CAPS Datasheets provide pest-specific information to support planning and completing early detection surveys.

Platypus quercivorus

Scientific Name

Platypus quercivorus (Murayama, 1925)

Synonym(s):

Crossotarsus brevidens Browne, 1975
Crossotarsus quercivorus Murayama, 1925

Common Name

Oak ambrosia beetle
Japanese oak ambrosia beetle
Oak platypodid beetle

Type of Pest

Ambrosia beetle

Taxonomic Position

Class: Insecta, **Order:** Coleoptera, **Family:** Curculionidae

Figure 1. *Platypus quercivorus* adult male in lateral view (Photo by Joseph Benzel, Screening Aids, USDA-APHIS-PPQ, Bugwood.org, CC BY-NC 3.0 US)

Notes on taxonomy and nomenclature

Ambrosia beetles typically refer to members of two unrelated clades/groups: the subfamily Platypodinae and the tribe Xyleborini within the subfamily Scolytinae. They have evolved separately but are defined by a shared ecological strategy of fungus farming (Hulcr and Stelinski, 2017).

Pest Recognition

This section describes characteristics of the organism and symptoms that will help surveyors recognize possible infestations/infections in the field, select survey sites, and collect symptomatic material. For morphological descriptions, see the Identification/Diagnostic resources on the AMPS pest page on the CAPS Resource and Collaboration website.

Pest Description

Adults: *Platypus quercivorus* is a small beetle measuring approximately 5 mm long and 1 mm wide (Fig. 1 and 2) (Hong et al., 2006; Murayama, 1925). The body shape is elongated and roughly cylindrical, with an elongated thorax and a short abdomen (the entire abdomen is shorter than the last segment of the thorax) (Fig. 2B). The apex of the

hardened wings (elytra) is convex with a broad square end and with a series of spines at the top (Fig. 2) (Atkinson, 2021; Benzel, 2015). The color is reddish brown, with the head and the apex of the elytra darker, and the underside of the body yellowish brown (Murayama, 1925).
Adults can be found in the series of tunnels (galleries) they dig mainly in the bottom 3 feet of the host tree, flying in search of a tree to colonize, or in traps with species specific pheromone lures (Esaki et al., 2009; Kinuura and Yamada, 1994).

Figure 2. *Platypus quercivorus* adult male **(A)** dorsal view and **(B)** lateral view with 3rd thoracic segment and abdomen labeled (Photos courtesy of Joseph Benzel, Screening Aid, USDA APHIS PPQ, Bugwood.org, CC BY-NC 3.0 US)

Eggs: Eggs are ovoid and white to cream-colored (Fig. 3). They can be found in the walls of galleries (Fig. 4B) (Kinuura and Yamada, 1994).

Figure 3. *Platypus quercivorus* eggs (Photo courtesy of Tohoku Forest Management Bureau)

Larvae: Larvae are tubular, wrinkled, white to cream-colored with amber mouthparts, and up to 1/4 inches long when mature (Fig. 4A) (Ciesla, 2003; Kinuura and Yamada, 1994). All larval stages can be found in the galleries (Fig. 4B) (Kinuura and Yamada, 1994).

Pupae: Pupae are white, slightly larger than adults, and with partially developed wings and appendages. They can be found in the chambers made by the mature larvae within the galleries (Ciesla, 2003; Kinuura and Yamada, 1994).

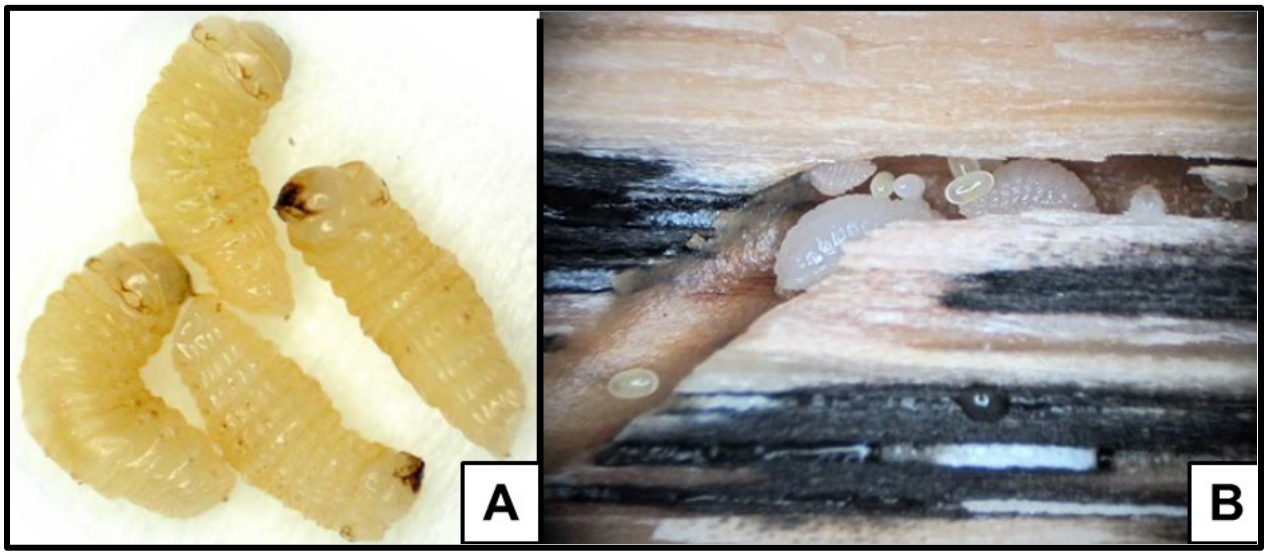

Figure 4. *Platypus quercivorus* **(A)** larvae and **(B)** larvae and eggs in galleries (Photo courtesy of Tohoku Forest Management Bureau).

Signs & Symptoms

Infestations by platypodids (ambrosia beetles in the Platypodinae subfamily) show some common signs and symptoms:

- Entrance holes ('pinholes') are about 1/16 in. in diameter, located primarily in bark crevices, and are more abundant at the base of trees (Fig. 5A and B, see indicated by red circle and Fig. 5C) (Hijii et al., 1991; Kuma et al., 2021).
- Fibrous frass around entrance holes or abundant powdery frass at the base of trees (Fig. 6A and B) (Tarno et al., 2012; Tarno et al., 2016).

Symptoms of the fungal symbiont *Dryadomyces quercivora* (formerly *Raffaelea quercivora*) might be visible, including:

- Wilting and changes in foliage color, with leaves turning reddish (Ito et al., 2003).
- Tree dieback (Esaki et al., 2004).
- Necrotic inner bark and discolored sapwood near galleries (Fig. 7A and B) (Ito et al., 2003; Kubono and Ito, 2002; Kuroda and Yamada, 1996).

Figure 5. Platypodid damage signs: **(A)** and **(B)** *Platypus quercivorus* entrance holes with frass around them, and **(C)** *Platypus* spp. galleries on sapwood (Photos a and b: Troy Kimoto, Canadian Food Inspection Agency, Bugwood.org, Photo c: James Solomon, USDA Forest Service, Bugwood.org CC BY-NC 3.0 US)

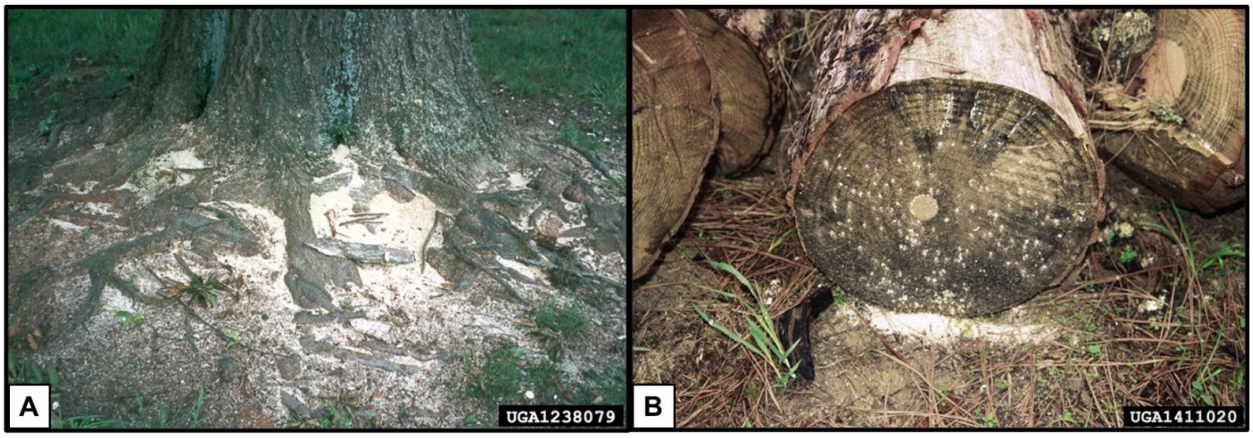

Figure 6. *Platypus* spp. damage signs: **(A)** frass at the tree base and **(B)** galleries and frass in a log (Photos courtesy of (a) Randy Cyr, Greentree, Bugwood.org and (b) James Denny Ward, USDA Forest Service, Bugwood.org, CC BY-NC 3.0 US)

Figure 7. *Platypus* spp. damage signs and symptoms: **(A)** entrance holes stained with blue fungi and **(B)** dark stain on or around tunnel walls (Photos courtesy of: (a) Ladd Livingston, Idaho Department of Lands, Bugwood.org and (b) USDA Forest Service - Wood Products Insect Lab, USDA Forest Service, Bugwood.org, CC BY-NC 3.0 US)

Easily Mistaken Species

There are many small beetles associated with trees that can be easily mistaken for the ambrosia beetle, *P. quercivorus*. Cossonine weevils, horned powderpost beetles, sap beetles, featherwing beetles, and other small brown beetles are typically found near stressed or decomposing wood. These species can be differentiated by eye with careful examination.

Bark beetles (which includes several related groups of beetles) and ambrosia beetles (which is name that typically includes the subfamily Platypodinae and the tribe Xyleborini within the subfamily Scolytinae) are all very similar in appearance and bore holes and excavate galleries in the tissues of their hosts. They are generally small (typically up to ¼ inch long), dark brown or black, and pill-shaped (elongate and cylindrical). However, they can be differentiated by eye. A screening aid for ambrosia beetles by Benzel (2015) is available on the CAPS website and provides helpful information to distinguish bark and ambrosia beetles.

Within the ambrosia beetles, there are several species that can be easily mistaken for *P. quercivorus* without magnification. *Platypus koryoensis,* which is not present in the

United States, looks similar to *P. quercivorus* but is smaller (about 3.8 mm) (Fig. 9) and the pronotum is deeply convex in lateral view whereas *P. quercivorus* is slightly convex (Hong et al., 2006). Females and males can be differentiated by experts using morphological features visible under magnification (Hong et al., 2006). *Platypus koryoensis* shares many hosts with *P. quercivorus* (Hong et al., 2006; Lai et al., 2023).

Within the United States, seven species of platypodids are known to occur; these most commonly occur in the Southeast and Pacific Northwest (Benzel, 2015). These species are listed below and the screening aid for ambrosia beetles provides guidance and images to differentiate these species.

Euplatypus compositus is highly polyphagous (feeding on multiple plant families), including Fagaceae (*Quercus* spp.), the main host of *P. quercivorus*. It is widespread in the Southeast, parts of the Northeast, and Southwest, and Puerto Rico.
Euplatypus parallellus is highly polyphagous (feeding on multiple plant families) but does not share hosts with *P. quercivorus*. It is present in California, Florida, Texas, and Puerto Rico.
Euplatypus pini shares no hosts with *P. quercivorus*, as it only infests pines and is present in parts of the Southwest.
Myoplatypus flavicornis infests pines, shares no hosts with *P. quercivorus*. It is present in the Southeast and parts of the Northeast.
Oxoplatypus quadridentatus is polyphagous, including Fagaceae (*Castanea* spp. and *Quercus* spp.). It is widely distributed in the Southeast and most of the Southwest.
Treptoplatypus abietis and ***T. wilsoni*** are present in most of the West; both species infest various genera within the Pinaceae and share no hosts with *P. quercivorus.* *Treptoplatypus abietis* is present in Arizona, Colorado, New Mexico, and Utah and *T. wilsoni* is present in most of the West (Atkinson, 2020, 2021).

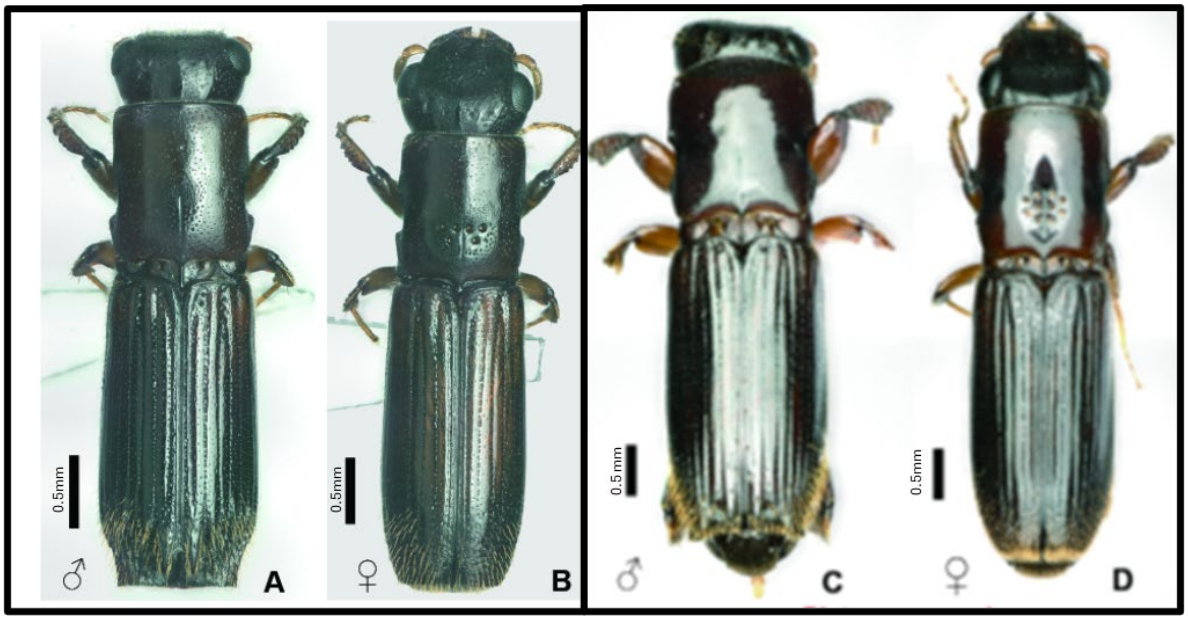

Figure 9. *Platypus koryoensis* male and female **(A&B)** and *P. quercivorus* male and female **(C&D)** adults in dorsal view (Photos courtesy of S. Lai, Forestry College, Nanjing Forestry University, China)

Commonly Encountered Non-targets

The approved survey method for *P. quercivorus* is the pheromone quercivorol ((1S,4R)-4-isopropyl-1-methyl-2-cyclohexen-1-ol) in a multi-funnel trap.

Insects attracted to this pheromone that are present in the United States include *Ambrosiodmus devexulus*, *A. lecontei*, *Euwallacea fornicatus*, *E. perbrevis,* and *Xylosandrus crassiusculus* (El-Sayed, 2024; Hulcr, 2012).

The platypodids present in the United States are not known to be attracted to this pheromone.

Biology and Ecology

Platypus quercivorus generally infests weakened trees or logs but can also attack healthy trees when attacking in a large group (Esaki et al., 2004; Hijii et al., 1991). Climatic events, primary tree pests, or diseases that increase the number of weak or fallen trees may generate a large beetle population and trigger an outbreak that can severely impact healthy trees (Soné et al., 1998).

Platypus quercivorus develops in tree trunks, where it spends its life cycle in the sapwood and, in some cases, the heartwood (Kobayashi and Ueda, 2005; Kusumoto et al., 2022). Like all ambrosia beetles, it does not actually feed on the wood, but rather on the symbiotic fungi that it spreads on gallery walls (Ciesla, 2011). *Platypus quercivorus* males are attracted to host leaf volatiles and select suitable hosts based on trunk size, preferring large trees that will maintain high water content for long periods of time (Kobayashi and Ueda, 2005; Pham et al., 2019; Pham et al., 2020).

Once a suitable host has been found, the beetle will preferably attack at heights less than 3 feet (Esaki et al., 2009); the male bores an entrance hole and prepares a short gallery about the length of its body and waits for a female (Kinuura and Yamada, 1994). In the gallery, the male will respond to the female's stridulation sounds (sounds made by rubbing body parts together) by releasing an aggregation pheromone that can trigger a mass attack (Kobayashi and Ueda, 2005; Ohya and Kinuura, 2001). Males and females are both attracted to the aggregation pheromone, and beetles will infest the same tree repeatedly after the initial infestation (Soné et al., 1998), with a higher concentration of bore holes close to the ground (root collar) (Esaki et al., 2009; Hijii et al., 1991).

The beetles are monogamous. The male and female mate at the entrance hole, after which she will continue boring the gallery while the male plugs the entrance with his body (Kobayashi and Ueda, 2002; Kobayashi et al., 2001; Soné et al., 1998; Tarno et al., 2016). The female places frass at the hole entrance, which the male expels outside (Nobuchi, 1994 cited by Soné et al., 1998). Eggs are laid in the gallery walls, with females laying between 20 and 196 eggs in their lifetime (Kinuura and Yamada, 1994; Kitajima and Goto, 2004; Soné et al., 1998).

Eggs hatch in about a week, and larvae develop through five stages within approximately two months. The galleries continue to expand, branching a few times laterally and vertically across the sapwood and, in some cases, the heartwood, and larvae pupate at the internal ends of the gallery (Kinuura and Yamada, 1994; Soné et al., 1998).

Platypus quercivorus commonly has one generation per year but can have two generations (Kinuura, 1995; Soné et al., 1998). Some individuals will emerge as adults while others overwinter as final stage larvae until the following year (Kinuura and Yamada, 1994; Soné et al., 1998). In the southern part of Japan, up to 40% of individuals emerge as adults in the summer and fly to find new hosts; the rest overwinter for approximately eight to ten months as mature larvae (Soné et al., 1998), although the mechanisms behind the overwintering are unknown.

During the summer and fall, adults fly to colonize new hosts and reproduce (Esaki et al., 2002; Esaki et al., 2004; Soné et al., 1998). In Japan, adults are be observed from mid-May through mid-October, with flights occurring between July and October (Igeta et al., 2003; Kinuura and Yamada, 1994). Beetles tend to fly to find new hosts on days with sunny conditions before noon and temperatures above 66°F (Ueda and Kobayashi, 2000). Although they mostly fly towards the lower part of trees (below 3 ft.), they can fly as high as 30 ft. (Yamasaki et al., 2023).

Platypus quercivorus has a mutualistic symbiotic relationship with multiple fungal species, including *Dryadomyces quercivora,* the main causal agent of Japanese oak wilt. Other symbiotic fungi include *Ambrosiozyma kamigamensis, A. neoplatypodis, Candida kashinagacola, C. pseudovanderkliftii,* and *C. vanderkliftii*. The female beetle carries the fungal spores, inoculates them along galleries in the wood so the fungi will grow into the sapwood, and the fungi in turn serve as food for the beetles (Kato et al., 2003; Kuroda, 2001).

Known Hosts

Platypus quercivorus is a forest pest that infests hosts within the Fagaceae family (Kobayashi and Ueda, 2005; Yamasaki et al., 2024). This pest attacks felled logs and weakened and living trees (Soné et al., 1998). It prefers large, old oak trees (*Quercus* spp. and *Lithocarpus* spp. (=*Pasania*)) (Benzel, 2015; Kobayashi and Ueda, 2005; Lai et al., 2023), with a DBH greater than $3^1/_2$ in. (diameter at breast height, a standard measure taken at 54 inches above ground) (Soné et al., 1995; Sueyoshi et al., 2018; Yamasaki and Futai, 2008).

The host list below includes cultivated and wild plants that 1) are infested by the pest under natural conditions, 2) are frequently described as major, primary, or preferred hosts, and 3) have primary evidence for feeding and damage documented in the literature. Plants are highlighted in bold if they are commercially produced and the pest causes economically significant damage.

Table 1. Preferred hosts of *Platypus quercivorus*.

Scientific Name	Common Name	Presence in the U.S.*	Type/Use	Reference
Castanea crenata	Japanese chestnut	Present	Wild	Yamasaki et al., 2014
Castanopsis chinensis	N/A	Absent	Wild	Lai et al., 2023
Castanopsis cuspidata	N/A	Absent	Wild	Sueyoshi et al., 2018
Castanopsis sieboldii	N/A	Absent	Wild	Sueyoshi et al., 2018
Lithocarpus edulis (=*Pasania edulis*)	N/A	Absent	Wild	Soné et al., 1998
Lithocarpus glabra	Japanese-oak	Absent	Wild	Sekine et al., 2011
Quercus spp.	oak	Present	Wild	Soné et al., 1998
Quercus acutissima	sawthorn oak	Present	Wild	Sekine et al., 2011
Quercus gilva	N/A	Absent	Wild	Sekine et al., 2011
Quercus glauca	ring-cup oak	Absent	Wild	Sekine et al., 2011
Quercus laurifolia	laurel oak	Present	Wild/cultivated	Endoh et al., 2011
Quercus myrsinaefolia	N/A	Absent	Wild	Sekine et al., 2011
Quercus mongolica *(=Quercus crispula)*	mongolian oak	Absent	Wild	Yamasaki and Futai, 2012
Quercus phillyriaeoides	N/A	Absent	Wild	Sekine et al., 2011
Quercus robur	English oak	Present	Wild/cultivated	Endoh et al., 2011
Quercus serrata	bao-li	Absent	Wild	Yamasaki and Futai, 2012
Quercus sessilifolia	N/A	Absent	Wild	Sekine et al., 2011
Quercus variabilis	Chinese cork	Absent	Wild	Sekine et al., 2011

*Presence in the U.S. confirmed by USDA-NRCS, 2024

Pest Importance

Platypus quercivorus is a destructive forest pest that vectors *Dryadomyces quercivora* (formerly *Raffaelea quercivora*), the causal agent of Japanese oak wilt. The beetle has contributed to mass mortality of oaks in Japan (Ito et al., 2003; Kinuura and Kobayashi, 2006).

Direct damage made by galleries can impact the structural integrity of the wood, causing a reduction in lumber quality (Ciesla, 2003). Additionally, Japanese oak wilt can

kill healthy trees (Kamata et al., 2012; Kashiwagi et al., 2006). In some areas of Japan, more than 200,000 trees were killed annually between 1980 and 2003 by *D. quercivora* vectored by *P. quercivorus*, with *Quercus mongolica* and *Q. serrata* the most affected species (Ito et al., 2003). Changing environmental conditions and land use patterns may be a key factor in the expansion of *P. quercivorus* and *D. quercivora* to more northern latitudes and higher altitudes in Japan (Kamata et al., 2002; Ozaki et al., 2021). Outside of Japan, the impacts of Japanese oak wilt are less severe, which might be due to host plant susceptibility, pathogenicity/virulence of *D. quercivora*, aggressiveness of *P. quercivorus*, and/or environmental factors (Kamata et al., 2012).

Platypus quercivorus is listed as a harmful organism in the Republic of Korea (USDA-PCIT, 2024). There may be trade implications if this pest becomes established in the United States.

Pathogens or Associated Organisms Vectored

Platypus quercivorus, as an ambrosia beetle, is associated with fungi in a mutualistic symbiosis (Batra, 1967). *Platypus quercivorus* females carry the spores of fungal species in specialized structures called mycangia, inoculating host trees as they create galleries, after which the fungi grow and reproduce within the wood (Batra, 1967). The fungus is used for food by the developing population within the tree, and, when new adult females emerge to colonize new trees, they carry spores acquired from the gallery with them in their mycangia (Kamata et al., 2007; Kinuura, 2002; Kinuura and Yamada, 1994).

Dryadomyces quercivora is the most well-known and highest impact fungi vectored by *P. quercivorus*. It is the causal agent of Japanese oak wilt, which can lead to oak mortality (Kinuura and Kobayashi, 2006; Kubono and Ito, 2002). Other fungi have been isolated from *P. quercivorus* galleries and are included in Table 2.

Table 2. Ascomycete fungi commonly associated with or vectored by *P. quercivorus*.

Scientific Name	Vectored /isolated	Pathogenicity	Reference
Dryadomyces quercivora (=Raffaelea quercivora)	Vectored	Pathogenic	Kinuura and Yamada, 1994
Ambrosiozyma kamigamensis	Isolated	Unknown	Endoh et al., 2011
Ambrosiozyma neoplatypodis	Isolated	Unknown	Endoh et al., 2011
Candida sp.	Isolated	Unknown	Endoh et al., 2011
Candida kashinagacola	Isolated	Unknown	Endoh et al., 2011
Candida pseudovanderkliftii	Isolated	Unknown	Endoh et al., 2011
Candida vanderkliftii	Isolated	Unknown	Endoh et al., 2011

*Vectored indicates that *P. quercivorus* has been demonstrated to actively inoculate this fungus into the host; isolated indicates that the fungus has been identified in association with *P. quercivorus*, but whether the beetle inoculates it into the host is unknown.

Known Distribution

Platypus quercivorus is widely distributed in Asia (Table 3) (Ciesla, 2011). It has recently been reported in mainland China, South Korea, and Far East Russia (Lai et al., 2023; Legalov, 2022; Park and Hong, 2025).

Table 3. Countries where *Platypus quercivorus* is known to occur.

Continent	Country	Reference
Asia	China	Lai et al., 2023
Asia	India	Beeson, 1937
Asia	Indonesia	Beeson, 1937
Asia	Japan	Fukuzawa et al., 2019; Ozaki et al., 2021
Asia	South Korea (not in mainland) *	Park and Hong, 2025
Asia	Laos	Beaver, 2016
Asia	Russia	Legalov, 2022
Asia	Taiwan	Beaver and Shih, 2003
Asia	Thailand	Beaver and Liu, 2013
Asia	Vietnam	Kusumoto et al., 2014

*This recent report of *P. quercivorus* in South Korea is from Ulleung Island, located in the Japan Sea, which is 75 miles from the Korean mainland and 114 miles from Japan (Honshu).

Pathway

Long-distance dispersal of *P. quercivorus* is mainly possible through human assistance. Platypodids can be transported between countries and/or continents through international trade within wood, timber, and wood packaging materials (Alfaro et al., 2007; Kirkendall and Faccoli, 2010; Yu et al., 2019). Multiple interceptions of platypodids at ports have been associated with timber, crating, dunnage, and pallets (Haack, 2006; Haack and Rabaglia, 2013; Yu et al., 2019).

Platypus quercivorus adults are capable of sustained flight up to 0.6 miles (Ciesla, 2003). In laboratory flight mill experiments, adults could fly up to 17 miles in 7.5 hours, with an average speed of 2.6 mi/h (Okada et al., 2018; Pham et al., 2021).

Use the PPQ Commodity Import and Export manual listed below to determine 1) if host plants or material are allowed to enter the United States from countries where the organism is present and 2) what phytosanitary measures (e.g., inspections, phytosanitary certificates, post entry quarantines, mandatory treatments) are in use. This manual is updated regularly.

Agricultural Commodity Import Requirements(ACIR) manual: ACIR provides a single source to search for and retrieve entry requirements for imported commodities.

Potential Distribution within the United States

Based on the known distribution of *P. quercivorus* and comparing those areas to Global Plant Hardiness Zones (Takeuchi et al., 2018), we expect that *P. quercivorus* could establish in plant hardiness zones 6-12. There are reports of *P. quercivorus* in from the Primorsky Krai region of Russia (Russian Far East) (Legalov, 2022), which mainly encompasses PHZ 3-5, but we do not have specifics on where *P. quercivorus* was found.

Native and introduced oaks grow across the United States. There are 50 oak species present across most of the eastern United States, which makes this region the most diverse, and 22 species on the Pacific coast, all of which may potentially serve as hosts (Frankel et al., 2022; Davis et al. 2005; Mc Creary, 2011; USDA-NRCS, 2024; Stein et al., 2001). Oaks are abundant, representing 11 percent of the total tree population in the country. The most common oak species, *Quercus alba*, *Q. rubra*, and *Q. velutina* are widespread in the Midwest and eastern United States; whereas, *Q. agrifolia* dominates forests on the West Coast (Frankel et al., 2022; USDA-NRCS, 2024).

A likelihood of establishment map has been developed for *P. quercivorus* (SAFARIS, 2024). Based on this map, the Southeast, Southwest, West Coast, southern portion of the Northeast, Hawaii, Puerto Rico, and the southern portion of Alaska all have suitable conditions for the establishment of *P. quercivorus* (SAFARIS, 2024). Further, portions of the Midwest and North Central regions may have suitable conditions in some years.

The areas at greatest risk for *P. quercivorus* establishment are the Southeast, Southwest, West Coast, and southern portion of the Northeast because of ideal conditions and widespread oak species.

Survey and Key Diagnostics

Approved Methods for Pest Surveillance*:

For the current approved methods and guidance for survey and identification, see Approved Methods for Pest Surveillance (AMPS) pest page on the CAPS Resource and Collaboration website, at https://approvedmethods.ceris.purdue.edu/.

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Versions

Datasheet completed 2013 (Version 1)
December 2025 (Version 2)

- Updated synonyms in **Scientific Name** section
- Created new **Pest Recognition** section by combining Pest Description and Damage/Signs and Symptoms
- Added **Easily Mistaken Species** section
- Added **Commonly Encountered Non-targets** section
- Updated **Biology & Ecology** section
- Created a table for **Known Hosts** section
- Updated **Pest Importance** section
- Updated and created a table for **Pathogens or Associated Organisms Vectored** section
- Created a table for **Known Distribution** section
- Updated **Pathway** section
- Updated **Potential Distribution within the United States** section
- Updated guidance for **Approved Methods** section.

Reviewer(s)

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