entering the UK. If infected *D. balteata* were to enter, they could transmit viruses to UK hosts, and if populations were to establish persist in transmitting them. The likelihood of this occurring is very small – many of the viruses have economic impacts on hosts not widely grown in the UK, and each has a range that is more limited than that of *D. balteata* itself. *Diabrotica virgifera virgifera* was introduced multiple times to Europe from the USA, where it is a vector of *Maize Chlorotic Virus*, but no incidence of this virus has been reported in Europe (MacLeod *et al.* 2007).

Though it has been theorised that Cowpea mosaic virus and cowpea severe mosaic virus could be transmitted by any member of the leaf beetle sub-family Galerucinae capable of feeding upon the hosts (Jansen & Staples 1971), it is unclear if UK species of Chrysomelidae could be capable of transmitting any of the above viruses if they were first introduced by individuals of *D. balteata* that then died out.

15. What is the area endangered by the pest?

Due to climate, *D. balteata* is not expected to establish in the UK. Transient populations potentially transmitting viruses could occur in southern areas in very hot summers.

Stage 3: Pest Risk Management

16. What are the risk management options for the UK/PRA area?

Exclusion

Prospects for continued exclusion are good. Adults are 5 to 6 mm in length and brightly coloured, so they are likely to be spotted on imports of planting material or produce if present. Though there is no evidence of movement in trade, this may be because not all of the commodities it could enter on are controlled and subject to regular inspection, so inspection of field vegetables originating from Central America and the Southern USA could be considered, and raising awareness with importers of such commodities could also help reduce risk.

Eradication and Control

Transient summer populations outdoors could prove difficult to control, as *D. balteata* is able to use several species present in the wider environment as hosts but if infestations are spotted early small populations may be eradicated with appropriate pesticide applications. However, they are not expected to cause much damage and are very unlikely to survive the winter. In the USA pre-plant soil insecticides are used to control larvae (though they are considered difficult to control) and foliar sprays to target. In the event of an outbreak under protection on hosts being grown in soil (e.g. organic tomatoes), control and eradication could be achieved via crop breaks during winter, removing growing medium to destroy any eggs or larvae and turning off heating to allow lower temperatures to reduce adult numbers.

17. Summary and conclusions of the rapid PRA

This rapid PRA shows that *D. balteata* is a polyphagous pest of varying impacts in the southern United states and Central America and introduction and impacts in the UK are very unlikely.

Risk of entry

There is no evidence that this pest is moving in trade. Pathways such as produce, cut flowers and plants for planting are all considered unlikely, and soil very unlikely.

Risk of establishment

The pest is very unlikely to establish in the UK, as temperature development requirements and current distribution strongly indicate that *D. balteata* could not survive the UK winters, as they are do not diapause and are extremely intolerant of cold and freezing temperatures. There are no records of this pest in protected cultivation.

Economic, environmental and social impact

In its current range the impacts of the pest vary greatly depending on crop and location, but overall impacts are rated as moderate. Due to the unsuitable climate impacts in the UK are very unlikely to occur even if there are transient summer populations.

Endangered area

The UK is not considered to be endangered by this pest except by transient populations potentially transmitting viruses in southern areas in very hot summers.

Risk management options

Prospects of continued exclusion are good. Transient populations of this pest could be managed with the application of soil and foliar pesticides.

Key uncertainties and topics that would benefit from further investigation

It is uncertain if UK species of Chrysomelidae could transmit viruses that may be introduced by transient populations of *D. balteata*.

18. Is there a need for a detailed PRA or for a more detailed analysis of particular sections of the PRA? If yes, select the PRA area (UK or EU) and the PRA scheme (UK or EPPO) to be used.

(For completion by the Plant Health Risk Group) ✓ *(put a tick in the box)*

No					
Yes		PRA area: UK or EU		PRA scheme: UK or EPPO	

19. Images of the pest

Adult *Diabrotica balteata*

Russ Ottens, University of Georgia, Bugwood.org

20. Given the information assembled within the time scale required, is statutory action considered appropriate / justified?

[*For completion by the Plant Health Risk Group*] *(put a tick in the box)*

Yes Statutory action		No Statutory action	

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