Pests and mitigations for manufactured wood décor and craft products from China for importation into the United States

United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

January
2011

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Executive Summary

Since 2002, 304 emergency action notifications have been issued for wood décor and craft products from China, including: trees manufactured from a composite of natural and synthetic materials, garden trellis towers, home and garden wood décor, and craft items. In 2004, the USDA intercepted live *Callidiellum villosulum* beetles from wood décor and craft products imported from China, and shipments of the commodity were recalled. Options to mitigate the risk of introducing quarantine arthropod pests in wood décor and craft products (non-palleting and non-crating) from China into the United States include fumigation and heat treatment described in the PPQ Treatment Manual.

This document was updated in 2011 to reflect the removal of 7 CFR 319.40-7 from the CFRs. The 319.40-7 regulations were replaced with 305.8 and the updated sections in the Treatment Manual.

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I. Introduction

Since 2002, 304 Emergency Action Notifications have been issued for wood décor and craft products from China, including: trees manufactured from a composite of natural and synthetic materials; garden trellis towers; home and garden wood décor; and craft items. In 2004, the USDA intercepted live *Callidiellum villosulum* manufactured wood décor and craft products imported from China and shipments of the commodity were recalled. Options to mitigate the risk of introducing quarantine arthropod pests in wood décor and craft products (non-palleting and non-crating) from China into the United States were requested of Plant Epidemiology and Risk Analysis Laboratory in 2004, with priority given to identifying mitigation options for internal and external arthropod pests.

This analysis lists possible arthropod pests in the pathway, identifies risks associated with the major quarantine pests and pest groups and describes the mitigation options currently available. The products are of an undefined nature being composites of plant and synthetic materials. The species of plants used and their origin are mostly undefined and unknown. It is assumed that most of the plant species and their pests originate in China, but that is uncertain because the raw wood products may have originated in other countries and been shipped to China for manufacturing. If, in the future, any of these commodities are better defined, more detailed risk analyses can be done and mitigations options can more narrowly targeted.

II. Background

A. Initiating Event

1. Initiating Event: Proposed Action

Based on the live insect pest interceptions in 2003 and 2004 which occurred in stores at the point of sale, USDA/APHIS/PPQ Phytoisanitary Issues Management staff requested the Center for Plant Health Science and Technology (CPHST) to complete a report on pests and possible mitigations for home and garden décor and handcrafted manufactured wood product items from China on November 24, 2004. A letter of notification (February 15, 2005) to Mr. Lu Houlin, Deputy Director General, Department for Supervision on Animal and Plant Quarantine, China, indicates that effective on April 1, 2005, USDA APHIS will suspend the importation of wood craft items that contain logs, limbs, branches, or twigs greater than 1 centimeter (≈0.39 inches) in diameter and having intact bark. Over the past 38 months (2002, 2003, 2004, early 2005), 304 Emergency Action Notifications (EANs) were issued on manufactured wood products from China. The pests listed in these EANs are noted in Table 1 as having been intercepted.

2. Decision to initiate this report

It has been demonstrated by the interceptions that the importation of home and garden décor and wooden handicraft items provide a pathway for the entry and possible establishment of potentially harmful live plant arthropod pests. Mitigation options are required for trade to continue.

3. Commodity Information

The article in question consist of manufactured wood products including articles with/without bark, with/without seeds, and with/without non-wood components of varied size (*e.g.,* plastic, paper, metal parts). For each item, the degree of processing, the tree species and parts used, and the geographic origins are unspecified and unknown. Because of the similarity between some of these products and wood packaging material, pests of wood packaging material are included here.

The following partial list categorizes manufactured wood products imported into the United States from China within the last ten years:

Categorization of Manufactured Wood Products from China

- Animal Artifacts (deer, other animals made from wood)
- Art Décor/Wood Carvings
- Baskets/Boxes
- Bird Houses (with supporting poles)
- Garden and Lawn/Patio (Rustic) Furniture
- Potpourri (possibly including wood/seeds of trans-shipped origins)
- Artificial Trees (typically *Ficus,* could include wood not of Chinese origins)
- Trellis Towers (including garden fencing, some hardwoods, mainly of bamboo species)
- Bamboo slats and bamboo garden stakes

- Unspecified Wood Items (varying in size, origin, and description)

III. Pest Categorization

A. Pest Identification and Categorization

The accepted international definitions of a quarantine pest is: "…a pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled" (IPPC, 1997). Table 1 is a collection of data {from PPQ interception records [pests found in cargo at a port of entry and reported in the USDA Database PEST ID (Previously known as PIN 309)], various journal articles, texts, online databases, etc.} of pests that are known to be found on/in trees, shrubs, bamboo, wood, and wood products from China. All pests in Table 1 are likely to be found on/in manufactured wood products from China (the pathway), but not all species have quarantine status.

Table 1 – Arthropod Pests Associated with Wood from China

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
	Arthropods: Acarina					
1.	*Acalitus phloeocoptes* (Nalepa) Eriophyoidea	CH (Hong et al., 1996)	Bud and Shoot Galls (Hong et al., 1996)	No	Yes	Yes
2.	*Aceria abalis* (Keifer) Eriophyoidea	CH, US (Hong et al., 1996)	Galls (Hong et al., 1996)	No	No	Yes
3.	*Aceria bromi* (Kuang et Zhang) Eriophyoidea	CH (Hong et al., 1996)	Galls (Hong et al., 1996)	No	Yes	Yes
4.	*Aceria chinensis* (Trotter) Eriophyoidea	CH (Hong et al., 1996)	Galls (Hong et al., 1996)	No	Yes	Yes
5.	*Aceria jiangsuensis* (Kuang) Eriophyoidea	CH (Hong et al., 1996)	Galls (Hong et al., 1996)	No	Yes	Yes
6.	*Aceria milli* (Xin and Dong) Eriophyoidea	CH (Hong et al., 1996)	Stems (Hong et al., 1996)	No	Yes	Yes
7.	*Aceria sheldoni* (Ewing) Eriophyoidea	CH, US (Hong et al., 1996)	Bud (Hong et al., 1996)	No	No	Yes
8.	*Aceria sheldoni chinensis* (Kuang and Hong) Eriophyoidea	CH (Hong et al., 1996)	Galls (Hong et al., 1996)	No	Yes	Yes
9.	*Aculops atypta* Hall and Keifer Eriophyoidea	CH, US (Hong et al., 1996)	Galls (Hong et al., 1996)	No	No	Yes
10.	*Cecidophyopsis persicae* Kuang and Luo Eriophyoidea	CH (Hong et al., 1996)	Wood Galls (Hong et al., 1996)	No	Yes	Yes
11.	*Cecidophyopsis ribis* (Westwood) Eriophyoidea	CH (Hong et al., 1996)	Bud Galls (Hong et al., 1996)	No	Yes	Yes
12.	*Eotetranychus sexmaculatus* (Riley) Tetranychidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
13.	*Eutetranychus orientalis* Klein Tetranychidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
14.	*Oligonychus clavatus* (Ehara) Tetranychidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
15.	*Oligonychus coffeae* (Nietner) Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b; Xiao, 1991b)	No	No	Yes
16.	*Oligonychus perditus* Pritchard and Baker Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
17.	*Oligonychus punicae* (Hirst) Tetranychidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
18.	*Oligonychus ununguis* (Jacobi) Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c; Xiao, 1991b)	No	No	Yes
19.	*Panonychus citri* McGregor Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
20.	*Panonychus ulmi* Koch Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
21.	*Polyphagotarsonemus latus* Banks Tarsonemidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
22.	*Schizotetranychus* sp. Tetranychidae	CH	On or under bark (ARS, 2005a)	No	No	Yes
23.	*Tetranychus cinnabarinus* (Boisduval) Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
24.	*Tetranychus kanzawai* Kishida Tetranychidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
25.	*Tetranychus piercei* McGregor Tetranychidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
26.	*Tetranychus* sp. Tetranychidae	CH, US	On or under bark (Xiao, 1991b)	No	No	Yes
27.	*Tetranychus truncatus* Ehara Tetranychidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
28.	*Tetranychus urticae* Koch Tetranychidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
29.	Tetranychus viennensis (Zacher) Tetranychidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
	Arthropods: Coleoptera					
30.	*Acalolepta cervina* (Hope) Cerambycidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
31.	*Acanthocinus griseus* (Fabricius) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
32.	*Adoretus sinicus* Burmeister Scarabaeidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c)	No	No	Yes
33.	*Aeolesthes induta* (Neumann, 1842) Cerambycidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
34.	*Agelastica alni orientalis* Baly, 1878 Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
35.	*Agrilus macropoli* Obenberger Buprestidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
36.	*Agrilus planipennis* Fairmair Buprestidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	Yes	Yes
37.	*Agrilus rotundicollis* Saunders,1873 Buprestidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
38.	*Agrilus zanthoxylumi* Hou Buprestidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
39.	*Agriotes obscurus* (L.) Elateridae	CH	On or under bark (Xiao, 1991a)	No	Yes	No
40.	*Agriotes subvittatus* Motschulsky, 1859 Elateridae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
41.	Agrypninae sp. Elateridae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
42.	*Ahasverus* sp. Silvanidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
43.	*Altica* sp. Chrysomelidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
44.	*Altica weisei* (Jacobson, 1892) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
45.	*Amphimallon solstitiale* (L.) Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
46.	*Anelaphus parallelus* (Newman) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
47.	*Anelaphus* sp. Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
48.	*Anelaphus villosus* (Fab.) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
49.	Anobiidae sp. Anobiidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
50.	*Anomala corpulenta* (Motschulsky) Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
51.	*Anomala cupripes* Hope Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
52.	*Anoplophora chinensis* (Forter,1771) Cerambycidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et. al., 2004; Xiao, 1991a)	No	No	Yes
53.	*Anoplophora glabripennis* (Motschulsky) Cerambycidae	CH; US (under official control and of limited dist.) (CABI, 2005a)	In wood (CABI, 2005a; Dix et. al., 2004; PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
54.	*Anoplophora leechi* (Gahan, 1888) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
55.	*Anoplophora nobilis* (Ganglbauer) Cerambycidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
56.	*Anoplophora* sp. Cerambycidae	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
57.	*Anthaxia* sp. Buprestidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
58.	Anthicidae sp. Anthicidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
59.	*Apriona germari* (Hope) Cerambycidae	CH	On or under bark (CABI, 2005c; Dix et. al., 2004; Xiao, 1991a)	No	Yes	Yes
60.	*Apriona* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
61.	*Apriona swainsoni* (Hope) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
62.	*Araecerus fasciculatus* (De Geer) Curculionidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
63.	*Argopistes hoenei* Maulik, 1934 Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
64.	*Arhopalus rusticus* (L.) Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
65.	*Arhopalus* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
66.	*Aristobia hispida* Saunders, 1853) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
67.	*Aromia bungii* (Faldermann, 1835) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
68.	*Aromia moschata* (L.) Cerambycidae	CH	On or under bark (Xiao, 1991a)	Yes	Yes	Yes
69.	Aseminae sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
70.	*Asemum* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
71.	*Asemum striatum* L. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
72.	*Asias halodendri* (Pallas, 1776) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
73.	*Astyleiopus variegatus* (Haldeman) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
74.	*Bacchisa atritarsis* (Pic, 1912) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
75.	*Batocera davidis* Deyrolle, 1878 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
76.	*Batocera horsfieldi* (Hope) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
77.	*Batocera rubus* (L., 1758) Cerambycidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
78.	*Batocera rufomaculata* De Geer, 1775 Cerambycidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
79.	*Batocera* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
80.	Bostrichidae sp.	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
81.	Brentidae sp. Brentidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
82.	*Brontispa longissima* Gestro, 1885 Chrysomelidae	CH	On or under bark (CABI, 2005a; Dix et. al., 2004)	No	Yes	Yes
83.	*Bruchus pisorum* L., 1758 Chrysomelidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c)	No	No	Yes
84.	Buprestidae sp.	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
85.	*Buprestis* sp. Buprestidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
86.	*Callidiellum rufipenne* (Motschulsky, 1860) Cerambycidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; ARS, 2005b)	Yes	No	Yes
87.	*Callidiellum* sp. Cerambycidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
88.	*Callidiellum villosulum* (Fairmaire) Cerambycidae	CH	On or under bark (PEST ID, 2006; ARS, 2005b; Xiao, 1991a)	Yes	Yes	Yes
89.	*Callidium* sp. Cerambycidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
90.	*Callidium violaceum* (L.) Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
91.	*Callosobruchus chinensis* (L.) Bruchidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
92.	*Carpophilus* sp. Nitidulidae	CH, US (CPC, 2006)	On or under bark (CABI, 2005a)	No	No	Yes
93.	Cerambycidae sp.	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
94.	Cerambycinae sp. Cerambycidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
95.	*Ceresium sinicum* ornaticolle Pic, Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
96.	*Ceresium* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
97.	*Chalcophora georgiana* (LeConte) Buprestidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
98.	*Chalcophora* sp. Buprestidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
99.	*Chlorophorus annularis* (Fabricius) Cerambycidae	CH	On or under bark (ARS, 2005a; ARS, 2005b)	Yes	Yes	Yes
100.	*Chlorophorus diadema* (Motschulsky) Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
101.	*Chondracris rosea* (De Geer) Scarabaeidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
102.	*Chrysobothris chrysostigma* (L.) Buprestidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
103.	*Chrysobothris* sp. Buprestidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
104.	*Chrysomela adamsi* Baly Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
105.	*Chrysomela lapponica* L. Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
106.	*Chrysomela populi* L. Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
107.	*Chrysomela salicithorax* (Fairmaire) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
108.	*Chrysomela vigintipunctata* (Scopoli) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
109.	*Cleroclytus strigicollis* Jakowlew Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
110.	*Clytus validus* Fairmaire Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
111.	*Colaspoides femoralis* Lefevre Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
112.	*Coptocycla sordida* Bakeman Chrysomelidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
113.	*Corticeus* sp. Tenebrionidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
114.	*Cryphalus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991a)	Yes	No	Yes
115.	*Cryphalus tabulaefomis* Tsai et Li, 1963 Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
116.	Cryptophagidae sp.	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
117.	Cryptophilinae sp. Erotylidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes

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118.	*Cryptophilus* sp. Erotylidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
119.	Cryptorhynchinae sp. Curculionidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
120.	*Cryptorhynchus lapathi* (Linne, 1758) Curculionidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et. al., 2004; Xiao, 1991a)	No	No	Yes
121.	*Cryptorhynchus* sp. Curculionidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
122.	*Crypturgus pusillus* (Gyllenhal, 1813) Scolytidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
123.	*Curculio chinensis* (L., 1758) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
124.	*Curculio davidi* (Fairmaire) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
125.	*Curculio dentipes* (Roelofs) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
126.	*Curculio dieckmanni* (Faust, 1887) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
127.	*Curculio hippophes* Zhang Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
128.	*Curculio robustus* (Roelofs, 1874) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
129.	Curculionidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	In Wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
130.	*Cyllorhynchites ursulus* (Roelofs) Rhynchitidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
131.	*Cyrtogenius luteus* (Blandford, 1894) Scolytidae	CH	On or under bark (Xiao, 1991a)	Yes	Yes	Yes
132.	*Cyrtogenius* sp. Scolytidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
133.	*Cyrtotrachelus buqueti* Faust Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
134.	*Cyrtotrachelus longimanus* Fabricius, 1775 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
135.	*Dendroctonus armandi* Tsai and Li Scolytidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	No	Yes	Yes
136.	*Dendroctonus micans* (Kugelann, 1794) Scolytidae	CH	On or under bark (Dix et. al., 2004)	No	Yes	Yes
137.	*Dendroctonus valens* Leconte Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991a)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
138.	*Dere thoracica* White, 1855 Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
139.	*Dermestes* sp. Dermestidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
140.	Dinoderinae sp. Bostrichidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
141.	*Dinoderus japonicus* Lesne Bostrichidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
142.	*Dinoderus minutus* (Fabricius) Bostrichidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; ARS, 2005a; Xiao, 1991a)	Yes	No	Yes
143.	*Dinoderus* sp. Bostrichidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
144.	*Diorhabda elongata deserticola* Chen, 1961 Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
145.	*Diorhabda rybakowi* Weise, 1890 Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
146.	*Dryocoetes* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (Dix et. al., 2004)	Yes	No	Yes
147.	*Dyscerus cribripennis* Matsumura et Kono, 1927 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
148.	*Dyscerus juglans* Chao, 1980 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
149.	*Dyscerus longiclavis* Marshall, 1919 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
150.	*Dyscerus pustulatus* (Kono, 1933) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
151.	*Dysdercus cingulatus* (Fabricius, 1775) Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
152.	*Ectatorhinus adamsi* Pascoe, 1871 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
153.	*Elaphidion mucronatum* (Say) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
154.	*Elaphidion* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
155.	Elateridae sp.	CH, US	On or under bark (PEST ID, 2006)	Yes	No	Yes
156.	*Embrikstrandia bimaculata* (White, 1853) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
157.	Endomychidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
158.	Entiminae sp. Curculionidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
159.	*Ergania doriae yunnanus* Heller, 1927 Curculioninae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
160.	*Eucryptorrhynchus brandti* (Harold, 1881) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
161.	*Eucryptorrhynchus chinensis* (Olivier, 1790) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
162.	*Euwallacea destruens* (Blandford) Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
163.	*Euwallacea fornicatus* (Eichhoff, 1868) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
164.	*Euwallacea validus* (Eichhoff, 1875) Scolytidae	CH	On or under bark (CABI, 2005a)	Yes	Yes	Yes
165.	*Gastrolina depressathoracica* Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
166.	*Glenea* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
167.	*Gonipterus gibberus* Boisduval, 1835 Curculionidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
168.	*Grammographus notabilis* (Pascoe) Cerambycidae	CH	On or under bark (ARS, 2005b)	No	Yes	Yes
169.	*Harmonia axyridis* Pallas Coccinellidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
170.	*Harmonia* sp. Coccinellidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
171.	*Hesperophanes campestris* Faldermann, 1835) Cerambycidae	CH	On or under bark (ARS, 2005b)	Yes	Yes	Yes
172.	*Hesperophanes* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006; ARS, 2005a)	Yes	Yes	Yes
173.	*Heterobostrychus aequalis* (Waterhouse) Bostrichidae	CH; US (CABI, 2005a)	On or under bark (PEST ID, 2006; ARS, 2005a; ARS, 2005b; Xiao, 1991a)	Yes	No	Yes
174.	*Heterobostrychus brunneus* (Murray) Bostrichidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
175.	*Heterobostrychus hamatipennis* (Lesne) Bostrichidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
176.	*Heterobostrychus* sp. Bostrichidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006; ARS, 2005b)	Yes	No	Yes
177.	*Holotrichia diomphalia* (Bates) Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
178.	*Holotrichia oblita* (Falderman)Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
179.	*Hylastes ater* (Paykull, 1800) Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
180.	Hylesininae sp. Scolytidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
181.	*Hylesinus fraxini* (Fabricius) Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
182.	*Hylobitelus xiaoi* Zhang Runzhi Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
183.	*Hylobius abietis* (L., 1758) Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
184.	*Hylobius abietis haroldi* (Faust) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
185.	*Hylobius* sp. Curculionidae	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
186.	*Hylotrupes bajulus* (L., 1758) Cerambycidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	Yes	No	Yes
187.	*Hylurgops palliatus* (Gyllenhal, 1813) Scolytidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991a)	No	No	Yes
188.	*Hylurgops* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (CABI, 2005a)	Yes	No	Yes
189.	*Hylurgus ligniperda* (Fabricius, 1787) Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
190.	*Hypocryphalus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (CABI, 2005b)	Yes	No	Yes
191.	*Hypomeces squamosus* (Fabricius, 1792) Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
192.	*Hypothenemus* sp. Scolytidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
193.	*Ips acuminatus* Gyllenhal Scolytidae	CH	On or under bark (PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
194.	*Ips cembrae* (Heer, 1836) Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
195.	Ips duplicatus (Sahlberg, 1836) Scolytidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006)	No	Yes	Yes
196.	*Ips erosus* (Wollaston, 1857) Scolytidae	CH	On or under bark (Xiao, 1991a)	Yes	Yes	Yes
197.	Ips hauseri Reitter, 1894 Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
198.	*Ips nitidus* Egger, 1933 Scolytidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
199.	*Ips pini* (Say, 1826) Scolytidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991a)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
200.	*Ips sexdentatus* (Borner, 1776) Scolytidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
201.	*Ips* sp. Scolytidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991a)	Yes	No	Yes
202.	*Ips subelongatus* (Motschulsky, 1860) Scolytidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006)	No	Yes	Yes
203.	*Ips typographus* (L., 1758) Scolytidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	Yes	Yes	Yes
204.	Lamiinae sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
205.	*Lepidiota stigma* (Fabricius) Scarabaeidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
206.	*Leptura* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
207.	*Lepyrus japonicus* Roelofs, 1873 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
208.	*Litargus* sp. Mycetophagidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
209.	*Longitarsus* sp. Chrysomelidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
210.	*Luprops* sp. Tenebrionidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
211.	Lyctidae sp. Lyctidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
212.	Lyctinae sp. Lyctidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
213.	*Lyctus brunneus* Stephens Lyctidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
214.	*Lyctus linearis* (Goeze, 1777) Lyctidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
215.	*Lyctus* sp. Lyctidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
216.	*Maladera orientalis* (Motschulsky) Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
217.	*Mallodon* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
218.	*Megopis sinica* (White) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
219.	*Melanophila picta* (Pallas, 1793) Buprestidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
220.	*Melanophila* sp. Buprestidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
221.	*Melolontha melolontha* L., 1758 Scarabaeidae	CH	On or under bark (CABI, 2005a)	No	Yes	No
222.	*Melolontha* sp. Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	No	Yes
223.	*Mesosa myops* (Dalman, 1817) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
224.	*Minthea rugicollis* (Walker) Lyctidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
225.	*Monochamus alternatus* Hope, 1843 Cerambycidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
226.	*Monochamus saltuarius* Gebler, 1830 Cerambycidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
227.	*Monochamus* sp. Cerambycidae	CH, US (CPC, 2006)	In wood; On or under bark (CABI, 2005c; PEST ID, 2006)	Yes	No	Yes
228.	*Monochamus sutor* (L.) Cerambycidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
229.	*Monochamus tesserula* White Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
230.	*Monochamus urussovii* (Fischer, 1806) Cerambycidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
231.	*Mycetophagidae* sp. Mycetophagidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
232.	*Myocalandra* sp. Curculionidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
233.	*Niphades castanea* Chao, 1980 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
234.	*Niphades* sp. Curculionidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
235.	*Niphades verrucosus* (Voss, 1932) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
236.	*Niphona furcata* (Bates, 1873) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
237.	*Niphona* sp. Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
238.	Nitidulidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
239.	*Oberea fusciventris* Fairmaire, 1895 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
240.	*Oberea inclusa* Pascoe, 1858 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
241.	*Oberea oculata* (L., 1758) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
242.	*Oides leucomeluena* Weise Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
243.	*Olenecamptus* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
244.	*Ophrida scaphoides* (Baly, 1865) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
245.	*Ophrida xanthospilota* (Baly, 1881) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
246.	*Orthotomicus erosus* (Wollaston, 1857) Scolytidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
247.	*Orthotomicus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (CABI, 2005a)	Yes	No	Yes
248.	*Oryctes rhinoceros* (L.) Scarabaeidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
249.	*Otidognathus davidis* (Fairmaire) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
250.	*Oulema melanopus* (L.) Chrysomelidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
251.	*Ovalisia* sp. Buprestidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
252.	*Phloeosinus aubei* Perris Scolytidae	CH	On or under bark (ARS, 2005b)	No	Yes	Yes
253.	*Phloeosinus sinensis* Schedl Scolytidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
254.	*Phloeosinus* sp. Scolytidae	CH (PEST ID, 2006), US (CA - unconfirmed) (CPC, 2006)	Wood; On or under bark (PEST ID, 2006; Xiao, 1991a	Yes	No	Yes
255.	*Phyllophaga* sp. Scarabaeidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
256.	*Phymatodes* sp. Cerambycidae	CH	On or under bark (ARS, 2005a)	Yes	No	Yes
257.	*Phymatodes testaceus* (L.) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
258.	*Piazomia validus* Motschulsky, 1853 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
259.	*Pissodes nitidus* Roelofs Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
260.	*Pissodes* sp. Curculionidae	CH, US	On or under bark (PEST ID, 2006; Dix. et.al., 2004)	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
261.	*Pissodes validirostris* Gyllenhal Curculionidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
262.	*Pissodes yunnanensis* Langor Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
263.	*Pityogenes chalcographus* (L., 1761) Scolytidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
264.	*Pityogenes hopkinsi* Swaine Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
265.	*Pityogenes serindensis* Murayama, 1929 Scolytidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
266.	*Plagiodera versicolora* Laicharting Chrysomelidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
267.	*Plagionotus christophi* Kraatz Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
268.	*Plagionotus* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
269.	Platypodidae sp.	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
270.	*Platypus* sp. Platypodidae	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
271.	*Pleonomus canaliculatus* (Faldermann) Elateridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
272.	*Plocaederus obesus* Gahan, 1890 Cerambycidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
273.	*Podagricomela cyanea* Chen Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
274.	*Podagricomela shirahatai* Chujo Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
275.	*Podontia lutea* (Olivier, 1890) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
276.	*Poecilomorpha cyanipennis* (Kroatz) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
277.	*Poecilonota variolosa* (Paukull, 1799) Buprestidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
278.	*Polygraphus poligraphus* (L.) Scolytidae	CH	On or under bark (Xiao, 1991a)	Yes	Yes	Yes
279.	*Polygraphus* sp. Scolytidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
280.	*Polyzonus fasciatus* (Fabricius, 1781) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
281.	*Popillia japonica* Newman Scarabaeidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
282.	Prioninae sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
283.	*Prionus* sp. Cerambycidae	CH	On or under bark (ARS, 2005b)	No	No	Yes
284.	*Pterolophia* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
285.	*Purpuricenus sideriger* Fairmaire, 1888 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
286.	*Purpuricenus temminckii* Guerin – Meniville, 1844) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
287.	*Pyrrhalta aenescens* (Fairmaire) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
288.	*Pyrrhalta maculicollis* (Motschulsky, 1853) Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
289.	*Pyrrhidium sanguineum* (L) Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
290.	*Rhagium* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
291.	*Rhynchaenus alini* (L., 1759) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
292.	*Rhynchaenus empopulifolis* Chen et Zang, 1988 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
293.	*Rhynchophorus ferrugineus* (Olivier, 1790) Curculionidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
294.	*Ropica* sp. Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
295.	*Saperda balsamifera* (Motschulsky, 1860) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
296.	*Saperda carcharias* (L., 1758) Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
297.	*Saperda populnea* (L., 1758) Cerambycidae	CH	On or under bark (CABI, 2005a; Dix et. al., 2004; Xiao, 1991a)	No	Yes	Yes
298.	*Saperda* sp. Cerambycidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	No	No	Yes
299.	Scaphidiinae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
300.	Scolytidae sp.	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
301.	*Scolytus morawitzi* Semenov, 1902 Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
302.	*Scolytus multistriatus* (Marsham, 1802) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
303.	*Scolytus schevyrewi* Semenov, 1902 Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991a)	Yes	No	Yes
304.	*Scolytus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (Dix et.al., 2004)	Yes	No	Yes
305.	*Semanotus bifasciatus* (Motschulsky) Cerambycidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
306.	*Semanotus sinoauster* Gressitt Cerambycidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
307.	*Semanotus* sp. Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
308.	*Shirahoshizo coniferae* Chao, 1980 Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
309.	*Shirahoshizo patruelis* (Voss, 1937) Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
310.	*Shirahoshizo* sp. Curculionidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
311.	Silvanidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
312.	*Silvanus* sp. Silvanidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
313.	*Sinoxylon anale* Lesne Bostrichidae	CH	On or under bark (PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
314.	*Sinoxylon conigerum* Gerstaecker, 1855 Bostrichidae	CH; US (CABI, 2005a)	On or under bark (PEST ID, 2006)	Yes	No	Yes
315.	*Sinoxylon* sp. Bostrichidae	CH (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
316.	*Sipalinus gigas* (Fab) Curculionidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
317.	*Sipalinus* sp. Curculionidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
318.	*Sitophilus* sp. Curculionidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
319.	*Sphaerotrypes coimbatorensis* Stebbing, 1903 Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
320.	*Stenhomalus taiwanus* Matsushita Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
321.	*Stenodontes dasytomus* Browne and Peck Cerambycidae	CH	On or under bark (ARS, 2005b)	No	Yes	Yes
322.	*Stenodontes* sp. Cerambycidae	CH	On or under bark (ARS, 2005b)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
323.	*Sternidius variegatus* (Haldeman) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
324.	*Stromatium barbatum* (Fabricius) Cerambycidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
325.	*Stromatium longicorne* (Newman, 1842) Cerambycidae	CH	On or under bark (PEST ID, 2006; Xiao, 1991a)	No	Yes	Yes
326.	*Stromatium* sp. Cerambycidae	CH	In wood; On or under bark (ARS, 2005b)	Yes	Yes	Yes
327.	*Tenebrionidae* sp. Tenebrionidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
328.	*Tetropium castaneum* (L., 1758) Cerambycidae	CH	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
329.	*Tetropium fuscum* (Fabricius, 1787) Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
330.	*Tetropium gabrieli* Weise Cerambycidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
331.	*Tetropium gracilicorne* Reitter, 1889 Cerambycidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
332.	*Tetropium* sp. Cerambycidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
333.	*Thylactus simulans* Gahan, 1890 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
334.	*Tomicus minor* (Hartig, 1834) Scolytidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
335.	*Tomicus pilifer* (Spessivtsev, 1919) Scolytidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
336.	*Tomicus piniperda* (L., 1758) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et.al., 2004; PEST ID, 2006; Xiao, 1991a)	Yes	Yes (Official Control)	Yes
337.	*Tribolium castaneum* (Herbst) Tenebrionidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
338.	*Tribolium* sp. Tenebrionidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
339.	*Trichoferus campestris* (Faldermann, 1835) Cerambycidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
340.	*Trichoferus* sp. Cerambycidae	CH	In wood; On or under bark (PEST ID, 2006)	Yes	Yes	Yes
341.	*Trigonorhinus* sp. Anthribidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
342.	*Trirachys orientalis* Hope, 1841 Cerambycidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
343.	*Trypodendron lineatum* (Olivier, 1795) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
344.	*Typhaea stercorea* (L.) Mycetophagidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
345.	*Urgleptes* sp. Cerambycidae	CH	In wood; On or under bark (PEST ID, 2006)	Yes	Yes	Yes
346.	*Xyleborinus saxesenii* (Ratzeburg) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
347.	*Xyleborinus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
348.	*Xyleborus dispar* (Fabricius) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
349.	*Xyleborus emarginatus* Eichhoff Scolytidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
350.	*Xyleborus glabratus* Eichhoff, 1877 Scolytidae	CH	On or under bark (PEST ID, 2006)	No	Yes	Yes
351.	*Xyleborus interjectus* Blandford Scolytidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
352.	*Xyleborus perforans* (Wollaston) Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
353.	*Xyleborus similis* Ferrari Scolytidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
354.	*Xyleborus* sp. Scolytidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
355.	*Xylinophorus mongolicus* Faust Curculionidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
356.	*Xylobiops texanus* (Horn) Bostrichidae	CH	On or under bark (ARS, 2005b)	No	Yes	Yes
357.	*Xyloperthella picea* (Olivier) Bostrichidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
358.	*Xylopsocus capucinus* (Fab) Bostrichidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
359.	Xylosandrus ater (Eggers) Chrysomelidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
360.	*Xylosandrus compactus* (Eichhoff, 1875) Chrysomelidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
361.	*Xylosandrus crassiusculus* (Motschulsky) Chrysomelidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	Yes	No	Yes
362.	*Xylosandrus discolor* (Blandford) Chrysomelidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
363.	*Xylothrips flavipes* Illiger Bostrichidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
364.	*Xylotrechus chinensis* (Chevrolat) Cerambycidae	CH	In wood; On or under bark (Xiao, 1991a)	No	Yes	Yes
365.	*Xylotrechus colonus* (F.) Cerambycidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
366.	*Xylotrechus grayi* (White) Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
367.	*Xylotrechus magnicollis* (Fairmaire) Cerambycidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
368.	*Xylotrechus rusticus* (L.) Cerambycidae	CH	On or under bark (Dix et.al., 2004; PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
369.	*Xylotrechus sagittatus* Germar Cerambycidae	CH	In wood; On or under bark (ARS, 2005a)	No	Yes	Yes
370.	*Xylotrechus* sp. Cerambycidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
371.	*Xylotrupes gideon* (L.) Scarabaeidae	CH	On or under bark (CABI, 2005c)	No	Yes	No
372.	*Zeugophora scutellaris* Suffrian Chrysomelidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
	Arthropods: Diptera					
373.	*Algedonia coclesalis* Walker Syrphidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
374.	*Camptomyia* sp. Cecidomyiidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
375.	*Cecidomyia yunnanensis* Wu et Zhou Cecidomyiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
376.	Cecidomyiidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
377.	Ceratopogonidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
378.	*Dasineura datifolia* Jiang Cecidomyiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
379.	*Delia platura* (Meigen) Anthomyiidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
380.	*Giraudiella inclusa* (Frauenfeld) Cecidomyiidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
381.	Lestremiinae sp. Cecidomyiidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
382.	*Liriomyza sativae* Blanchard Agromyzidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
383.	Phoridae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
384.	*Planetella conesta* Jiang Cecidomyiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
385.	*Rhabdophaga salicis* Schrank Cecidomyiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
386.	Stratiomyidae sp.	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
387.	*Strobilomyia infrequens* (Ackland) Anthomyiidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
388.	*Strobilomyia laricicola* (Karl) Anthomyiidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
389.	*Thecodiplosis japonensis* Uchida and Inouye, 1955 Cecidomyiidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
	Arthropods: Dictyoptera					
390.	Blattidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
	Arthropods: Hemiptera, Heteroptera, and Homoptera					
391.	*Acanthocephala femorata* (Fab) Coreidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
392.	*Acyrthosiphon pisum* Harris Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
393.	*Aleurocanthus woglumi* Ashby Aleyrodidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
394.	*Aonidiella aurantii* (Maskell) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
395.	*Aonidiella orientalis* (Newstead) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
396.	*Aphis craccivora* Koch Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
397.	Aphis gossypii Glover Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
398.	Aradidae sp.	CH; US (CABI, 2005a)	On or under bark (PEST ID, 2006)	Yes	No	Yes
399.	*Aradus betulae* (L) Aradidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
400.	*Aradus* sp. Aradidae	CH (PEST ID, 2006); US (CABI, 2005a)	Under Bark	Yes	No	Yes
401.	*Arma chinensis* (Fallou) Pentatomidae	CH	On or under bark (Xiao, 1991a)	No	Yes	No
402.	*Aspidiotus destructor* Signoret Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
403.	*Aspidiotus nerii* Bouche Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
404.	*Atrazonatus umbrosus* (Distant) Lygaeidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
405.	*Aulacaspis rosarum* Borchsenius Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
406.	*Aulacaspis sassafris* Chen Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
407.	*Aulacorthum solani* Kaltenbach, 1843 Aphididae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
408.	*Bemisia tabaci* (Gennadius) Aleyrodidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
409.	*Brochymena quadripustulata* (Fabricius) Pentatomidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	No
410.	*Ceroplastes ceriferus* (Fabricius, 1798) Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
411.	*Ceroplastes floridensis* Comstock Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
412.	*Ceroplastes japonicus* Green Coccidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
413.	*Ceroplastes rubens* Maskell Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
414.	*Chionaspis salicis* L. Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
415.	*Chloropulvinaria floccifera* Westwood Coccidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
416.	*Chrysomphalus dictyospermi* (Morgan) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
417.	*Dialeurodes citri* (Ashmead, 1885) Aleyrodidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
418.	*Diaphorina citri* Kuwayama Psyllidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
419.	*Diaspidiotus ostreaeformis* (Curtis) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
420.	*Diaspidiotus perniciosus* (Comstock) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
421.	*Dolycoris baccarum* L. Pentatomidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
422.	*Drosicha corpulenta* (Kuwana) Margarodidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
423.	*Drosicha stebbingi* (Green) Margarodidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
424.	*Erthesina fullo* (Thunberg) Pentatomidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
425.	*Ferrisia virgata* Cockerell Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
426.	*Fiorinia japonica* (Cockerell) Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
427.	*Fulvius* sp. Miridae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
428.	*Gonocerus* sp. Coreidae	CH	On or under bark (PEST ID, 2006)	Yes	Yes	Yes
429.	*Gonocerus yunnanensis* Hsiao Coreidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
430.	*Halyomorpha halys* (Stal) Pentatomidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
431.	*Halyomorpha picus* F. Pentatomidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
432.	*Hemiberlesia lataniae* (Signoret) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
433.	*Hemiberlesia pitysophila* Takagi Diaspididae	CH	On or under bark (Dix et.al., 2004; Xiao, 1991b)	No	Yes	Yes
434.	*Heteropsylla cubana* D. L. Crawford Psyllidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
435.	*Homoeocerus walkerianus* Lethierry and Serville Coreidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
436.	*Icerya aegyptiaca* Douglas Margarodidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
437.	*Icerya purchasi* Maskell Margarodidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
438.	*Icerya seychellarum* (Westwood) Margarodidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
439.	*Lawana imitata* Melichar Cicadellidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
440.	*Lepidopsyche asiatica* Staudinger Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
441.	*Lepidosaphes salicina* Borchsenius Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
442.	*Lepidosaphes* sp. Diaspididae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991b)	No	No	Yes
443.	*Lepidosaphes ulmi* (L.) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
444.	*Leptocorisa acuta* Thunberg Alydidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
445.	*Leptoglossus gonagra* (Fabricius) Coreidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
446.	*Leptoglossus oppositus* Say Coreidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
447.	*Lopholeucaspis japonica* (Cockerell) Diaspididae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
448.	*Maconellicoccus hirsutus* (Green) Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	Yes (Official Control add to Table 2)	Yes
449.	*Matsucoccus matsumurae* (Kuwana) Margarodidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
450.	*Miridae* sp. Miridae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
451.	*Mytilaspis conchiformis* (Gmelin) Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
452.	*Myzus persicae* Sulzer Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
453.	*Nesticoccus sinensis* Tang Pseudococcidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
454.	*Nezara viridula* (L.) Pentatomidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
455.	*Nipaecoccus nipae* (Maskell) Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
456.	*Nipaecoccus viridis* (Newstead) Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
457.	*Oracella acuta* (Lobdell) Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c)	No	No	Yes
458.	*Orthezia insignis* Browne Ortheziidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
459.	*Palmicultor lumpurensis* (Takahashi) Pseudococcidae	CH	On or under bark (ARS, 2005a)	No	Yes	Yes
460.	*Parabemisia myricae* (Kuwana) *Aleyrodidae*	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
461.	*Paracoccus pasaniae* (Green) *Pseudococcidae*	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
462.	*Parasaissetia nigra* (Nietner) Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
463.	*Parlatoria pergandii* Comstock Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
464.	*Parthenolecanium corni* (Bouche) Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
465.	Pentatomidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
466.	*Phenacaspis camphora* Chen Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
467.	*Phenacoccus fraxinus* Tang Pseudococcidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
468.	*Philaenus spumarius* (L.) Cercopidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
469.	*Phloeomyzus passerinii* (Signoret, 1875) Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
470.	*Pineus pini* (L.) Adelgidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
471.	*Pinnaspis strachani* (Cooley) 1899 Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
472.	*Planococcus citri* (Risso) Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
473.	*Pseudaonidia duplex* (Cockerell) Diaspididae	CH	On or under bark (CABI, 2005c; Xiao, 1991b)	No	Yes	Yes
474.	*Pseudaulacaspis cockerelli* (Cooley) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
475.	*Pseudaulacaspis pentagona* (Targioni Tozzetti) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
476.	*Pseudococcus longispinus* Targioni Tozzetti Pseudococcidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
477.	*Pulvinaria psidii* Maskell, Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
478.	*Quadraspidiotus gigas* (Thiem et Gerneck) Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
479.	*Quadraspidiotus perniciosus* (Comstock) Cockerell Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
480.	*Quadraspidiotus slavonicus* Ferris Diaspididae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
481.	*Rastrococcus invadens* Williams Pseudococcidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
482.	Reduviidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
483.	*Rhopalosiphum padi* L. Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
484.	*Saissetia coffeae* (Walker) Coccoidea	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
485.	*Saissetia oleae* (Olivier) Coccoidea	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
486.	*Sophonia rufofascia* Kuoh and Kuoh Cicadellidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
487.	*Toxoptera aurantii* Boyer de Fonscolombe Aphididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
488.	*Trialeurodes vaporariorum* Westwood Aleyrodidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
489.	*Unaspis citri* (Comstock) Diaspididae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
490.	*Unaspis euonymi* Comstock Diaspididae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
	Arthropods: Hymenoptera					
491.	Bethylidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark; In seed pods	Yes	No	Yes
492.	*Caliroa cerasi* L. Tenthredinidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
493.	*Camponotus japonicus* Mayr Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
494.	*Cataulacus* sp. Formicidae	CH	On or under bark (ARS, 2005a)	No	No	Yes
495.	*Cephalcia abietis* L. Pamphilidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
496.	*Chinolyda flagellicornis* F. Smith Pamphiliidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
497.	*Crematogaster* sp. Formicidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
498.	*Diprion jingyuanensis* Xiao and Zhang Diprionidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
499.	*Diprion similis* (Hartig) Diprionidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
500.	*Dryocosmus kuriphilus* Yasumatsu Cynipidae	CH; US (CABI, 2005a)	In seed pods; On or under bark (CABI, 2005c)	No	No	Yes
501.	*Formica fukaii* Wheeler Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
502.	*Formica japonica* Motschulsky Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
503.	*Formica sanguinea* Latreille Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
504.	*Formica* sp. Formicidae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991a)	No	No	Yes
505.	*Formica superba* Wheeler Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
506.	*Formica transkaucasia* L. Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
507.	Ibaliidae sp. Ibaliidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
508.	*Iridomyrmex anceps* (Roger) Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
509.	*Iseropus himalayensis* (Cameron) Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
510.	*Iseropus stercorator* (Fabricius) Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
511.	*Megaspilidae* sp. Megaspilidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
512.	*Megastigmus aculeatus* (Swederus) Torymidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
513.	*Megastigmus cryptomeriae* Yano Torymidae	CH	On or under bark (CABI, 2005b; Xiao, 1991b)	No	Yes	Yes
514.	*Megastigmus duclouxiana* Roques and Pan Torymidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
515.	*Megastigmus lasiocarpae* Crosby Torymidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
516.	*Megastigmus pictus* (Forster) Torymidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
517.	*Megastigmus pistaciae* Walker Torymidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
518.	*Megastigmus sabinae* Xu and He Torymidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
519.	*Monodontomerus minor* (Torymidae) Torymidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
520.	*Monodontomerus* sp. Torymidae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991b)	No	No	Yes
521.	*Monomorium* sp. Formicidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
522.	*Neodiprion xiangyunicus* (Xiao and Huang) Diprionidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
523.	*Oecophylla smaragdina* Fabricius Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
524.	*Paratrechina* sp. Formicidae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991a)	No	No	Yes
525.	*Pheidole* sp. Formicidae	CH (PEST ID, 2006), US (CPC, 2006)	Wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
526.	*Podagrion chinensis* Ishii Torymidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
527.	*Polistes rothneyi grahami* Van der Vecht Vespidae	CH	On or under bark (Xiao, 1991b)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
528.	*Polistes snelleni* de Saussure Vespidae	CH	On or under bark (Xiao, 1991b)	No	No	Yes
529.	*Polyrhachis dives* Fred Smith Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
530.	*Pristiphora erichsonii* (Hartig, 1837) Tenthredinidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
531.	*Pristomyrmex pungens* Mayr Formicidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
532.	*Psenulus* sp. Sphecidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
533.	*Sirex juvencus* (L., 1758) Siricidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
534.	*Sirex nitobei* Matsumura Siricidae	CH (PEST ID, 2006)	In Wood	Yes	Yes	Yes
535.	*Sirex rufiabdominis* Xiao and Wu Siricidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
536.	*Sirex siricius* (RIFEEP in Dix et al., 2004) Siricidae	CH	On or under bark (Dix et al., 2004)	No	Yes	Yes
537.	*Sirex* sp. Siricidae	CH, US (CPC, 2006)	In wood; On or under bark (PEST ID, 2006)	Yes	No	Yes
538.	*Siricidae* sp. Siricidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
539.	*Sympiesis* sp. Eulophidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
540.	*Torymus gerani* (Walker) Torymidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
541.	*Torymus sinensis* Kamijo Torymidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
542.	*Torymus* sp. Torymidae	CH;US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
543.	*Tremex fuscicornis* (Fabricius) Siricidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
544.	*Tremex* sp. Siricidae	CH (PEST ID, 2006); , US (CPC, 2006)	In Wood	Yes	No	Yes
545.	*Trisetacus juniperinus* (Nalepa) Cynipidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
546.	*Urocerus gigastiaganus* L. Siricidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
547.	*Urocerus* sp. Siricidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
548.	*Vespidae* sp. Vespidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
549.	*Xiphydriidae* sp. Xiphydriidae	CH (PEST ID, 2006) , US (CPC, 2006)	In Wood	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
	Arthropods: Isoptera					
550.	*Coptotermes formosanus* Shiraki Rhinotermitidae	CH; US (CABI, 2005a)	In wood (CABI, 2005a; Xiao, 1991a)	Yes	No	Yes
551.	*Coptotermes* sp. Rhinotermitidae	CH, US (CPC, 2006)	In wood (CABI, 2005a; PEST ID, 2006)	Yes	No	Yes
552.	*Cryptotermes brevis* (Walker, 1853) Kalotermitidae	CH; US (CABI, 2005a)	In wood (CABI, 2005a)	No	No	Yes
553.	*Cryptotermes declivis* Tsai and Chen Kalotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
554.	*Cryptotermes domesticus* (Haviland) Kalotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
555.	*Cryptotermes* sp. Kalotermitidae	CH, US (CPC, 2006)	In wood (PEST ID, 2006; CABI, 2005c)	Yes	No	Yes
556.	*Glyptotermes chinpingensis* Tsai and Chen Kalotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
557.	*Glyptotermes fuscus* Oshima Kalotermitidae	CH	In wood (PEST ID, 2006)	No	Yes	Yes
558.	*Glyptotermes satsumensis* (Matsumura) Kalotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
559.	*Kalotermes* sp. Kalotermitidae	CH (PEST ID, 2006), US (CPC, 2006)	In Wood	Yes	No	Yes
560.	*Macrotermes barneyi* Light Termitidae	CH	In wood (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
561.	*Nasutitermes erectinasus* (Tsai and Chen) Termitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
562.	*Nasutitermes parvonasutus* Nawa Termitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
563.	*Neotermes* sp. Kalotermitidae	CH (PEST ID, 2006)	In Wood	Yes	No	Yes
564.	*Odontotermes formosanus* Shiraki Termitidae	CH	In wood (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
565.	*Reticulitermes chinensis* Snyder Rhinotermitidae	CH	In wood (PEST ID, 2006; Xiao, 1991a)	Yes	Yes	Yes
566.	*Reticulitermes flaviceps* (Oshima) Rhinotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
567.	*Reticulitermes* sp. Rhinotermitidae	CH, US (CPC, 2006)	In wood (PEST ID, 2006)	No	No	Yes
568.	*Reticulitermes speratus* (Kolbe) Rhinotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
569.	*Rhinotermitidae* sp. Rhinotermitidae	CH, US (CPC, 2006)	In wood (PEST ID, 2006)	Yes	No	Yes
570.	*Stylotermes valvules* Tsai and Ping Rhinotermitidae	CH	In wood (Xiao, 1991a)	No	Yes	Yes
	Arthropods: Ixodidae					
571.	*Rhipicephalus sanguineus* Latreille Ixodidae	CH (PEST ID, 2006), US	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
	Arthropods: Lepidoptera					
572.	*Abraxas flavisinuata* Warren Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
573.	*Abraxas* sp. Geometridae	CH	On or under bark (Dix et.al., 2004)	No	No	Yes
574.	*Acanthopsyche nigraplaga* (Wileman) Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
575.	*Acanthopsyche subferalbata* Hampson Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
576.	*Achaea janata* (L.) Noctuidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
577.	*Acleris fimbriana* (Thunberg) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
578.	*Acleris submaccana* (Filipjev) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
579.	*Acleris ulmicola* Meyrick Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
580.	*Acronicta rumicis* (L.) Noctuidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
581.	*Adoxophyes orana* Fischer von Roeslerstamm Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
582.	*Agrotis ipsilon* (Hufnagel) Noctuidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991a)	No	No	Yes
583.	*Agrotis segetum* Dennis and Schiffermuller Noctuidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
584.	*Alphaea phasma* (Leech) Arctiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
585.	*Amata germana* (Felder) Amatidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
586.	*Amata pascus* (Leech) Amatidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
587.	*Amatissa snelleni* Heylaets Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
588.	*Anarsia lineatella* Zeller Gelechiidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
589.	*Anomis sabulifera* (Guenee) Noctuidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
590.	*Apocheima cinerarium* (Ershov) Geometridae	CH	On or under bark (CABI, 2005c; Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
591.	*Aporia crataegi* L. Pieridae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
592.	*Archips oporanus* (L.) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
593.	*Arctiidae* sp. Arctiidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	No	No	Yes
594.	*Argyroploce ineptana* Kennel Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
595.	*Ascotis selenaria* (Denis and Schiffermuller) Geometridae	CH	On or under bark (CABI, 2005c; Xiao, 1991b)	No	Yes	Yes
596.	*Attacus atlas* (L.) Saturniidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
597.	*Autographa californica* Speyer Noctuidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
598.	*Biston marginata* Shiraki Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
599.	*Blastobasinae* sp. Coleophoridae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
600.	*Blumeriella jaapii* (Rehm) Arx Tortricidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
601.	*Bombyx mandarina* Moore Bombycidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
602.	*Bupalus mughusaria* Gumppenberg Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
603.	*Buzura suppressaria* Guenee Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
604.	*Cadra cautella* Walker Pyralidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
605.	*Cadra* sp. Pyralidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
606.	*Calliteara horsfieldii* (Saunders) Lymantridae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
607.	*Carposina sasakii* Matsumura Carposinidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
608.	*Cephonodes hylas* (L.) Trochilidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
609.	*Chalioides kondonis* Kondo, 1922 Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
610.	*Cheimophila salicellum* (Hubner) Oecophoridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
611.	*Chihuo zao* Yang, 1978 Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
612.	*Chilo* sp. Crambidae	CH (PEST ID, 2006), US (HI) (CPC, 2006)	Under Bark	Yes	No	Yes
613.	*Chilo suppressalis* (Walker, 1863) Crambidae	CH	On or under bark (Xiao, 1991a)	Yes	Yes	Yes
614.	*Choreutis pariana* (Clerck) Choreutidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c)	No	No	Yes
615.	*Choristoneura lafauryana* (Ragonot, 1875) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
616.	*Clania minuscula* (Butler) Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
617.	*Clania variegata* (Snellen) Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
618.	*Clostera anachoreta* Denis and Schiffermuller Notodontidae	CH	On or under bark (CABI, 2005c; Dix et.al., 2004)	No	Yes	Yes
619.	*Coccus hesperidum* (L.) Coccidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
620.	*Coleophora laricella* Hubner Coleophoridae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c; Dix et.al., 2004)	No	No	Yes
621.	*Conogethes punctiferalis* (Guenee) Pyralidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
622.	*Conopomorpha cramerella* Snellen Gracillariidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
623.	*Cosmotriche saxosimilis* Lajonquiere Lasiocampidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
624.	*Cossidae* sp. Cossidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
625.	*Cossus cossus* (L.) Cossidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
626.	*Cossus cossus orientalis* Gaede Cossidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
627.	Crambidae sp. Crambidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
628.	Crambinae sp. Crambidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
629.	*Cryptophlebia ombrodelta* (Lower) Tortricidae	CH	On or under bark (CABI, 2005c; Xiao, 1991b)	No	Yes	Yes
630.	*Cydia glandicolana* (Danilevskii) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
631.	*Cydia strobilella* (L.) Tortricidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
632.	*Cydia zebeana* (Ratzeburg) Tortricidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
633.	*Cymolomia hartigiana* (Saxeson, 1840) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
634.	*Dappula tertia* (Templeton) Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
635.	*Dargida procincta* (Grote) Noctuidae	CH (PEST ID, 2006), US (OR - unconfirmed) (CPC, 2006)	Under Bark	Yes	Yes	Yes
636.	*Dasychira axutha* Colenette Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
637.	*Dasychira baibarana* Matsumura Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
638.	*Dasychira grotei* (Moore) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
639.	*Dasychira* sp. Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	No	Yes
640.	*Dendrolimus houi* Lajongquiere Lasiocampidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
641.	*Dendrolimus pini* L. Lasiocampidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
642.	*Dendrolimus punctatus* Walker Lasiocampidae	CH	On or under bark (CABI, 2005a; Dix et.al., 2004)	No	Yes	Yes
643.	*Dendrolimus spectabilis* (Butler) Lasiocampidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
644.	*Dendrolimus superans* (Butler) Lasiocampidae	CH	On or under bark (CABI, 2005a; CABI, 2005c; Dix et.al., 2004)	No	Yes	Yes
645.	*Dendrolimus tabulaeformis* Tsai and Liu Lasiocampidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
646.	*Dioryctria abietella* Denis and Schiffermuller Pyralidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
647.	*Dioryctria sylvestrella* (Ratzeburg) Pyralidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
648.	*Ectropis oblique hypulina* Wehrli Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
649.	*Epinotia rubiginosana* (Herrish – Schaffer) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
650.	*Erannis ankeraria* Staudinger Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
651.	*Erannis dira* Butler Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
652.	*Euctenurapteryx nigrociliaria* Leech Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
653.	*Eudocima fullonia* (Clerck) Noctuidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
654.	*Eumeta variegate* (Snellen) Psychidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
655.	*Euproctis bipunctapex* (Hampson) Lymantriidae	CH	On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
656.	*Euproctis chrysorrhoea* (L.) Lymantriidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991a)	No	No	Yes
657.	*Euproctis cryptosticta* Collenette Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
658.	*Euproctis flavotriangulata* Gaede Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
659.	*Euproctis karghalica* Moore Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
660.	*Euproctis pseudoconspersa* (Stran) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
661.	*Euproctis varians* (Walker) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
662.	*Eurema hecabe* (L.) Pieridae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
663.	*Exoteleia dodecella* (L.) Gelechiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
664.	*Gelechia pinguinella* Treits. Gelechiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
665.	Gelechiidae sp.	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
666.	Geometridae sp.	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	Yes	No	Yes
667.	*Grapholita molesta* (Busck) Tortricidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Xiao, 1991b)	No	No	Yes
668.	*Gravitarmata margarotana* (Heinemann) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
669.	*Gypsonoma minutana* (Hubner) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
670.	*Haritalodes derogata* Fabricius Crambidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
671.	*Helicoverpa armigera* (Hubner) Noctuidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
672.	*Hepialidae* sp. Hepialidae	CH, US (CPC, 2006)	On or under bark (PEST ID, 2006)	No	No	Yes
673.	*Holcocerus arenicolus* Staudinger Cossidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
674.	*Homona coffearia* (Nietner) Tortricidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
675.	*Homona issikii* Yasuda Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
676.	*Hoshinoa longicellana* (Walsingham) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
677.	*Hyblaea puera* (Cramer) Hyblaeidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
678.	*Hyphantria cunea* Drury Arctiidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et.al., 2004; Xiao, 1991b)	No	No	Yes
679.	*Indarbela dea* (Swinhoe) Metarbelidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
680.	*Inurois fletcheri* Inoue Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
681.	*Ivela eshanensis* Chao Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
682.	*Ivela ochropoda* (Eversmann) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
683.	*Lampides boeticus* L. Lycaenidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
684.	*Larerannis filipjevi* Wehrli Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
685.	*Larerannis orthogrammaria* (Wherli) Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
686.	*Laspeyresia coniferana* (Saxeson) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
687.	*Laspeyresia gruneriana* Ratzeburg Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
688.	*Laspeyresia pomonella* L. Tortricidae	CH, US (CPC, 2006)	On or under bark (Xiao, 1991b)	No	No	Yes
689.	*Laspeyresia zebeana* (Ratzeburg) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
690.	*Leucoma candida* (Staudinger) Lymantriidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
691.	*Leucoma salicis* (L.) Lymantriidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
692.	*Loxostege sticticalis* L. Crambidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
693.	*Lymantria dispar* (L.) Lymantriidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et.al., 2004; Xiao, 1991a)	No	Yes (Official Control)	Yes
694.	*Lymantria dissoluta* (Swinhoe) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
695.	*Lymantria mathura* Moore Lymantriidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
696.	*Lymantria monacha* (L.) Lymantriidae	CH	On or under bark (CABI, 2005a; Dix et.al., 2004; Xiao, 1991a)	No	Yes	Yes
697.	*Lymantria viola* Swinhoe Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
698.	*Lymantria xylina* Swinhoe Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
699.	Lymantriidae sp. Lymantriidae	CH, US (CPC, 2006)	Leaves; On or under bark (PEST ID, 2006)	Yes	No	Yes
700.	*Lyonetia clerkella* L. Lyonetiidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
701.	*Mahasena colona* Sonan Psychidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
702.	*Malacosoma neustria* (L.) Lasiocampidae	CH	On or under bark (CABI, 2005a; Dix et.al., 2004)	No	Yes	Yes
703.	*Maruca vitrata* Fab. Pyralidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
704.	*Melanitis leda* Cramer Nymphalidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
705.	*Metanastria hyrtaca* Cramer Lasiocampidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
706.	*Monema flavescens* Walker Limacodidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
707.	*Naxa angustaria* Leech, 1897 Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
708.	*Naxa seriaria* (Guenee, 1857) Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
709.	*Nemapogon granella* (L.) Tineidae	CH (PEST ID, 2006), US (MI - unconfirmed) (CPC, 2006)	Under Bark	Yes	Yes	Yes
710.	Noctuidae sp. Noctuidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
711.	Nymphalidae sp. Nymphalidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
712.	*Nymphalis antiopa* (L.) Nymphalidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005c)	No	No	Yes
713.	*Odontopera urania* (Wehrli) Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
714.	Oecophoridae sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
715.	*Opogona* sp. Tineidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
716.	*Orgyia antiqua* (L., 1758) Lymantriidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b; Xiao, 1991a)	No	No	Yes
717.	*Orgyia ericae* Germar Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
718.	*Orgyia gonostigma* Hubner Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
719.	*Orgyia parallela* Gaede, 1932 Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
720.	*Orgyia postica* (Walker, 1855) Lymantriidae	CH	On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
721.	*Pandemis corylana* (Fab.) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
722.	*Pandemis heparana* Denis and Schiffermuller Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
723.	*Paranthrene tabaniformis* Rottemburg, 1775 Sesiidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a; Dix et.al., 2004)	No	No	Yes
724.	*Parasa lepida* (Cramer, 1799) Limacodidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
725.	*Parocneria furva* (Leech, 1888) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
726.	*Parocneria orienta* (Chao, 1978) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
727.	*Pectinophora gossypiella* Saunders, 1843 Gelechiidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
728.	*Pelopidas mathias* (Fabricius) Hesperiidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
729.	*Penicillaria jocosatrix* (Guenee) Noctuidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
730.	*Percnia giraffata* (Guenee, 1857) Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
731.	*Peridroma saucia* (Hubner, 1808) Noctuidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
732.	*Phalera flavescens alticola* Mell, 1930 Notodontidae	CH	On or under bark (Dix et.al., 2004)	No	Yes	Yes
733.	*Phassus excrescens* (Butler) Hepialidae	CH	On or under bark (Dix et.al., 2004; Xiao, 1991b)	No	Yes	Yes
734.	*Phassus nodus* Chu and Wang, 1985 Hepialidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
735.	*Phassus signifera sinensis* Moore, 1877 Hepialidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
736.	*Phthonandria atrilineata* Butler Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
737.	Phycitinae sp. Pyralidae	CH (PEST ID, 2006), US (CPC, 2006)	On Leaves; In Seed pods; Under Bark	Yes	No	Yes
738.	*Plodia interpunctella* (Hubner) Pyralidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
739.	*Polychrosis cunninghamiacola* Liu and Pai Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
740.	*Porthesia kurosawai* Inoue, 1956 Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
741.	*Porthesia scintillans* (Walker) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
742.	*Porthesia similis* Fuessly Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
743.	*Porthesia xanthocampa* Dyer Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
744.	*Pseudotomoides strobilellus* (L.) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
745.	Psychidae sp.	CH, US (CPC, 2006)	On branched; On or under bark (PEST ID, 2006)	No	No	Yes
746.	*Ptycholomoides aeriferanus* (Herrich-Schaffer) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
747.	Pyralidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	In seed pods and nuts; Under Bark	Yes	No	Yes
748.	*Pyralis farinalis* L. Pyralidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
749.	Pyraustinae sp. Crambidae	CH (PEST ID, 2006)	Under Bark	Yes	No	Yes
750.	*Retinia cristata* (Walsingham) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
751.	*Retinia monopunctata* (Oky) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
752.	*Retinia perangustana* (Snellen) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
753.	*Retinia resinella* (L.) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
754.	*Rhyacionia duplana* (Hubner) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
755.	*Rhyacionia insulariana* Liu and Bai Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
756.	*Rhyacionia pinicolana* (Zeller) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
757.	*Saliciphaga caesia* Falkovitsh Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
758.	*Scirpophaga nivella* Fabricius Pyralidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
759.	*Semiothisa cinerearia* Bremer and Gray Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
760.	*Sesia molybdoceps* Hampson Sesiidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
761.	*Sesia rhynchioides* (Butler) Sesiidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
762.	*Sitotroga cerealella* (Olivier) Gelechiidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
763.	*Sphecia siningensis* Hsu Sesiidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
764.	*Spilarctia melli* Daniel, 1943 Arctiidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
765.	*Spilarctia oblique* Walker Arctiidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
766.	*Spilonota laricianaa* (Heinemann) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
767.	*Spilonota ocellana* Denis and Schiffermuller Tortricidae	CH; US (CABI, 2005a)	On or under bark (Xiao, 1991b)	No	No	Yes
768.	*Spodoptera litura* (Fabricius) Noctuidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	Yes	Yes
769.	*Stathmopoda masinissa* Meyrick Oecophoridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
770.	*Stauropus alternus* (Walker) Notodontidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
771.	*Stilpnotia candida* (Staudinger) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
772.	*Stilpnotia salicis* (L.) Lymantriidae	CH	On or under bark (Xiao, 1991a)	No	Yes	Yes
773.	*Syndemis perpulchrana* (Kennel) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
774.	*Thalassodes quadraia* Guenee Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
775.	*Thysanoplusia orichalcea* (F.) Noctuidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
776.	Tineidae sp.	CH (PEST ID, 2006), US (CPC, 2006)	In seed pods; on leaves; Under Bark	Yes	No	Yes
777.	*Tirathaba rufivena* (Walker) Pyralidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
778.	Tortricidae sp.	CH, US (CPC, 2006)	In seed pods and nuts; On or under bark (PEST ID, 2006)	Yes	No	Yes
779.	*Yponomeuta padellus* (L.) Yponomeutidae	CH	On or under bark (CABI, 2005c)	No	Yes	Yes
780.	*Zamacra excavata* Dyar Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
781.	*Zeiraphera griseana* (Hubner) Tortricidae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
782.	*Zethenia rufescentaria* Motschulsky Geometridae	CH	On or under bark (Xiao, 1991b)	No	Yes	Yes
783.	*Zeuzera coffeae* Nietner Cossidae	CH	In wood; On or under bark (CABI, 2005a; Xiao, 1991a)	No	Yes	Yes
784.	*Zeuzera multistrigata* Moore Cossidae	CH	In wood; On or under bark (CABI, 2005c; Xiao, 1991a)	No	Yes	Yes
	Arthropods: Psocoptera					
785.	Psocoptera sp.	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
	Arthropods: Orthoptera					
786.	*Atractomorpha* sp. Acrididae	CH (PEST ID, 2006)	On leaves; Under Bark	Yes	Yes	Yes
787.	*Diestrammena tachycines* Adelung Gryllacrididae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
788.	*Gryllodes sigillatus* (Walker) Gryllidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes
789.	Mogoplistidae sp.	CH	On or under bark (PEST ID, 2006)	Yes	No	Yes
790.	*Oxya velox* (Thunberg) Acrididae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
791.	*Teleogryllus mitratus* (Burmeister) Gryllidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
792.	*Teleogryllus* sp. Gryllidae	CH (PEST ID, 2006), US (CPC, 2006)	Under Bark	Yes	No	Yes

	Pest	China and US Distribution	Plant Part(s) Association	Intercepted in the US	United States Quarantine Pest	Likely to Follow Pathway
793.	*Tessaratoma papillosa* (Drury) Acridoidea	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
	Arthropods: Thysanoptera					
794.	*Haplothrips gowdeyi* Franklin Phlaeothripidae	CH (PEST ID, 2006)	Under Bark	Yes	Yes	Yes
795.	*Heliothrips haemorrhoidalis* Bouche Aeolothripidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
796.	*Megalurothrips distalis* (Karny) Thripidae	CH	On or under bark (CABI, 2005a)	No	Yes	Yes
797.	*Rhipiphorothrips cruentatus* Hood Thripidae	CH	On or under bark (CABI, 2005b)	No	Yes	Yes
798.	*Scirtothrips dorsalis* Hood Thripidae	CH; US (CABI, 2005a)	On leaves; On or under bark (CABI, 2005a)	No	Yes	Yes
799.	*Selenothrips rubrocinctus* (Giard) Thripidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005a)	No	No	Yes
800.	*Thrips hawaiiensis* (Morgan) Phlaeothripidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes
801.	*Thrips tabaci Lindeman* Phlaeothripidae	CH; US (CABI, 2005a)	On or under bark (CABI, 2005b)	No	No	Yes

B. Identification of Quarantine-Significant Pests Likely to Follow the Pathway

To be a quarantine pest, an organism must satisfy geographic and regulatory criteria; specifically, the pest must have been "not yet present there, or present but not widely distributed and being officially controlled" (IPPC, 1997). The pests in Table 1 that are found to be quarantine pests and associated with the pathway (manufactured wood products from China) are listed in Table 2.

Table 2 – Quarantine arthropod pests reported on manufactured wood products from China and likely to follow the pathway

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
	Arthropods: Acarina					
1.	Eriophyoidea	*Acalitus phloeocoptes*	Mite	All life stages (CPC, 2006)	In Bud and Shoot Galls (Hong et al., 1996)	External (CPC, 2006)
2.	Eriophyoidea	*Aceria bromi*	Mite	All life stages (CPC, 2006)	In Galls (Hong et al., 1996)	External (CPC, 2006)
3.	Eriophyoidea	*Aceria chinensis*	Mite	All life stages (CPC, 2006)	In Galls (Hong et al., 1996)	External (CPC, 2006)
4.	Eriophyoidea	*Aceria jiangsuensis*	Mite	All life stages (CPC, 2006)	In Galls (Hong et al., 1996)	External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
5.	Eriophyoidea	*Aceria milli*	Mite	All life stages (CPC, 2006)	In Stems (Hong et al., 1996)	External (CPC, 2006)
6.	Eriophyoidea	*Aceria sheldoni chinensis*	Mite	All life stages (CPC, 2006)	In Galls (Hong et al., 1996)	External (CPC, 2006)
7.	Eriophyoidea	*Cecidophyopsis persicae*	Mite	All life stages (CPC, 2006)	In Wood Galls (Hong et al., 1996)	External (CPC, 2006)
8.	Eriophyoidea	*Cecidophyopsis ribis*	Black Currant Gall Mite	All life stages (CPC, 2006)	In Bud Galls (Hong et al., 1996)	External (CPC, 2006)
9.	Tetranychidae	*Eutetranychus orientalis*	Citrus Brown Mite	All life stages (CPC, 2006)	On or under bark (CPC, 2006)	External (CPC, 2006)
10.	Tetranychidae	*Oligonychus clavatus*	Mite	Adult (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
11.	Tetranychidae	*Oligonychus punicae*	Avocado Brown Mite	Adult (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
12.	Tetranychidae	*Tetranychus kanzawai*	Kanzawa Spider Mite	Adult (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
13.	Tetranychidae	*Tetranychus piercei*	Mite	Adult (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)
14.	Tetranychidae	*Tetranychus truncatus*	Mite	Adult (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
15.	Tetranychidae	*Tetranychus viennensis*	Hawthorn Spider Mite	Adult (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
	Arthropods: Coleoptera					
16.	Bostrichidae	*Dinoderus japonicus*	Borer	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
17.	Bostrichidae	*Heterobostrychus brunneus*	Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
18.	Bostrichidae	*Heterobostrychus hamatipennis*	Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
19.	Bostrichidae	*Sinoxylon anale*	False Powder Post Beetle	Immature, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
20.	Bostrichidae	*Xylobiops texanus*	Borer	All life stages	On or under bark (ARS, 2005b)	Borer (CPC, 2006)
21.	Bostrichidae	*Xyloperthella picea*	Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
22.	Bostrichidae	*Xylopsocus capucinus*	Borer	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
23.	Bostrichidae	*Xylothrips flavipes*	Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
24.	Bruchidae	*Callosobruchus chinensis*	Chinese Bruchid	Eggs (CPC, 2006)	On or under bark (CABI, 2005b)	Borer (CPC, 2006)
25.	Buprestidae	*Agrilus marcopoli*	Borer	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
26.	Buprestidae	*Agrilus planipennis*	Emerald Ash Borer	Eggs, larvae, pupae (CPC, 2006)	In Stem, Shoot, Trunk, Branch (CPC, 2006)	Borer (under official control) (CPC, 2006)
27.	Buprestidae	*Agrilus ratundicollis*	Borer	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
28.	Buprestidae	*Agrilus zanthoxylumi*	Borer	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
29.	Buprestidae	*Chalcophora georgiana*	Borer	Pupae, Immature, Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
30.	Buprestidae	Chalcophora sp.	Borer	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
31.	Buprestidae	*Chrysobothris chrysostigma*	Borer	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
32.	Buprestidae	*Melanophila picta*	Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
33.	Buprestidae	*Ovalisia* sp.	Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
34.	Buprestidae	*Poecilonota variolosa*	Borer	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
35.	Cerambycidae	*Acalolepta cervina*	Coffee Longhorn	All life stages	On or under bark (CABI, 2005c)	Borer (CPC, 2006)
36.	Cerambycidae	*Acanthocinus griseus*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
37.	Cerambycidae	*Aeolesthes induta*	Longhorned Beetle	All life stages	On or under bark (CABI, 2005c)	Borer (CPC, 2006)
38.	Cerambycidae	*Anelaphus parallelus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
39.	Cerambycidae	*Anelaphus* sp.	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
40.	Cerambycidae	*Anelaphus villosus*	Oak Pruner	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
41.	Cerambycidae	*Anoplophora glabripennis*	Asian Longhorned Beetle	Egg, Immature, Adult (PEST ID, 2006)	On or under bark (CABI, 2005a; Dix et. al., 2004; PEST ID, 2006; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006; under official control)
42.	Cerambycidae	*Anoplophora leechi*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
43.	Cerambycidae	*Anoplophora nobilis*	Yellow Spotted Cerambycid	All life stages	On or under bark (CABI, 2005c; Xiao, 1991a)	Borer (CPC, 2006)
44.	Cerambycidae	*Apriona germari*	Longhorned Stem Borer	All life stages	On or under bark (CABI, 2005c; Dix et. al., 2004; Xiao, 1991a)	Borer (CPC, 2006)
45.	Cerambycidae	*Apriona* sp.	Longhorned Borer	Immature (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
46.	Cerambycidae	*Apriona swainsoni*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
47.	Cerambycidae	*Arhopalus rusticus*	Rust Pine Borer	Immature (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
48.	Cerambycidae	*Arhopalus* sp.	Longhorned Beetle	Immature (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
49.	Cerambycidae	*Aristobia hispida*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
50.	Cerambycidae	*Aromia bungii*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
51.	Cerambycidae	*Aromia maschata*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
52.	Cerambycidae	*Asemum* sp.	Borer	Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
53.	Cerambycidae	*Asemum striatum*	Opaque Sawyer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
54.	Cerambycidae	*Asias halodendri*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
55.	Cerambycidae	*Astyleiopus variegatus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
56.	Cerambycidae	*Bacchisa atritarsis*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
57.	Cerambycidae	*Batocera davidis*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
58.	Cerambycidae	*Batocera horsfieldi*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
59.	Cerambycidae	*Batocera rubus*	Lateral Banded Mango Longhorn	Larvae, Adult (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
60.	Cerambycidae	*Batocera rufomaculata*	Mongo Stem Borer	Larvae, Adult (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
61.	Cerambycidae	*Batocera* sp.	Stem Borer	Immature (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
62.	Cerambycidae	*Callidiellum villosulum*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; ARS, 2005b; Xiao, 1991a)	Borer (CPC, 2006)
63.	Cerambycidae	*Callidium violaceum*	Longicorne Blue Violet	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
64.	Cerambycidae	*Ceresium sinicumornaticolle*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
65.	Cerambycidae	*Ceresium* sp.	Longhorned Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
66.	Cerambycidae	*Chlorophorus annularis*	Bamboo Tiger Longicorn	Immature, Adult (PEST ID, 2006)	On or under bark (ARS, 2005a; ARS, 2005b)	Borer (CPC, 2006)
67.	Cerambycidae	*Chlorophorus diadema*	Borer	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
68.	Cerambycidae	*Cleroclytus strigicollis*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
69.	Cerambycidae	*Clytus validus*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
70.	Cerambycidae	*Dere thoracica*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
71.	Cerambycidae	*Elaphidion mucronatum*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
72.	Cerambycidae	*Embrikstrandia bimaculata*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
73.	Cerambycidae	*Glenea* sp.	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
74.	Cerambycidae	*Grammographus notabilis*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005b)	Borer (CPC, 2006)
75.	Cerambycidae	*Hesperophanes campestris*	jiarong tianniu	Immature (PEST ID, 2006)	On or under bark (ARS, 2005b)	Borer (CPC, 2006)

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76.	Cerambycidae	*Hesperophanes* sp.	Borer	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006; ARS, 2005a)	Borer (CPC, 2006)
77.	Cerambycidae	*Mallodon* sp.	Cacao Stem Borer	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
78.	Cerambycidae	*Megopis sinica*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
79.	Cerambycidae	*Mesosa myops*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
80.	Cerambycidae	*Monochamus alternatus*	Japanese Pine Sawyer	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
81.	Cerambycidae	*Monochamus saltuarius*	Japanese Pine Sawyer	Adult (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)
82.	Cerambycidae	*Monochamus sutor*	small white-marmorated longicorn	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)
83.	Cerambycidae	*Monochamus teserula*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
84.	Cerambycidae	*Monochamus urussovii*	Longhorned Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991a)	Borer (CPC, 2006)
85.	Cerambycidae	*Niphona furcata*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
86.	Cerambycidae	*Niphona* sp.	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
87.	Cerambycidae	*Oberea fusciventris*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
88.	Cerambycidae	*Oberea inclusa*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
89.	Cerambycidae	*Oberea oculata*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
90.	Cerambycidae	*Olenecamptus* sp.	Longhorned Beetle	Immature (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
91.	Cerambycidae	*Phymatodes testaceus*	Tanbark Borer	Immature (PEST ID, 2006)	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
92.	Cerambycidae	*Plagionotus christophi*	Longhorned Beetle	Immature, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
93.	Cerambycidae	*Plagionotus* sp.	Longhorned Beetle	Immature, Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
94.	Cerambycidae	*Plocaederus obesus*	Cashew Stem Borer	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
95.	Cerambycidae	*Polyzonus fasciatus*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
96.	Cerambycidae	*Pterolophia* sp.	Longhorned Beetle	Pupae (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
97.	Cerambycidae	*Purpuricenus sideriger*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
98.	Cerambycidae	*Purpuricenus temminckii*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
99.	Cerambycidae	*Pyrrhidium sanguineum*	Longhorned Beetle	Pupae, Immature, Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
100.	Cerambycidae	*Ropica* sp.	Longhorned Beetle	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
101.	Cerambycidae	*Saperda balsamifera*	Poplar Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
102.	Cerambycidae	*Saperda carcharias*	Large Poplar Borer	Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
103.	Cerambycidae	*Saperda populnea*	Small Poplar Borer	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a; Dix et. al., 2004; Xiao, 1991a)	Borer (CPC, 2006)
104.	Cerambycidae	*Semanotus bifasciatus*	Longhorned Beetle	All life stages	On or under bark (CABI, 2005c; Xiao, 1991a)	Borer (CPC, 2006)
105.	Cerambycidae	*Semanotus sinoauster*	Longhorned Beetle	All life stages	On or under bark (CABI, 2005c; Xiao, 1991a)	Borer (CPC, 2006)
106.	Cerambycidae	*Semanotus* sp.	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
107.	Cerambycidae	*Stenhomalus taiwanus*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
108.	Cerambycidae	*Stenodontes dasytomus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005b)	Borer (CPC, 2006)
109.	Cerambycidae	*Sternidius variegatus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
110.	Cerambycidae	*Stromatium barbatum*	Longhorned Beetle	All life stages	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
111.	Cerambycidae	*Stromatium longicorne*	Longhorned Beetle	All life stages	On or under bark (PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
112.	Cerambycidae	*Stromatium* sp.	Longhorned Beetle	Immature (PEST ID, 2006)	On or under bark (ARS, 2005b)	Borer (CPC, 2006)
113.	Cerambycidae	*Tetropium castaneum*	Black Spruce Beetle	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
114.	Cerambycidae	*Tetropium fuscum*	Brown Spruce Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
115.	Cerambycidae	*Tetropium gabrieli*	Larch Longhorned Beetle	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
116.	Cerambycidae	*Tetropium gracilicorne*	Longhorned Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
117.	Cerambycidae	*Thylactus simulans*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
118.	Cerambycidae	*Trichoferus campestris*	jiarong tianniu	Larvae (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
119.	Cerambycidae	*Trichoferus* sp.	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
120.	Cerambycidae	*Trirachys orientalis*	Longhorned Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
121.	Cerambycidae	*Urgleptes sp.*	Longhorned Beetle	All life stages	In wood (CPC, 2006)	Borer (CPC, 2006)
122.	Cerambycidae	*Xylotrechus chinensis*	Tiger Longicorn Beetle	All life stages	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
123.	Cerambycidae	*Xylotrechus colonus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
124.	Cerambycidae	*Xylotrechus grayi*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
125.	Cerambycidae	*Xylotrechus magnicollis*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
126.	Cerambycidae	*Xylotrechus rusticus*	Longhorned Beetle	Adult (PEST ID, 2006)	On or under bark (Dix et.al., 2004; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
127.	Cerambycidae	*Xylotrechus sagittatus*	Longhorned Beetle	All life stages	On or under bark (ARS, 2005a)	Borer (CPC, 2006)
128.	Chrysomelidae	*Agelastica alniorientalis*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
129.	Chrysomelidae	*Altica weisei*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
130.	Chrysomelidae	*Argopistes hoenei*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
131.	Chrysomelidae	*Brontispa longissima*	Coconut Hispine Beetle	Larvae, Adult (CPC, 2006)	On or under bark (CABI, 2005a; Dix et. al., 2004)	Internal (CPC, 2006)
132.	Chrysomelidae	*Chrysomela adamsiornaticollis*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
133.	Chrysomelidae	*Chrysomela lapponica*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
134.	Chrysomelidae	*Chrysomela populi*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
135.	Chrysomelidae	*Chrysomela salicivorax*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
136.	Chrysomelidae	*Chrysomela vigintipunctata*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
137.	Chrysomelidae	*Colaspoides femoralis*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
138.	Chrysomelidae	*Coptocycla sordida*	Beetle	All life stages	On or under bark (PEST ID, 2006)	Internal (CPC, 2006)
139.	Chrysomelidae	*Diorhabda elongatadeserticola*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
140.	Chrysomelidae	*Diorhabda rybakowi*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
141.	Chrysomelidae	*Gastrolina depressathoracica*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
142.	Chrysomelidae	*Oides leucomeluena*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
143.	Chrysomelidae	*Ophrida scaphoides*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
144.	Chrysomelidae	*Ophrida xanthospilota*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
145.	Chrysomelidae	*Podagricomela cyanea*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
146.	Chrysomelidae	*Podagricomela shirahatai*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
147.	Chrysomelidae	*Podontia lutea*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
148.	Chrysomelidae	*Poecilomorpha cyanipennis*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
149.	Chrysomelidae	*Pyrrhalta aenescens*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
150.	Chrysomelidae	*Pyrrhalta maculicollis*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
151.	Chrysomelidae	*Xylosandrus ater*	Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal (CPC, 2006)
152.	Chrysomelidae	*Xylosandrus discolor*	Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal (CPC, 2006)
153.	Chrysomelidae	*Zeugophora scutellaris*	Beetle	All life stages	On or under bark (Xiao, 1991b)	Internal (CPC, 2006)
154.	Curculionidae	*Curculio chinensis*	Chinese Bruchid	Eggs, Adult (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
155.	Curculionidae	*Curculio davidi*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
156.	Curculionidae	*Curculio dentipes*	Chestnut Circulio	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
157.	Curculionidae	*Curculio dieckmanni*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
158.	Curculionidae	*Curculio hippophes*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
159.	Curculionidae	*Curculio robustus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
160.	Curculionidae	*Cyrtotrachelus buqueti*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
161.	Curculionidae	*Cyrtotrachelus longimanus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
162.	Curculionidae	*Dyscerus cribripennis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
163.	Curculionidae	*Dyscerus juglans*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
164.	Curculionidae	*Dyscerus longiclavis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
165.	Curculionidae	*Dyscerus pustulatus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
166.	Curculionidae	*Dysdercus cingulatus*	Red Cotton Stainer	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
167.	Curculionidae	*Ectatorrhinus adamsi*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
168.	Curculionidae	*Eucryptorrhynchus brandti*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
169.	Curculionidae	*Eucryptorrhynchus chinensis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
170.	Curculionidae	*Hylastes ater*	Black Pine Bark Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
171.	Curculionidae	*Hylobitelus xiaoi*	xiao shi song jing xiang	All life stages	On or under bark (CABI, 2005a)	Internal (CPC, 2006)
172.	Curculionidae	*Hylobius abietis*	Large Pine Weevil	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
173.	Curculionidae	*Hylobius abietis haroldi*	Large Pine Weevil	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
174.	Curculionidae	*Hypomeces squamosus*	Gold Dust Beetle	Adult (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
175.	Curculionidae	*Lepyrus japonicus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
176.	Curculionidae	*Myocalandra* sp.	Beetle	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Internal (CPC, 2006)
177.	Curculionidae	*Niphades castanea*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
178.	Curculionidae	*Niphades* sp.	Beetle	Immature (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Internal (CPC, 2006)
179.	Curculionidae	*Niphades verrucosus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
180.	Curculionidae	*Otidognathus davidis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
181.	Curculionidae	*Piazomias validus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
182.	Curculionidae	*Pissodes nitidus*	Yellow Spotted Pine Weevil	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
183.	Curculionidae	*Pissodes validirostris*	Pine Cone Weevil	All life stages	On or under bark (CABI, 2005c; Xiao, 1991a)	Internal (CPC, 2006)
184.	Curculionidae	*Pissodes yunnanensis*	yun nan song mu du xiang	Larvae, Adult (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
185.	Curculionidae	*Rhynchaenus alini*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
186.	Curculionidae	*Rhynchaenus empopulifolis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
187.	Curculionidae	*Rhynchophorus ferrugineus*	Asiatic Palm Weevil	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal (CPC, 2006)
188.	Curculionidae	*Shirahoshizo coniferae*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
189.	Curculionidae	*Shirahoshizo patruelis*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
190.	Curculionidae	*Shirahoshizo* sp.	Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Internal (CPC, 2006)
191.	Curculionidae	*Sipalinus gigas*	Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Internal (CPC, 2006)
192.	Curculionidae	*Sipalinus* sp.	Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Internal (CPC, 2006)
193.	Curculionidae	*Xylinophorus mongolicus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)
194.	Curculioninae	*Ergania doriaeyunnanus*	Beetle	All life stages	On or under bark (Xiao, 1991a)	Internal (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
195.	Elateridae	*Agriotes subrittatus*	Click Beetles	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (Bug Guide, 2006)
196.	Elateridae	*Agrypninae* sp.	Click Beetles	Immature (PEST ID, 2006)	On or under bark (PEST ID, 2006)	External (Bug Guide, 2006)
197.	Elateridae	*Pleonomus canaliculatus*	Click Beetles	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External (Bug Guide, 2006)
198.	Lyctidae	*Lyctus brunneus*	Common Powder Post Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Internal (Groden et al., 2006)
199.	Lyctidae	*Lyctus linearis*	Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Internal (Groden et al., 2006)
200.	Lyctidae	*Minthea rugicollis*	Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (CABI, 2005c; Xiao, 1991a)	Internal (Groden et al., 2006)
201.	Rhynchitidae	*Cyllorhynchites ursulus*	Beetle	All Life Stages	On or under bark (Xiao, 1991a)	External (Legalov, 2006)
202.	Scarabaeidae	*Amphimallon solstitiale*	Chafer	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
203.	Scarabaeidae	*Anomala corpulenta*	Copper Green Chafer	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
204.	Scarabaeidae	*Anomala cupripes*	Large Green Chafer Beetle	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
205.	Scarabaeidae	*Chondracris rosea*	Citrus Locust	Adult (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)
206.	Scarabaeidae	*Holotrichia diomphalia*	Northeast Larger Black Chafer	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
207.	Scarabaeidae	*Holotrichia oblita*	Chafer	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
208.	Scarabaeidae	*Lepidiota stigma*	Sugarcane White Grub	Adult (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
209.	Scarabaeidae	*Maladera orientalis*	Smaller Velvet Chafer	Adult (CPC, 2006)	On or under bark (CABI, 2005c)	External (Foltz, 2003)
210.	Scolytidae	*Cryphalus tabulaefomis*	Borer	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
211.	Scolytidae	*Crypturgus pusillus*	Borer	Adult (PEST ID, 2006)	Wood (PEST ID, 2006)	Borer (CPC, 2006)
212.	Scolytidae	*Cyrtogenius luteus*	Borer	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
213.	Scolytidae	*Cyrtogenius* sp.	Borer	Immature, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
214.	Scolytidae	*Dendroctonus armandi*	da ningzhi xiaodu	Eggs, Larvae, Nymphs, Pupae, Adults (CPC, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
215.	Scolytidae	*Dendroctonus micans*	Great Spruce Bark Beetle	Eggs, Larvae, Nymphs, Pupae, Adults (CPC, 2006)	On or under bark (Dix et. al., 2004)	Borer (CPC, 2006)
216.	Scolytidae	*Euwallacea destruens*	Borer	All life stages (CPC, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
217.	Scolytidae	*Euwallacea validus*	Borer	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
218.	Scolytidae	*Hylesinus fraxini*	Ash Bark Beetle	Immature, Pupae (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
219.	Scolytidae	*Hylurgus ligniperda*	Shoot Beetle	Immature, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
220.	Scolytidae	*Ips acuminatus*	Sharp Dentated Bark Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
221.	Scolytidae	*Ips cembrae*	Large Larch Bark Beetle	Adult (CPC, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
222.	Scolytidae	*Ips duplicatus*	Double Spined Bark Beetle	Adult (CPC, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006)	Borer (CPC, 2006)
223.	Scolytidae	*Ips erosus*	Mediterranean Pine Beetle	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
224.	Scolytidae	*Ips hauseri*	Kyrgyz mountain engraver	All life stages (CPC, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
225.	Scolytidae	*Ips nitidus*	Bark Beetle	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
226.	Scolytidae	*Ips sexdentatus*	Pine Stenographer Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)
227.	Scolytidae	*Ips subelongatus*	Larch Bark Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
228.	Scolytidae	*Ips typographus*	Eight Toothed Bark Beetle	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)
229.	Scolytidae	*Orthotomicus erosus*	Mediterranean Pine Beetle	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
230.	Scolytidae	*Phloeosinus aubei*	Borer	Immature, Adult (PEST ID, 2006)	On or under bark (ARS, 2005b)	Borer (CPC, 2006)
231.	Scolytidae	*Phloeosinus sinensis*	Borer	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
232.	Scolytidae	*Pityogenes chalcographus*	Six Toothed Spruce Bark Beetle	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a; PEST ID, 2006; PEST ID, 2006; Xiao, 1991a)	Borer (CPC, 2006)
233.	Scolytidae	*Pityogenes hopkkinsi*	Borer	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
234.	Scolytidae	*Pityogenes serindensis*	Borer	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
235.	Scolytidae	*Polygraphus poligraphus*	Borer	Pupae, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
236.	Scolytidae	*Polygraphus* sp.	Borer	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
237.	Scolytidae	*Scolytus morawitzi*	scolytid of Morawitz	All life stages (CPC, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
238.	Scolytidae	*Sphaerotrypes coimbatorensis*	Borer	Immature, Pupae, Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006; PEST ID, 2006)	Borer (CPC, 2006)
239.	Scolytidae	*Tomicus minor*	Lesser Pine Shoot Beetle	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Borer (CPC, 2006)
240.	Scolytidae	*Tomicus pilifer*	Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
241.	Scolytidae	*Tomicus pniperda*	Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
242.	Scolytidae	*Xyleborus emarginatus*	Borer	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
243.	Scolytidae	*Xyleborus glabratus*	Borer	All life stages (CPC, 2006)	On or under bark (PEST ID, 2006)	Borer (CPC, 2006)
244.	Scolytidae	*Xyleborus interjectus*	Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
245.	Tenebrionidae	*Luprops* sp.	Beetle	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (Foltz, 2003)

Arthropods: Diptera

246.	Anthomyiidae	*Strobilomyia infrequens*	Root Maggot Fly	Larvae	On or under bark (CABI, 2005c)	External
247.	Anthomyiidae	*Strobilomyia laricicola*	Root Maggot Fly	Larvae	On or under bark (CABI, 2005c)	External
248.	Cecidomyiidae	*Camptomyia sp.*	Gall Gnats	Pupae (PEST ID, 2006)	In Wood (PEST ID, 2006)	External
249.	Cecidomyiidae	*Cecidomyia yunnanensis*	Gall Gnats	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External
250.	Cecidomyiidae	*Dasineura datifolia*	Gall Gnats	Larvae	On or under bark (Xiao, 1991b)	External
251.	Cecidomyiidae	*Giraudiella inclusa*	Gall Gnats	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External
252.	Cecidomyiidae	*Lestremiinae sp.*	Gall Gnats	Immature (PEST ID, 2006)	In Wood (PEST ID, 2006)	External
253.	Cecidomyiidae	*Planetella conesta*	Gall Gnats	Larvae	On or under bark (Xiao, 1991b)	External
254.	Cecidomyiidae	*Rhabdophaga salicis*	Gall Gnats	Larvae	On or under bark (Xiao, 1991b)	External
255.	Cecidomyiidae	*Thecodiplosis japonensis*	Japan pine gall midge	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External
256.	Syrphidae	*Algedonia coclesalis*	Hover Fly	Larvae (Foltz, 2003)	On or under bark (CABI, 2005c)	External (Foltz, 2003)

Arthropods: Hemiptera and Homoptera

257.	Alydidae	*Leptocorisa acuta*	Rice Seed Bug	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)
258.	Aradidae	*Aradus betulae*	Flatbugs	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
259.	Cicadellidae	*Lawana imitata*	Leafhoppers	Nymphs, Adults (Bug Guide, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
260.	Coccidae	*Ceroplastes japonicus*	Japanese Wax Scale	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
261.	Coccidae	*Chloropulvinaria floccifera*	Camellia Cottony Scale	Adult (PEST ID, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
262.	Coreidae	*Acanthocephala femorata*	Squash Bug	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (CPC, 2006)
263.	Coreidae	*Gonocerus* sp.	Squash Bug	Adult (PEST ID, 2006)	On or under bark (PEST ID, 2006)	External (CPC, 2006)
264.	Coreidae	*Gonocerus yunnanensis*	Squash Bug	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
265.	Coreidae	*Homoeocerus walkerianus*	Squash Bug	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
266.	Coreidae	*Leptoglossus gonagra*	Squash Bug	Adult (PEST ID, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
267.	Coreidae	*Leptoglossus oppositus*	Squash Bug	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (CPC, 2006)
268.	Diaspididae	*Aulacaspis rosarum*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
269.	Diaspididae	*Aulacaspis sassafris*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
270.	Diaspididae	*Chionaspis salicis*	Black Willow Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
271.	Diaspididae	*Fiorinia japonica*	Japanese baton shaped scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
272.	Diaspididae	*Hemiberlesia pitysophila*	pine needle hemiberlesian scale	Egg, Larvae, Adults (CPC, 2006)	On or under bark (Dix et.al., 2004; Xiao, 1991b)	External (CPC, 2006)
273.	Diaspididae	*Lepidopsyche asiatica*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
274.	Diaspididae	*Lepidosaphes salicina*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
275.	Diaspididae	*Mytilaspis conchiformis*	Oystershell scale	Adult (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
276.	Diaspididae	*Phenacaspis camphora*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
277.	Diaspididae	*Pseudaonidia duplex*	Camphor Scale	All life stages (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991b)	External (CPC, 2006)
278.	Diaspididae	*Quadraspidiotus gigas*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
279.	Diaspididae	*Quadraspidiotus perniciosus*	San Jose Scale	Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
280.	Diaspididae	*Quadraspidiotus slavonicus*	Scale	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
281.	Lygaeidae	*Atrazonatus umbrosus*	Seed Bug	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (Brisbane, 2006)
282.	Margarodidae	*Drosicha corpulenta*	Mealybug	All Life Stages	On or under bark (CABI, 2005c)	External (CPC, 2006)
283.	Margarodidae	*Drosicha stebbingi*	Giant Mealybug	All Life Stages	On or under bark (CABI, 2005c)	External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
284.	Margarodidae	*Icerya aegyptiaca*	Breadfruit Mealybug	All Life Stages	On or under bark (CABI, 2005a)	External (CPC, 2006)
285.	Margarodidae	*Icerya seychellarum*	Okada cottony-cushion scale	All Life Stages	On or under bark (CABI, 2005b)	External (CPC, 2006)
286.	Margarodidae	*Matsucoccus matsumurae*	Mealybug	All Life Stages	On or under bark (CABI, 2005c)	External (CPC, 2006)
287.	Pentatomidae	*Dolycoris baccarum*	Stink Bug	Adult (PEST ID, 2006)	On or under bark (CABI, 2005c)	External (Bug Guide, 2006)
288.	Pentatomidae	*Erthesina fullo*	Stink Bug	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (Bug Guide, 2006)
289.	Pentatomidae	*Halyomorpha picus*	Stink Bug	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (Bug Guide, 2006)
290.	Pseudococcidae	*Nesticoccus sinensis*	Mealybug	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
291.	Pseudococcidae	*Palmicultor lumpurensis*	Mealybug	All life stages (CPC, 2006)	On or under bark (ARS, 2005a)	External (CPC, 2006)
292.	Pseudococcidae	*Paracoccus pasaniae*	Pink Hibiscus Meaybug	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
293.	Pseudococcidae	*Phenacoccus fraxinus*	Mealybug	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
294.	Pseudococcidae	*Rastrococcus invadens*	Mango Mealybug	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
	Arthropods: Hymenoptera					
295.	Diprionidae	*Diprion jingyuanensis*	Confier Sawflies	Larvae (Foltz, 2003)	On or under bark (Dix et.al., 2004)	External (CPC, 2006)
296.	Diprionidae	*Neodiprion xiangyunicus*	Confier Sawflies	Larvae (Foltz, 2003)	On or under bark (Dix et.al., 2004)	External (CPC, 2006)
297.	Formicidae	*Camponotus japonicus*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
298.	Formicidae	*Formica fukaii*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
299.	Formicidae	*Formica japonica*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
300.	Formicidae	*Formica sanguinea*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
301.	Formicidae	Formica superba	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
302.	Formicidae	Formica transkaucasia	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
303.	Formicidae	Iridomyrmex anceps	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
304.	Formicidae	Iseropus himalayensis	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
305.	Formicidae	Iseropus stercorator	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
306.	Formicidae	Oecophylla smaragdina	Weaver Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
307.	Formicidae	*Polyrhachis dives*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
308.	Formicidae	*Pristomyrmex pungens*	Ant	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
309.	Pamphilidae	*Cephalcia abietis*	Sawfly	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a)	External
310.	Pamphilidae	*Chinolyda flagellicornis*	Cypress Sawfly	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a)	External
311.	Siricidae	*Sirex nitobei*	Wasp	Immature, Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	Internal Borer (CPC, 2006)s
312.	Siricidae	*Sirex rufiabdominis*	Wasp	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	Internal Borer (CPC, 2006)s
313.	Siricidae	*Sirex siricius*	Wasp	Immature, Adult (PEST ID, 2006)	On or under bark (Dix et.al., 2004)	Internal Borer (CPC, 2006)s
314.	Siricidae	*Tremex fuscicornis*	Tremex Wasp	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Internal Borer (CPC, 2006)s
315.	Siricidae	*Urocerus gigastiaganus*	Tremex Wasp	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal Borer (CPC, 2006)s
316.	Torymidae	*Megastigmus cryptomeriae*	Japanese cedar seed chalcid	Adult (PEST ID, 2006)	On or under bark (CABI, 2005b; Xiao, 1991b)	External, Internal (NHM, 2006)
317.	Torymidae	*Megastigmus duclouxiana*	Chinese cypress seed chalcid	Adult (PEST ID, 2006)	On or under bark (CABI, 2005b)	External, Internal (NHM, 2006)
318.	Torymidae	*Megastigmus pictus*	larch seed chalcid	Adult (PEST ID, 2006)	On or under bark (CABI, 2005b)	External, Internal (NHM, 2006)
319.	Torymidae	*Megastigmus sabinae*	Chalcid	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External, Internal (NHM, 2006)
320.	Torymidae	*Monodontomerus minor*	Chalcid	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External, Internal (NHM, 2006)
321.	Torymidae	*Podagrion chinensis*	Chalcid	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External, Internal (NHM, 2006)
322.	Torymidae	*Torymus grerani*	Chalcid	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External, Internal (NHM, 2006)
323.	Torymidae	*Torymus sinensis*	Chalcid	Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	External, Internal (NHM, 2006)
	Arthropods: Isoptera					
324.	Kalotermitidae	*Cryptotermes declivis*	Termite	All life stages (CPC, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
325.	Kalotermitidae	*Cryptotermes domesticus*	Termite	All life stages (CPC, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
326.	Kalotermitidae	*Glyptotermes chinpingensis*	Termite	All life stages (CPC, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
327.	Kalotermitidae	*Glyptotermes fuscus*	Termite	All life stages (CPC, 2006)	In Wood (PEST ID, 2006) (PEST ID, 2006)	Internal (CPC, 2006)
328.	Kalotermitidae	*Glyptotermes satsumensis*	Termite	All life stages (CPC, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
329.	Rhinotermitidae	*Reticulitermes chinensis*	Termite	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006) (PEST ID, 2006; Xiao, 1991a)	Internal (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
330.	Rhinotermitidae	*Reticulitermes flaviceps*	Termite	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
331.	Rhinotermitidae	*Reticulitermes speratus*	Japanese Termite	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
332.	Rhinotermitidae	*Stylotermes valvules*	Termite	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
333.	Termitidae	*Macrotermes barneyi*	Termite	All Life Stages	In Wood (PEST ID, 2006) (CABI, 2005c; Xiao, 1991a)	Internal (CPC, 2006)
334.	Termitidae	*Nasutitermes erectinasus*	Termite	All Life Stages	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
335.	Termitidae	*Nasutitermes parvonasutus*	Termite	All Life Stages	In Wood (PEST ID, 2006) (Xiao, 1991a)	Internal (CPC, 2006)
336.	Termitidae	*Odontotermes formosanus*	formosan subterranean termite	All Life Stages	In Wood (PEST ID, 2006) (CABI, 2005c; Xiao, 1991a)	Internal (CPC, 2006)
	Arthropods: Lepidoptera					
337.	Amatidae	*Amata germana*	Moth	Unknown	On or under bark (Xiao, 1991b)	Internal (Xiao, 1991b)
338.	Amatidae	*Amata pascus*	Moth	Unknown	On or under bark (Xiao, 1991b)	Internal (Xiao, 1991b)
339.	Arctiidae	*Alphaea phasma*	Tiger Moths	Larvae (Brisbane, 2006)	On or under bark (Xiao, 1991b)	External (Brisbane, 2006)
340.	Arctiidae	*Spilarctia melli*	Tiger Moths	Larvae (Brisbane, 2006)	On or under bark (Xiao, 1991b)	External (Brisbane, 2006)
341.	Arctiidae	*Spilarctia obliqua*	Tiger Moths	Larvae (Brisbane, 2006)	On or under bark (CABI, 2005c)	External (Brisbane, 2006)
342.	Bombycidae	*Bombyx mandarina*	Silk Worm	All Life Stages	On or under bark (CABI, 2005c)	External Borneo, 2006)
343.	Carposinidae	*Carposina sasakii*	Peach Fruit Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal (CPC, 2006)
344.	Cossidae	*Cossus cossus*	Carpenterworm Moth	All life stages (CPC, 2006)	In wood; On or under bark (CABI, 2005a; Xiao, 1991a)	External (CPC, 2006)
345.	Cossidae	*Cossus cossus orientalis*	Carpenterworm Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
346.	Cossidae	*Holcocerus arenicolus*	Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
347.	Cossidae	*Zeuzera coffeae*	Carpenterworm Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Internal (CPC, 2006)
348.	Cossidae	*Zeuzera multistrigata*	Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991a)	External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
349.	Crambidae	*Chilo suppressalis*	Striped Rice Stalkborer	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External, Borer (CPC, 2006)
350.	Crambidae	*Haritalodes derogata*	Cotton Leaf Roller	Larvae (CPC, 2006)	On or under bark (CABI, 2005b)	External, Borer (CPC, 2006)
351.	Crambidae	*Loxostege sticticalis*	Beet Webworm	Eggs, Larvae (CPC, 2006)	On or under bark (CABI, 2005b)	External, Borer (CPC, 2006)
352.	Gelechiidae	*Exoteleia dodecella*	Pine Bud Moth	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal
353.	Gelechiidae	*Gelechia pinguinella*	Moth	Immature, Adult (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal
354.	Geometridae	*Abraxas flavisinuata*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
355.	Geometridae	*Apocheima cinerarium*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991b)	External (CPC, 2006)
356.	Geometridae	*Ascotis selenaria*	Cotton Geometrid	All life stages (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991b)	External (CPC, 2006)
357.	Geometridae	*Biston marginata*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
358.	Geometridae	*Bupalus mughusaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
359.	Geometridae	*Buzura suppressaria*	Tea Looper	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
360.	Geometridae	*Chihuo zao*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
361.	Geometridae	*Ectropis obliquahypulina*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
362.	Geometridae	*Erannis ankeraria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
363.	Geometridae	*Erannis dira*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
364.	Geometridae	*Euctenurapteryx nigrociliaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
365.	Geometridae	*Inurois fletcheri*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
366.	Geometridae	*Larerannis filipjevi*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
367.	Geometridae	*Larerannis orthogrammaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
368.	Geometridae	*Naxa angustaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
369.	Geometridae	*Naxa seriaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
370.	Geometridae	*Odontopera urania*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
371.	Geometridae	*Percnia giraffata*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
372.	Geometridae	*Phthonandria atrilineata*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
373.	Geometridae	*Semiothisa cinerearia*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
374.	Geometridae	*Thalassodes quadraia*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)

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375.	Geometridae	*Zamacra excavata*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
376.	Geometridae	*Zethenia rufescentaria*	Geometrid Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991b)	External (CPC, 2006)
377.	Gracillariidae	*Conopomorpha cramerella*	Cocoa Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	Internal (CPC, 2006)
378.	Hepialidae	*Phassus excrescens*	Japanese Swift Moth	Immature (PEST ID, 2006)	On or under bark (Dix et.al., 2004; Xiao, 1991b)	Internal, External
379.	Hepialidae	*Phassus nodus*	Moth	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal, External
380.	Hepialidae	*Phassus signifersinensis*	Moth	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal, External
381.	Hesperiidae	*Pelopidas mathias*	Rice Skipper	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)
382.	Hyblaeidae	*Hyblaea puera*	Teak defoliator	Eggs, Larvae (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
383.	Lasiocampidae	*Cosmotriche saxosimilis*	Pine Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Dix et.al., 2004)	External (CPC, 2006)
384.	Lasiocampidae	*Dendrolimus houi*	Pine Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Dix et.al., 2004)	External (CPC, 2006)
385.	Lasiocampidae	*Dendrolimus pini*	Pine Tree Lappet	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
386.	Lasiocampidae	*Dendrolimus punctatus*	Masson Pine Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a; Dix et.al., 2004)	External (CPC, 2006)
387.	Lasiocampidae	*Dendrolimus spectabilis*	Pine Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
388.	Lasiocampidae	*Dendrolimus superans*	Japanese Hemlock Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a; CABI, 2005c; Dix et.al., 2004)	External (CPC, 2006)
389.	Lasiocampidae	*Dendrolimus tabulaeformis*	Chinese Pine Caterpillar	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
390.	Lasiocampidae	*Malacosoma neustria*	Common Lackey	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Dix et.al., 2004)	External (CPC, 2006)
391.	Lasiocampidae	*Metanastria hyrtaca*	Pine Caterpillar	All life stages (CPC, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
392.	Limacodidae	*Monema flavescens*	Oriental Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
393.	Limacodidae	*Parasa lepida*	Nettle Caterpillar	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
394.	Lymantridae	*Calliteara horsfieldii*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005c)	Internal, External (CPC, 2006)
395.	Lymantriidae	*Dasychira axutha*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
396.	Lymantriidae	*Dasychira baibarana*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
397.	Lymantriidae	*Dasychira grotei*	Moth	Egg, Larvae, Pupae (CPC,	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
				2006)		
398.	Lymantriidae	*Euproctis bipunctapex*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991a)	Internal, External (CPC, 2006)
399.	Lymantriidae	*Euproctis cryptosticta*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
400.	Lymantriidae	*Euproctis flavotriangulata*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
401.	Lymantriidae	*Euproctis karghalica*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
402.	Lymantriidae	*Euproctis pseudoconspersae*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
403.	Lymantriidae	*Euproctis varians*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
404.	Lymantriidae	*Ivela eshanensis*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
405.	Lymantriidae	*Ivela ochropoda*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
406.	Lymantriidae	*Leucoma candida*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005c)	Internal, External (CPC, 2006)
407.	Lymantriidae	*Lymantria dispar*	Gypsy Moth	Egg, Larvae, Pupae (CPC, 2006)	Bark, Stems, Shoots, Branches, Trunk (CPC, 2006)	Official control
408.	Lymantriidae	*Lymantria dissoluta*	Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
409.	Lymantriidae	*Lymantria mathura*	Pink Gypsy Moth	Egg, Larvae, Pupae (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
410.	Lymantriidae	*Lymantria monacha*	Nun Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Internal, External (CPC, 2006)
411.	Lymantriidae	*Lymantria viola*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
412.	Lymantriidae	*Lymantria xylina*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
413.	Lymantriidae	*Orgyia ericae*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
414.	Lymantriidae	*Orgyia gonostigma*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
415.	Lymantriidae	*Orgyia parallela*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
416.	Lymantriidae	*Orgyia postica*	Cocoa Tussock Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Internal, External (CPC, 2006)
417.	Lymantriidae	*Parocneria furva*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
418.	Lymantriidae	*Parocneria orienta*	baimaochong	Eggs, Larvae, Pupae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)

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419.	Lymantriidae	*Porthesia kurosawai*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
420.	Lymantriidae	*Porthesia scintillans*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
421.	Lymantriidae	*Porthesia similis*	Gold Tail Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
422.	Lymantriidae	*Porthesia xanthocampa*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
423.	Lymantriidae	*Stilpnotia candida*	Moth	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
424.	Lymantriidae	*Stilpnotia salicis*	Satin Moth	Eggs, Larvae (CPC, 2006)	On or under bark (Xiao, 1991a)	Internal, External (CPC, 2006)
425.	Lyonetiidae	*Lyonetia clerkella*	Apple Leaf Miner	Larvae (HYPPZ, 2006)	On or under bark (CABI, 2005c)	External, Internal (HYPPZ, 2006)
426.	Metarbelidae	*Indarbela dea*	Bark Borer	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
427.	Noctuidae	*Achaea janata*	castor semilooper	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
428.	Noctuidae	*Acronicta rumicis*	Knotgrass moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
429.	Noctuidae	*Agrotis segetum*	Black Cutworm	All life stages (CPC, 2006)	On or under bark (CABI, 2005a; Xiao, 1991a)	Internal, External (CPC, 2006)
430.	Noctuidae	*Anomis sabulifera*	Jute Semi Looper	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	Internal, External (CPC, 2006)
431.	Noctuidae	*Dargida procincta*	Looper	All life stages (CPC, 2006)	In Wood (PEST ID, 2006)	Internal, External (CPC, 2006)
432.	Noctuidae	*Helicoverpa armigera*	Cotton Bollworm	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
433.	Noctuidae	*Spodoptera litura*	Cluster Caterpillar	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	Internal, External (CPC, 2006)
434.	Noctuidae	*Thysanoplusia orichalcea*	Fax Caterpillar	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	Internal, External (CPC, 2006)
435.	Notodontidae	*Clostera anachoreta*	Rauhfuss-Spinner	Larvae	On or under bark (CABI, 2005c; Dix et.al., 2004)	External
436.	Notodontidae	*Phalera fiavescens alticola*	Moth	Larvae	On or under bark (Dix et.al., 2004)	External
437.	Notodontidae	*Stauropus alternus*	Lobster Caterpillar	Larvae	On or under bark (CABI, 2005c)	External
438.	Nymphalidae	*Melanitis leda*	Rice Butterfly	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)
439.	Oecophoridae	*Cheimophila salicellum*	Moth	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
440.	Oecophoridae	*Stathmopoda masinissa*	Persimmon Fruit Moth	Immature (PEST ID, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
441.	Pieridae	*Aporia crataegi*	White (Butterflies)	Larvae	On or under bark (CABI, 2005c)	External
442.	Pieridae	*Eurema hecabe*	Common Grass Yellow	Larvae	On or under bark (CABI, 2005c)	External
443.	Psychidae	*Acanthopsyche nigraplaga*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
444.	Psychidae	*Acanthopsyche subferalbata*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)

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445.	Psychidae	*Amatissa snelleni*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
446.	Psychidae	*Chalioides kondonis*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
447.	Psychidae	*Clania minuscula*	Tea Bagworm	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
448.	Psychidae	*Clania variegata*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
449.	Psychidae	*Dappula tertia*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
450.	Psychidae	*Eumeta variegata*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (CABI, 2005c)	External (CPC, 2006)
451.	Psychidae	*Mahasena colona*	Bagworm Moth	Immature, Pupae (PEST ID, 2006)	On or under bark (Xiao, 1991a)	External (CPC, 2006)
452.	Pyralidae	*Conogethes punctiferalis*	Pyralid Moths	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
453.	Pyralidae	*Dioryctria abietella*	Cone Pyralid	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	Borer (CPC, 2006)
454.	Pyralidae	*Dioryctria sylvestrella*	Japanese Pine Tip Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005c)	Borer (CPC, 2006)
455.	Pyralidae	*Pyralis farinalis*	Meal Moth	All life stages (CPC, 2006)	In Wood (PEST ID, 2006)	Borer (CPC, 2006)
456.	Pyralidae	*Scirpophaga nivella*	White Rice Borer	All life stages (CPC, 2006)	On or under bark (Xiao, 1991a)	Borer (CPC, 2006)
457.	Pyralidae	*Tirathaba rufivena*	Coconut Spike Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	Borer (CPC, 2006)
458.	Saturniidae	*Attacus atlas*	Atlas Moth	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
459.	Sesiidae	*Sesia molybdoceps*	Clearwing Moths	Larvae	On or under bark (Xiao, 1991a)	Borers
460.	Sesiidae	*Sesia rhynchioides*	Clearwing Moths	Larvae	On or under bark (Xiao, 1991a)	Borers
461.	Sesiidae	*Sphecia siningensis*	Clearwing Moths	Larvae	On or under bark (Xiao, 1991a)	Borers
462.	Tineidae	*Nemapogon granella*	Corn Moth	Adult (PEST ID, 2006)	In Wood (PEST ID, 2006)	External (CPC, 2006)
463.	Tortricidae	*Acleris fimbriana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
464.	Tortricidae	*Acleris submaccana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
465.	Tortricidae	*Acleris ulmicola*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
466.	Tortricidae	*Adoxophyes orana*	summer fruit tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
467.	Tortricidae	*Archips oporanus*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
468.	Tortricidae	*Argyroploce ineptana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
469.	Tortricidae	*Choristoneura lafauriana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
470.	Tortricidae	*Cryptophlebia ombrodelta*	Macadamia Nut Borer	Egg, Larvae (CPC, 2006)	On or under bark (CABI, 2005c; Xiao, 1991b)	Internal, External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
471.	Tortricidae	*Cydia glandicolana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
472.	Tortricidae	*Cydia strobilella*	Spruce Seed Moth	Egg, Larvae (CPC, 2006)	On or under bark (CABI, 2005c)	Internal, External (CPC, 2006)
473.	Tortricidae	*Cydia zebeana*	Wickler	Egg, Larvae (CPC, 2006)	On or under bark (Dix et.al., 2004)	Internal, External (CPC, 2006)
474.	Tortricidae	*Cymolomia hartigiana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
475.	Tortricidae	*Epinotia rubiginosana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
476.	Tortricidae	*Gravitarmata margarotana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
477.	Tortricidae	*Gypsonoma minutana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
478.	Tortricidae	*Homona coffearia*	Coffee Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (CABI, 2005a)	Internal, External (CPC, 2006)
479.	Tortricidae	*Homona issikii*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
480.	Tortricidae	*Hoshinoa longicellana*	Common Apple Leafroller	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
481.	Tortricidae	*Laspeyresia coniferana*	Wickler	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
482.	Tortricidae	*Laspeyresia gruneriana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
483.	Tortricidae	*Laspeyresia zebeana*	Wickler	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
484.	Tortricidae	*Pandemis corylana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
485.	Tortricidae	*Pandemis heparana*	Apple Brown Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
486.	Tortricidae	*Polychrosis cunninghamiacola*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
487.	Tortricidae	*Pseudotomoides strobilellus*	Spruce Seed Moth	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
488.	Tortricidae	*Ptycholomoides aeriferanus*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
489.	Tortricidae	*Retinia cristata*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
490.	Tortricidae	*Retinia monopunctata*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
491.	Tortricidae	*Retinia perangustana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
492.	Tortricidae	*Retinia resinella*	Gall Pine Resin Moth	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
493.	Tortricidae	*Rhyacionia duplana*	Radish Wing Tipped Moth	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
494.	Tortricidae	*Rhyacionia insulariana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
495.	Tortricidae	*Rhyacionia pinicolana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
496.	Tortricidae	*Saliciphaga caesia*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
497.	Tortricidae	*Spilonota laricianaa*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)

	Family	Name	Common Name	Life Stage	Plant Part(s) Association	Biology
498.	Tortricidae	*Syndemis perpulchrana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
499.	Tortricidae	*Zeiraphera grisecana*	Tortrix	Egg, Larvae (CPC, 2006)	On or under bark (Xiao, 1991b)	Internal, External (CPC, 2006)
500.	Trochilidae	*Cephonodes hylas*	Coffee Hawk Moth	Egg, Larvae (CPC, 2006)	On or under bark (CABI, 2005c)	Internal, External (CPC, 2006)
501.	Yponomeutidae	*Yponomeuta padellus*	Cherry Ermine Moth	Larvae, Pupae (Fauske, 2002)	On or under bark (CABI, 2005c)	External (Fauske, 2002)
	Arthropods: Orthoptera					
502.	Acrididae	*Atractomorpha* sp.	Grasshopper	Adult (PEST ID, 2006)	On Wood (PEST ID, 2006)	External (CPC, 2006)
503.	Acrididae	*Oxya velox*	Chinese Rice Grasshopper	Adult (PEST ID, 2006)	On Wood (PEST ID, 2006)	External (CPC, 2006)
504.	Acridoidea	*Tessaratoma papillosa*	Litchi Stink Bug	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
505.	Gryllacrididae	*Diestrammena tachycines*	Raspy Cricket	Adult (PEST ID, 2006)	On Wood (PEST ID, 2006)	External (CPC, 2006)
506.	Gryllidae	*Teleogryllus mitratus*	Cricket	Adult (PEST ID, 2006)	On Wood (PEST ID, 2006)	External (CPC, 2006)
	Arthropods: Thysanoptera					
507.	Phlaeothripidae	*Haplothrips gowdeyi*	Thrips	Adult (PEST ID, 2006)	On Wood (PEST ID, 2006)	External (CPC, 2006)
508.	Thripidae	*Megalurothrips distalis*	Thrips	Adult (PEST ID, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
509.	Thripidae	*Scirtothrips dorsalis*	Thrips	All life stages (CPC, 2006)	On or under bark (CABI, 2005a)	External (CPC, 2006)
510.	Thripidae	*Rhipiphorothrips cruentatus*	Grapevine Thrips	All life stages (CPC, 2006)	On or under bark (CABI, 2005b)	External (CPC, 2006)

C. Likelihood and Consequences of introduction of the quarantine pests in Table 2

Of the pests in Table 2, several are Emergency and Domestic Program (EDP) pests under official control and 12 are in the same genus as an EDP pest. EDP is the group in PPQ that provides national coordination for domestic preparedness, response, and recovery from plant pests, diseases, and noxious weeds that threaten America's agricultural and natural resources. Current EDP pests include *Agrilus plannipennis* (Emerald Ash Borer or EAB), Lymantria dispar (Gypsy moth or GM and Asian Gypsy moth or AGM), *Tomicus piniperda* (Pine shoot beetle), and *Anoplophora glabripennis* (Asian Longhorned Beetle or ALB). Representative Genera which are the same as those of program pests and which have similar biologies are listed below as well as whether the pest Family is found internally or externally on wood products. Pests below in bold were analyzed further.

Coleoptera

Buprestidae: Agrilus (Internal)

Cerambycidae: Anoplophora (Internal)

Cerambycidae: Batocera (Internal)
Hymenoptera
Siricidae: Sirex (Internal)

Of the pests in Table 2, thirteen are Cooperative Agricultural Pest Survey (CAPS) Program pests and forty are in the same genus as a CAPS pest. The CAPS program is responsible for supplying means of detection, documentation and rapid dissemination of information on survey of plant pests and weeds in the United States. The program provides PPQ and cooperators with distribution information on pests in the U.S. Representative Genera which are the same as those of CAPS pests and which have similar biologies are listed below as well as whether the pest Family is found internally or externally on wood products. Pests below in bold were analyzed further.

Acarina
Eriophyoidea: Cecidophyopsis (External)
Tetranychoidea: Eutetranychus (External)
Coleoptera
Buprestidae: Agrilus (Internal)
Cerambycidae: Chlorophorus (Internal)
Cerambycidae: Monochamus (Internal)
Chrysomelidae: Xylosandrus (External)
Circulionidae: Hylobius (Internal)
Circulionidae: Rhynchophorus (Internal)
Scolytidae: Dendroctonus (Internal)
Scolytidae: Hylurgus (Internal)
Scolytidae: Scolytid (Internal)
Scolytidae: Tomicus (Internal)
Scolytidae: Xyleborus (Internal)
Homoptera
Coccidae: Ceroplastes (External)
Pseudococcidae: Palmicultor (External)
Hymenoptera
Siricidae: Sirex (Internal)
Siricidae: Urocerus (Internal)
Isoptera
Kalotermididae: Cryptotermes (Internal)
Lepidoptera
Crambidae: Chilo (External)
Lasiocampidae: Dendrolimus (External)
Lymantriidae: Lymantria (External)
Noctuidae: Helicoverpa (External)
Tortricidae: Adoxophyes (External)
Tortricidae: Cydia (External)

The EANs for Chinese wood products concern entry of wood boring beetles in the products.

APHIS currently has experience with two very large and costly programs to eradicate coleopterous borers, *Agrilus plannipennis* (EAB) and *Anoplophora glabripennis* (ALB). Of the above species in Table 2, the ones of greatest quarantine concern are wood boring beetles of the families Buprestidae and Cerambycidae. Scolytidae may be added to the list of borers of concern because, although there are currently no official APHIS eradication programs for them, they have similar destructive capability and habits. Because they are highly polyphagous, borers are generally considered to be of high consequence to ecosystems in the United States if they should become established. Because they pass their immature stages inside wood, wood boring beetles are considered highly likely to enter the United States with the wood. As has been demonstrated by the ALB and EAB, establishment can be disastrous. 228 of the species in Table 2 are wood boring beetles. There is high uncertainty about the likelihood of introduction of most of these species mainly because the species of wood in the products and their geographic origin are unknown for any given consignment. Given the high uncertainty, it is not possible to assign levels of risk to any particular product or consignment, so it is assumed that all are equally high risk and mitigation listed later therefore target the broadest group of pests.

Consequences of Introduction

This portion of the analysis considers negative outcomes that may occur when the quarantine pests identified in Table 2 are introduced into the United States. The potential consequences are evaluated using the following five Risk Elements: Climate- Host Interaction, Host Range, Dispersal Potential, Economic Impact, and Environmental Impact. These risk elements reflect the biology, host range and climatic and geographic distribution of each pest, and are supported by biological information on each of the analyzed pests. For each risk element, pests are assigned a rating of Low (1 point), Medium (2 points), or High (3 points) based on the criteria as stated in the PRA Guidelines (APHIS, 2000). The summation of the points for each risk rating is the cumulative value for the Consequences of Introduction (Table 5). A cumulative value of 5 to 8 points is considered Low risk for the Consequences of Introduction, 9 to 12 points is Medium, and 13 to 15 points is considered High (APHIS, 2000).

Table 3 - Risk Rating for Consequences of Introduction for Representative Genera from Table 2

		Risk Element					
		#1	#2	#3	#4	#5	
	Pest	Climate/ Host Interaction	Host Range	Dispersal Potential	Economic Impact	Envir. Impact	Cumulative Risk Rating
1	Adoxophyes spp.	3	3	3	3	3	15
2	Agrilus spp.	3	3	3	3	3	15
3	Anoplophora spp.	3	3	3	3	3	15
4	Ceroplastes spp.	3	3	2	3	3	14
5	Chilo spp.	3	3	3	3	3	15
6	Chlorophorus spp.	3	3	3	3	3	15
7	Cryptotermes spp.	3	3	2	3	1	12
8	Dendroctonus spp.	3	3	3	3	3	15
9	Dendrolimus spp.	3	3	3	3	3	15
10	Eutetranychus spp.	3	3	2	3	3	14
11	Hylobius spp.	3	3	3	3	2	14
12	Hylurgus spp.	3	3	3	3	3	15
13	Lymantria spp.	3	3	3	3	3	15
14	Monochamus spp.	3	3	2	3	3	14
15	Scolytus spp.	3	3	3	3	3	15
16	Sirex spp.	3	3	3	3	3	15
17	Tomicus spp.	3	3	3	2	3	14

Risk Element 1: Climate/Host Interaction

This risk element considers ecological zonation and the interactions of quarantine pests with their biotic and abiotic environments. When introduced into new areas, pests are expected to behave as they do in their native areas if the potential host plants and suitable climate are present. Broad availability of suitable climates and a wide distribution of suitable hosts are assumed to increase the impact of a pest introduction. The ratings for this risk element are based on the relative number of United States Plant Hardiness Zones (ARS, 1990) with potential host plants and suitable climate.

All Pests: High Risk
China and the United States have very similar Hardiness Zones (Appendix 1). There are also several host genera that are found in both countries. Therefore, each pest is given a rating of High for Climate/Host interaction.

Risk Element 2: Host Range

The risk posed by a plant pest depends on both its ability to establish a viable, reproductive population and its potential for causing plant damage. This risk element assumes that the consequences of pest introduction are positively correlated with the pest's host range. Aggressiveness, virulence and pathogenicity also may be factors. The consequences are rated as a function of host range and consider whether the pest can attack a single species or multiple species within a single genus, a single plant family, or multiple families. All pests were rated high due to the large number of genera attacked.

Adoxophyes spp.: High Risk
Acer (field maple), *Alnus* (alders), *Arachis* (groundnut), *Betula* (birches), *Carpinus* (hornbeam), *Crataegus* (hawthorn), *Cydonia* (quince), *Fagus* (common beech), *Forsythia* (forsythia), *Gossypium* (short staple cotton), *Humulus* (hop), *Jasminum* (jasmine), *Laburnum* (laburnum), *Ligustrum* (privet), *Lonicera* (Fly honeysuckle), *Malus* (apple), *Mangifera* (mango), *Medicago* (alfalfa), *Nephelium* (rambutan), *Nerium* (oleander), *Pistacia* (mastic), *Populus* (poplars), *Prunus* (apricot, sweet cherry, plum, peach), *Pyrus* (European pear), *Ribes* (blackcurrant), *Ricinus* (castor bean), *Rosa* (roses), *Rubus* (raspberry), *Salix* (willow), *Symphoricarpos* (common snowberry), *Syringa* (lilac), *Tilia* (limes), *Ulmus* (European field elm), *Vaccinium* (blueberries) (CPC, 2006)

Agrilus spp.: High Risk
Carpinus (hornbeam), *Castanea* (chestnut), *Fagus* (beech), *Fraxinus* (ash), *Malus* (apple), *Quercus* (oak) (CPC, 2006)

Anoplophora spp.: High Risk
Acacia (wattle), *Acer* (maple), *Aesculus* (buckeye), *Albizia* (silk tree), *Alnus* (alders), *Aralia* (spikenard), *Atalantia* (box-orange), *Betula* (birch), *Broussonetia* (mulberry), *Cajanus* (pigeon pea), *Carpinus* (hornbeam), *Carya* (pecan), *Castanea* (chestnut), *Castanopsis* (chinkapin), *Casuarina* (casuarina), *Citrus* (citrus), *Cryptomeria* (cedar), *Elaeagnus* (elaeagnus), *Eriobotrya* (loquat), *Fagus* (beech), *Ficus* (fig), *Fortunella* (kumquat), *Fraxinus* (ashes), *Hedera* (ivy), *Hibiscus* (rosemallow), *Juglans* (walnuts), *Lagerstroemia* (lagerstroemia), *Lindera* (spicebush), *Liriodendron* (tuliptree), *Litchi* (lychee), *Mallotus* (mallotus), *Malus* (apple), *Melia* (Chinaberry), *Morus* (mora), *Persea* (avocado), *Pinus* (pine), *Platanus* (planetree), *Poncirus* (Trifoliate orange), *Populus* (poplars), *Prunus* (apricot), *Psidium* (guava), *Pyracantha* (Narrow-leaf firethorn), *Pyrus* (pear), *Quercus* (oak), *Rhus* (sumac), *Robinia* (locust), *Rosa* (rose), Rubus (blackberry), *Salix* (willow), *Sapium* (tallow tree), Sophora (necklacepod) , *Styrax* (snowbell), *Ulmus* (elm), *Vernicia* (wood oil tree), *Ziziphus* (jujube) (CPC, 2006)

Ceroplastes spp.: High Risk

Abutilon (mallow), *Acacia* (wattles), *Acer* (maple), *Actinidia* (kiwifruit), *Aglaonema* (aglaonema), *Allamanda* (allamanda), *Alpinia* (gingerlily), *Alstonia* (cheesewood), *Amaranthus* (grain amaranth), *Anacardium* (cashew nut), *Annona* (annona), *Anthurium* (laceleaf), *Aralia* (spikenard), *Arbutus* (madrone), Ardisia (marlberry), *Artemisia* (wormwoods), *Artocarpus* (breadfruit trees), *Asplenium* (spleenworts), *Azadirachta* (neem tree), *Berberis* (barberries), *Betula* (birch), *Bixa* (bixa), *Blechnum* (fern), *Buxus* (boxwood), *Callistemon* (Bottle brush), *Calophyllum* (calophyllum), *Camellia* (tea), *Carissa* (Carissa), *Celosia* (celosia), *Celtis* (hackberry), *Chaenomeles* (quince), *Chrysanthemum* (chrysanthemum), *Cinnamomum* (cinnamon), *Citrus* (citrus), *Cleyera* (cleyera), *Coccoloba* (seaside grape), Cocos (coconut), *Coffea* (coffee), *Convolvulus* (morning glory), *Cornus* (cherry), *Crataegus* (hawthorns), *Cucurbita* (cucurbits), *Cycas* (sago palm), *Cydonia* (quince), *Cytisus* (Broom), *Daphne* (laurel), *Deutzia* (pride-of-Rochester), *Dimocarpus* (longan tree), *Diospyros* (persimmon), Dizygotheca (False aralia), *Dodonaea* (hopbush), *Ehretia* (ehretia), *Elaeagnus* (oleaster), Elaeocarpus (elaeocarpus), *Elaeodendron* (marble tree), *Eremocitrus* (lime), *Eriobotrya* (loquat), *Eucalyptus* (Eucalyptus), *Eugenia* (stopper), *Euonymus* (spindle trees), *Euphorbia* (spurges), *Fatsia* (aralia), *Feijoa* (Horn of plenty), Ficus (fig), *Garcinia* (mangosteen), *Gardenia* (gardenia), Gossypium (cotton), *Hedera* (Ivy), *Helianthus* (helianthus, sunflower), *Heliconia* (heliconia), Hibiscus (rosemallows), *Ilex* (Holly), *Illicium* (anisetree), *Inocarpus* (moonpod), *Ipomoea* (sweet potato), *Ixora* (ixora), *Jasminum* (jasmine), Juncus (rushes), *Lagerstroemia* (lagerstroemia), *Laurus* (laurel), *Ligustrum* (privet), *Lindera* (spicebush), *Litchi* (lichi), *Magnolia* (magnolia), Malpighia (acerola), *Malus* (apple), *Mangifera* (mango), *Manilkara* (sapodilla), *Melia* (Chinaberry), *Mespilus* (medlar), *Monstera* (monstera), *Morus* (mora), *Musa* (banana), *Myristica* (nutmeg), *Myrtus* (myrtle), *Nandina* (bamboo), *Nephelium* (rambutan), *Nephrolepis* (fern), *Nerium* (oleander), *Olea* (olive), *Persea* (avocado), *Philodendron* (philodendron), *Pimenta* (Allspice), *Pinus* (pines), *Piper* (pepper), *Pistacia* (mastic), *Pittosporum* (cheesewood), *Platanus* (planes), *Plumeria* (frangipani), *Podocarpus* (plum pine), *Polyscias* (aralia), *Poncirus* (Trifoliate orange), *Populus* (poplar), *Prunus* (stone fruit), Psidium (guava), *Pteridium* (brackenfern), *Punica* (pomegranate), *Pyracantha* (firethorn), Pyrus (pears), *Rhododendron* (Azalea), *Rhus* (sumac), Ruscus (ruscus), *Salix* (willow), Schefflera (schefflera), *Schinus* (pepper tree), Solanum (nightshade), *Spartium* (Spanish broom), Spiraea (spiraea), Syzygium (malay-apple), Tamarix (tamarisk), *Theobroma* (cocoa), *Ternstroemia* (ternstroemia), *Thevetia* (thevetia), *Trachelospermum* (trachelospermum), *Ulmus* (elm), *Vaccinium* (huckleberry), *Viburnum* (viburnum), *Vitis* (grape), *Zingiber* (ginger), *Ziziphus* (jujube) (CPC, 2006)

Chilo spp.: High Risk
Avena (oats), *Cymbopogon* (grass), *Cynodon* (grass), *Cyperaceae* (Sedges), *Cyperus* (nutsedge), *Echinochloa* (junglerice), *Eleusine* (millet), *Hordeum* (barley), *Oryza* (rice), *Panicum* (millets), *Pennisetum* (millet), *Phragmites* (reed), *Poaceae* (grasses), *Saccharum* (sugarcane), *Sclerostachya* (sclerostachya), *Setaria* (millet), *Sorghum* (sorghum), *Triticum* (wheat), Typha (bulrush), *Zea* (maize), *Zizania* (wildrice) (CPC, 2006)

Chlorophorus spp.: High Risk
Bambusa (bamboo), *Citrus* (citrus), *Dendrocalamus* (bamboo), *Derris* (derris), *Dipterocarpus* (dipterocarpus), *Gossypium* (cotton), *Indosasa* (indosasa), *Liquidambar* (sweetgum), *Phyllostachys* (bamboo), *Saccharum* (sugarcane), *Shorea* (shorea), *Sinocalamus* (bamboo),

Spondias (purple mombin), *Tectona* (teak), *Vitis* (grape), *Zea* (maize) (CPC, 2006)

Cryptotermes spp.: High Risk
Aceraceae (maple), *Cupressaceae* (cypress), *Fagaceae* (oak), *Hevea* (hevea), *Malvaceae* (hibiscus), *Oleaceae* (ash), *Pinaceae* (pine), *Tiliaceae* (basswood), *Ulmaceae* (elm) (CPC, 2006)

Dendroctonus spp.: High Risk
Abies (fir), *Larix* (larch), *Picea* (spruce), *Pinus* (pine), *Pseudotsuga* (Douglas-fir), *Tsuga* (hemlocks) (CPC, 2006)

Dendrolimus spp.: High Risk
Abies (fir), *Larix* (larch), *Picea* (spruce), *Pinus* (pine) (CPC, 2006)

Eutetranychus spp.: High Risk
Abelmoschus (okra), *Arachis* (groundnut), *Brassica* (broccoli), *Camellia* (tea), *Capsicum* (peppers), *Carica* (papaw), *Citrullus* (watermelon), *Citrus* (citrus), *Codiaeum* (croton), *Colocasia* (taro), *Cucumis* (melon), Cucurbitaceae (cucurbits), *Cynara* (artichoke), *Dianthus* (carnation), *Dioscorea* (yam), *Durio* (durian), Ficus (fig), *Fragaria* (strawberry), Gerbera (Barbeton daisy), *Glycine* (soyabean), *Gossypium* (cotton), Ipomoea (sweet potato), *Lablab* (hyacinth bean), *Luffa* (loofah), *Lycopersicon* (tomato), *Malus* (apple), *Manihot* (cassava), *Medicago* (lucerne), *Morus* (mora), *Musa* (plantain, banana), *Nephelium* (rambutan), *Olea* (olive), *Phaseolus* (beans), *Piper* (betel pepper), *Plumeria* (frangipani), *Prunus* (almond), *Psidium* (guava) *Ricinus* (castor bean), *Sechium* (sechium), *Solanum* (aubergine), *Sorghum* (sorghum), *Spinacia* (spinach), *Vigna* (cowpea), *Vitis* (grapevine), Xanthosoma (yautia), *Zea* (maize), *Ziziphus* (jujube) (CPC, 2006)

Hylobius spp.: High Risk
Betula (birch), *Fagus* (beech), *Larix* (larches), *Picea* (spruces), *Picea* (spruce), *Pinus* (pines), *Pseudotsuga* (Douglas-fir), *Quercus* (oak) (CPC, 2006)

Hylurgus spp.: High Risk
Abies (fir), *Juniperus* (juniper), *Larix* (larch), *Picea* (spruce), *Pinus* (pine) (CPC, 2006)

Lymantria spp.: High Risk
Abies (firs), *Acer* (maples), *Alnus* (alders), *Averrhoa* (carambola), *Betula* (birches), *Carpinus* (hornbeams), *Carya* (hickories), *Castanea* (chestnut), *Corylus* (hazelnut), *Eucalyptus* (red gum), *Fagus* (beeches), *Fraxinus* (white ash), *Glycine* (soybean), *Hamamelis* (Virginian witch-hazel), *Larix* (larches), *Liquidambar* (Sweet gum), *Litchi* (lichi), *Lithocarpus* (tanoak), *Malus* (ornamental species apple), *Mangifera* (mango), *Neolamarckia* (common bur-flower tree), Ostrya (American hophornbeam), *Picea* (common spruce), *Pinus* (pines), *Pistacia* (pistachio), Platanus (London planetree), *Populus* (poplars), *Prunus* (stone fruit), *Pseudotsuga* (Douglas-fir), *Pyrus* (pears), *Quercus* (oak), *Robinia* (locust), *Salix* (willow), *Shorea* (sal), *Syzygium* (black plum), *Taxodium* (bald cypress), *Terminalia* (arjun), *Tilia* (basswood), *Vaccinium* (blueberries), *Zea* (maize) (CPC, 2006)

Monochamus spp.: High Risk
Abies(fir), *Cedrus* (cedar), *Larix* (larch), *Picea* (spruce), *Pinus* (pine) (CPC, 2006)

Scolytus spp.: High Risk
Aesculus (buckeye), *Betula* (birch), *Caragana* (pea shrub), *Carpinus* (hornbeams), Castanea (chestnut), *Corylus* (hazelnut), *Elaeagnus* (ornamental olive), *Fagus* (beeches), Larix (larch), *Ostrya* (hophornbeam), *Pinus* (pine), Populus (poplar), *Prunus* (stone fruit), *Pyrus* (crabapple), Quercus (oak), *Rhamnus* (Buckthorn), *Salix* (willow), *Sorbus* (mountain ash), *Tilia* (limes), *Ulmus* (elms) (CPC, 2006)

Sirex spp.: High Risk
Abies (fir), *Cupressus* (cypress), *Larix* (larch), *Picea* (spruce), *Pinus* (pine), *Pseudotsuga* (Douglas-fir) (CPC, 2006)

Tomicus spp.: High Risk
Abies (fir), *Juniperus* (juniper), *Larix* (larch), *Picea* (spruce), *Pinus* (pine), *Pseudotsuga* (Douglas fir) (GPDD, 2006)

Risk Element 3: Dispersal Potential

Pests may disperse after introduction into new areas. The dispersal potential indicates how rapidly and widely the pests may spread within the importing country or region and is related to the pest's reproductive potential, inherent mobility, and external dispersal facilitation modes. Factors for rating the dispersal potential include: the presence of multiple generations per year or growing season, the relative number of offspring or propagules per generation, any inherent capabilities for rapid movement, the presence of natural barriers or enemies, and dissemination enhanced by wind, water, vectors, or human assistance.

Adoxophyes spp.: High Risk
Adoxophyes orana adults are active in summer and fall, though emergence may vary according to climatic conditions. Flight periods of the first and second generation may overlap (Whittle, 1985). Duration of the adult stage depends primarily on temperature and relative humidity. Under natural conditions, the longest recorded life span is 23 days (Barel, 1973a). Flight lasts approximately 4 weeks and is greatest in the first half of the flight period when conditions are optimal for egg and larval development (Barel, 1973). Moths fly at temperatures above 13 ºC (55.4 ºF) (Whittle, 1985). Males precede females in flight by a few days and may disperse up to 400 meters (≈437 yards). Female dispersal is limited (Barel, 1973; CPC, 2006). First, second, and third generation flight in northwestern Europe occurs from late May to late June, late July to early September, and October, respectively (CPC, 2006). Mating occurs at night or in the early morning hours, about a day after emergence (de Jong et al., 1971; Whittle, 1985; He et al., 1996). Adults rest on leaves within the tree canopy during the day and become active at dusk (Bradley et al., 1973). In the Netherlands and in much of Europe, *Adoxophyes orana* has two generations annually (Davis et al., 2005).

Agrilus spp.: High Risk

In terms of estimated spread, the natural spread capability of *Agrilus planipennis* is unknown. The maximum natural spread capability of the bronze birch borer, *A. anxius*, is estimated to be 16-32 kilometers /10-20 miles per year. These beetles may also spread with the help of people. For example, this beetle has been spread by illegal human movement of nursery stock from a quarantined area in Michigan to the state of Maryland, a distance of over 960 kilometers /600 miles). There is risk of nursery trade and other means (e.g., lumber trade, logs for firewood) spreading the beetle. There is more risk for nursery stock and logs (especially if not debarked) than for lumber. There is also concern about the potential entry of *A. planipennis* into the United States with wood packaging materials, especially those that are not debarked or properly treated (NPAG, 2002). The life cycle for the genus *Agrilus* includes egg, larva, pupa, and adult, taking about one year to complete. Pupation of *Agrilus* spp. occurs in the gallery within the heartwood of the tree during spring or early summer. Emergence of *Agrilus* spp. adults usually occurs around June and July, but may take place between May and September depending on climate (Hill, 1987).

Anoplophora spp.: High Risk

In a dispersal study by Smith et al. (2001), it has been shown that the mean dispersal distance in a single season for *Anoplophora glabripennis* was approximately 266 meters (0.166 miles), whereas the 98% *A. glabripennis* recapture radius was 560 meters /≈0.35 miles with a maximum dispersal distance recorded at 1,442 meters (≈0.90 miles), which includes the female beetles carrying mature eggs. Although it is reported that adults can fly weakly 30 to 225 meters /≈98-738 feet in a single flight on a clear day, short-distance flight is typical of many cerambycids. In China, the number of annual generations varies with climate and latitude. The further north *A. glabripennis* is found, the longer it takes for a generation to develop. In Taiwan, there is one generation per year. In eastern China, a generation may take 1 or 2 years to develop, whereas in northern China (Neimenggu), a single generation takes 2 years to develop. Thus, there can be one or two overlapping generations per year, depending upon the climate and feeding conditions. Adults emerge between May and October and live for about a month. The most active period for adult activity is late June to early July (Li and Wu, 1993). The adults usually remain on the tree from which they emerged, or fly short distances to nearby trees, and feed there on leaves, petioles and young bark. Egg deposition begins a week after copulation. The eggs, about 32 per female (Wong and Mong, 1986), are laid one by one under the bark, in oviposition slits chewed out by the female. Slits are generally cut on the eastern side of the trunk or of branches greater than 5 centimeters /1.96 inches in diameter (Li and Wu, 1993). Eggs hatch after about 2 weeks. The larva feeds in the cambial layer of bark in the branches and trunk and later enters the woody tissues. Pupation takes place in chambers in the heartwood, accompanied by the presence of characteristic wood 'shavings' that are packed into the chamber. Adults emerge from circular holes, millimeters/ 0.39 inches across, above the sites where the eggs were laid.

Ceroplastes spp.: Medium Risk

In the United States, all species of *Ceroplastes* appear to have similar life histories with 4 instars in the female and 5 in the male. In most areas of the US, species of *Ceroplastes* have only 1 generation per year. In the spring, each overwintering female lays from several hundred to several thousand eggs beneath her body. The crawlers hatch in late spring or early summer, and 2 or 3 days later leave the brood chamber and begin to settle. In some species, the crawlers settle mainly

on the stem of the host and remain at the site for the duration of their life cycle, whereas others usually settle on the leaves as crawlers and migrate to the stems as third instars (Gimpel, 1974). Dispersal occurs in the first and third instar crawler stage. The dispersal rate, pattern, and distance depend largely on population density, host availability, location on host (height or distance from the soil surface), and other environmental factors including wind speed, humidity, and temperature (Wakgari and Giliomee, 1999; Wakgari, 2000; Wakgari and Giliomee, 2000; Ben-dov et al., 2005).

Chilo spp.: High Risk

Adults are nocturnal and become active early in the evening. Some early larval instars may disperse to other plants by ballooning on extruded silk threads or by floating on leaf fragments (CPC, 2006). All rice stem borers lay eggs in masses usually containing 50-250 eggs. A single female can lay several egg masses per week. *Chilo suppressalis* adults lay their eggs on the basal half of rice leaves. The eggs hatch in about 5 days and the larva is fully grown in about 25 days. Young stem borer larvae feed on young rice leaves then penetrate and feed on the leaf sheath and the inner tissues. Later, they eat their way into the stem and feed inside it. Moths emerge after about 5 days of pupation. The life cycle requires about 35 days to complete. Stem borers generally produce about 6 generations a year, although the number depends on environmental factors. In temperate areas such as central Japan and Korea, where only one rice crop per year is grown, there are two stem borer generations per year. In tropical and subtropical regions with single rice cropping regimes, they occur in 3-4 generations per year (Exosect, 2005).

Chlorophorus spp.: High Risk

Various cerambycids are capable of long-distance aerial transport. Several cerambycine species have strong powers of dispersal because adults feed on host plant species different from the larval host (CPC, 2006). Strong dispersal abilities are considered adaptive because adults must disperse alternately between their food plants and the stressed host plants where they mate and oviposit. Males are usually more active than females because they play a role in mate location; however, convincing evidence of long-range pheromones in the cerambycids has been limited to a few species. Pheromones produced by females operate over at least moderate distances (>1.5 kilometers/0.9375 miles). If capable of long-distance aerial transport, *Chlorophorus annularis* could be expected to move rapidly beyond infested sites (Auclair et al., 2006). Inspection data (PEST ID, 2006) show over 300 live *Chlorophorus* spp. were intercepted on bamboo commodities from China either at US ports of entry and on interdictions inland from 1992 through 2005. Hence, it is known that live eggs and/or larvae of the species can survive harvesting, dyeing, packing, and shipment into the US on infested commodities. Commercial distribution of bamboo stakes with *C. annularis* infestation move quickly and widely throughout the US and hence this pathway greatly accelerates spread of the pest. The larvae are frequently carried to Europe within bamboo canes from China, India, and Thailand (Auclair et al., 2006). According to Weidner (1982), development usually occurs in one year; however, because of drying of the bamboo, development may be extended to two or more years (Schall, 2000).

Cryptotermes spp.: Medium Risk

Cryptotermes spp. spread slowly (15 to 300 meters per year/≈0.932-984 feet), and less than 1% of the alates eventually establish a new colony. However, an important factor concerning

subterranean termites is that infested untreated Wood Packaging Material (WPM), moved by humans in commerce, spread termites at a much faster rate than their natural spread. Also, once established at the receiving seaport, airport, or inland destinations (warehouses, etc.), subterranean termites are often not detected because of their cryptic habits; colonies are quite large before the first evidence of their activities is apparent. By this time, multiple colonies will already be established adjacent to the invading colony, and additional WPM could become infested and distributed within the continental United States or its possessions (Pasek, 2000).

Dendroctonus spp.: High Risk

The Eurasian bark beetle attacks trunks of living, mature trees in either vigorous or weakened condition. Emerging adults frequently attack the same or a neighboring tree but can fly considerable distance to attack distant trees. In contrast to most bark beetles, this species usually mates before emerging, attack singly instead of en masse, and thus kills a small patch of the cambial zone but seldom the entire tree. Over time, however, the tree can be weakened and predisposed to other bark beetles. Except for dispersal and host-finding by emerged adults, all stages occur beneath the bark in the cambial zone. The entire life cycle requires 1 to 3 years, depending on variations in ambient temperatures and other factors. Because of these variations, adults can be present at any season, and under controlled lab conditions, are ready to emerge after 44 days at 20 ºC (68 ºF). The spread potential of *Dendroctonus* spp. is very high because it attacks healthy as well as low vigor hosts that are widespread and common, particularly in coastal Pacific Northwest and Alaska and the continuous belt of spruce forests in Northern North America (Tkacz, 1991).

Dendrolimus spp.: High Risk

Adult *Dendrolimus sibericus* and *D. pini* are good fliers. Although the larvae do not balloon, they are well known for their crawling tenacity. A relentless spread within their main and secondary hosts would be expected. The adults are active from late June through August. Females oviposit 150 to 200 eggs in linear clusters on twigs and needles. Caterpillar activity is noted in July-August when they devour needles up to the fascicles. In fall, about mid-September to early October, the caterpillars are approximately 25 millimeters/≈ 1 inch long and they drop to the ground. There they crawl into the litter and enter diapause. In spring, perhaps about April, when soil temperatures reach 4 to 5 ºC (39.2 to 41 ºF) , the caterpillars emerge from overwintering sites, crawl back up their hosts, and begin to feed on old needles as well as on newly flushing buds. Most of the population begin to pupate in June and July; they form silken cocoons on branchlets intertwined with foliage. Apparently these insects also pupate in bark crevices (Tkacz, 1991).

Eutetranychus spp.: Medium Risk

Spider mites mainly disperse by wind currents, and in the field this is probably the main means of dispersal for *Eutetranychus orientalis*. In international trade, they might be carried on citrus plants. Under conditions in Israel, females oviposit along the midrib on the upper side of the leaf but in winter may deposit eggs on the lower side. Up to eight eggs a day or 35 in a lifetime may be deposited by one female. Under optimum laboratory conditions, eggs hatch in 2.5 to 3.0 days. Depending on the season, an adult emerges in 7 to 24 days and lives for 12 to 21 days. Up to 18 generations a year have been recorded. Climatic conditions which favor the development of this

mite are high temperatures ranging from 21 to 27 ºC (69.8 to 80.6 ºF) and a medium relative humidity ranging from 59 to 70 percent (USDA, 1969).

Hylobius spp.: High Risk
In spring or early summer, the beetles migrate by flight or by walking to clear cuttings from adjoining stands. Adults are strong fliers and can travel considerable distances to find suitable host material. They are attracted by volatiles (mainly alpha-pinene and ethanol) emanating from the resin of fresh conifer stumps left during clear-felling (Tilles et al., 1986; GPDD, 2006). From May to September, females lay eggs in punctures they gnaw in the bark of fresh pine and spruce stumps; but in regions with short growing seasons, they lay eggs from May to the end of July. Each female oviposits from 60 to 100 eggs during this period. Hatching takes place in about 2 weeks, and the larvae bore into the phloem and excavate longitudinal feeding tunnels in the root-phloem. There are five instars that develop over a period of 13 to 14 months. Mature larvae pupate in cells cut into the sapwood (chip cocoons) or in the outer bark. The pupal stage lasts about 2 to 3 weeks, and teneral adults remain in their chip cocoons or cells cut in the bark for an additional 2 to 3 weeks. Then, the sexually undeveloped adults emerge and do maturational feeding on young coniferous seedlings from July through August. For maturational feeding, the adults feed on seedling bark and phloem tissues of Douglas-fir, Scotch pine, white pine, Norway spruce, larch, and fir. This feeding causes significant seedling mortality, especially when a harvested area is regenerated soon after timber removal (Tkacz, 1991).

Hylurgus spp.: High Risk
Hylurgus spp. adults can disperse over distances of several kilometers (Fabre et al., 1975), and an infestation can spread as long as host material is available. This strong capability of spread has been demonstrated in Australia (Neumann, 1987), where *H. ligniperda* spread up to 25 kilometers/15.625 miles from a fire-killed area within 18 months, and in Chile, where the beetle now occupies the entire distribution on Monterey pine after being introduced into the country in the mid-1980s (Pasek, 2000). *H. ligniperda* usually has one generation per year in Europe, although up to three generations may occur in the southern regions. Two generations were recorded in the Mediterranean region of France. In New Zealand, the development from initiation of brood galleries to the first appearance of recently-molted adults takes 10 to 11 weeks. In southern France at 25 ºC (77 ºF), the beetle requires 45 days to develop from egg to adult (Tribe, 1991). Flight time for the adults occurs from March to April in Europe (Grune, 1979). In southeastern France where two generations occur, the major activity peak is in the spring followed by a shorter peak in the autumn. The peak in the autumn coincides with the second generation; adult beetles then enter a winter hibernation. In South Africa, the major activity peak is in the autumn with minor peaks in spring and summer (Tribe, 1991).

Lymantria spp.: High Risk
In temperate environments, masses of eggs (500 to 1,000) pass the winter on or under tree bark, rocks, fallen branches, or manmade objects (signs, litter, etc.) (Campbell et al., 1975). One generation appears each year, and hatching occurs from April to late May, depending upon location and weather, though egg hatching usually coincides with budbreak of most hardwood trees (Leonard, 1981). Natural dispersal of *Lymantria dispar* occurs when newly hatched larvae climb to the tops of trees or other tall objects and suspend themselves from silken threads,

allowing the wind to move them to potential hosts. In non-mountainous terrain, the larvae may be deposited within 0.8 kilometer (½ mile) of their source; however, in mountainous terrain, the larvae may be dispersed up to 4.8 kilometers /3 miles (Taylor and Reling, 1986). During the next 1-1 ½ months, they pass through five to six instars, feeding during the evening on the foliage and migrating to rest in protected locations during the day. Pupation occurs in these resting locations, although at outbreak densities, pupation occurs in less protected sites; adults emerge in about 2 weeks, mate, and lay their eggs (Campbell et al., 1975). The gypsy moth is often spread artificially when egg masses or pupae are transported to new areas on vehicles or outdoor articles. Egg masses may be deposited on Wood Packaging Material when cargo originates near areas infested by gypsy moths. Crates carrying household goods are a common substrate for hitchhiking gypsy moth egg masses (Pasek, 2000).

Monochamus spp.: Medium Risk

Susceptible host tree genera range from Central America north through Canada and the Pacific to Atlantic Oceans. Rate of natural spread may be slow (probably only a few miles per year), but spread would be greatly enhanced by the transportation of logs, firewood and lumber (non-kiln dried). *Monochamus sutor* females can lay at least 50 eggs. Eggs are laid in the phloem at the base of niches excavated by the females in the bark of tree boles and logs. From one to six eggs may be found in individual niches and thousands of eggs may be laid in a single log or tree. The neonate larvae feed on the phloem and sapwood throughout their first year. The larvae overwinter primarily as second instars and resume feeding the following spring. During the second year, the larvae continue feeding and bore deeper into the wood. There are five larval instars. The mature larvae form pupal cells in the wood near the surface where they spend the second winter. Pupation and adult emergence occurs the following spring. Typically *Monochamus* adults become sexually mature 7 to 10 days after emergence. The sexually mature beetles are attracted by volatile compounds to weakened, dying, or recently dead trees or logs to mate and oviposit. Trees weakened by fire, defoliation, or other disturbances are particularly susceptible to attack. Windthrown trees and logs are also highly attractive to breeding adult beetles (Tkacz, 1991).

Scolytus spp.: High Risk

The bioloogy of *Scolytus morawitzi* is presumed to be very similar to the biology of *S. intricatus*. Since the biology of *S. intricatus* has been published, it will be described here to represent that of *S. morawitzi*. *S. intricatus* (as an example of a quarantine pest wood borer) has the potential to spread throughout the contiguous 48 states given that at least one species of oak in native to each state except for Alaska and Hawaii. Although adult flight is generally less than 100 meters/≈ 328 feet , adults can easily be moved longer distanced by wind and through human transport of infested host material, particularly in oak firewood, which is highly preferred for heating (Pasek, 2000). Except when adults are seeking new host material for breeding or shoots for maturation feeding, all life stated occur under bark within the cambial region. In England, *S. intricatus* completes one generation per year (Yates, 1984), whereas two generations per year are completed in southern Germany (Kamp, 1951). *S. intricatus* typically overwinters in the late larval stages (Lekander et al., 1977; Yates, 1984), or occasionally in the pupal stage (Doganlar and Schopf, 1984). Overwintering and subsequent pupation usually take place in the outer bark if the bark is over 4 millimeters /≈ 0.16 thick or in the outer sapwood if the bark is thinner (Lekander et al., 1977; Yates, 1984). Pupation usually occurs in late spring or early summer and lasts for 1 to 2

weeks (Yates, 1984). In England, adult emergence usually spans 2-3 weeks and, depending on local temperatures, occurs from mid-May through late June (Yates, 1984). Upon emergence, adults fly to the crowns of trees, primarily oaks, and conduct maturation feeding on the twigs, usually at the juncture of current-year and 1-year-old growth (Lekander et al., 1977; Munro, 1926; Yates, 1984). After shoot feeding, adults seek breeding sites, which are usually the trunks and branches (> 5 centimeters/≈ 2 inches in diameter) of weakened and dying oaks as well as recently fallen branches (Gibbs, 1978; Lekander et al., 1977; Yates, 1981, 1984). Depending on the location and the number of generations per year, adult activity usually occurs between May and September (Doganlar and Schopf, 1984; Lekander et al., 1977; Yates, 1981, 1984). There is little evidence that reemergence of parent adults occurs (Yates, 1984).

Sirex spp.: High Risk

If *Sirex* spp. becomes established, it is likely to spread throughout the United States. Natural dispersal of *Sirex* spp. has been estimated at 8 to 24 kilometers /5 to 15 miles per year in Australia (Haugen et al., 1990). Adult females are capable of long dispersal flights and have high fecundity. Both males and females are strong fliers and known to fly long distances to forest fires. Also, populations could be transported and established throughout the United States by movement of infested logs and lumber. Adults have also commonly emerged from finished lumber in homes, pallets, boxes, and so forth. So, spread could also take place over very long distances (transcontinental) in finished products unless all lumber is kiln treated immediately after milling (Tkacz, 1991; Pasek, 2000). *Sirex* spp. normally completes one generation per year in southeastern Australia, but a portion of a population may take 2 years in the cooler climates of Tasmania and New Zealand (Taylor, 1981). In Australia, adults emerge from early summer to early winter with peak emergence in late summer or early autumn (Morgan and Stewart, 1966; Neumann and Minko, 1981). Females are attracted to physiologically stressed trees after an initial flight, which is usually less than 3.2 kilometers /2 miles but with the potential of 160 kilometers/100 miles. They drill their ovipositors into the outer sapwood to inject a symbiotic fungus (*Amylostereum areolatum*) and a toxic mucus. If the suitable, eggs are laid into the sapwood (up to three separate eggs at a drill site) (Pasek, 2000). Fecundity ranges from 21 to 458 eggs, depending upon size of the female (Neumann and Minko, 1981). The eggs usually hatch within 10 to 15 days, but some may overwinter in cooler climates. Unfertilized eggs develop into males and fertilized eggs develop into females. All larval instars feed on the fungus as they tunnel through the wood. Larval galleries may penetrate to the center of a tree. The number of instars varies from 6 to 12, and the larval stage generally takes 10 to 11 months. Mature larvae pupate close to the bark surface, and adults emerge about 3 weeks later (Taylor, 1981).

Tomicus spp.: High Risk

Tomicus piniperda is currently under official control in the United States. Pine shoot beetles spread naturally by flying to suitable host material. Populations may accumulate in log yards and then move on to healthy trees nearby. Infestation spread from a concentrated source of breeding material to adjoining pine stands may generally be limited to about 2 kilometers/1.25 miles per year (Langstrom and Hellqvist, 1990). Although the pine shoot beetle may fly up to a kilometer or more, it may spread farther on wind currents, perhaps tens of kilometers downwind. Pine shoot beetles may be transported as brood in infested logs or wood articles containing bark or as adult beetles in pine shoots or in overwintering sites at the base of tree trunks. The primary

means of new introductions to the United States is likely to be through infested wood articles containing bark, such as in wood packaging material (WPM) made of pine. Redistribution from established populations in the United States to other regions of North America may occur on recently dug or cut plant stock, logs, rough lumber with bark intact, or nursery stock (Pasek, 2000). One generation per year is the norm for the pine shoot beetle (Langstrom, 1983). Overwintering adults initiate flight on the first warm (10-12.22 ºC /50-54 ºF) days of spring, which probably occurs in February or March in the Great Lake States and in the Northeastern United States (Haack and Lawrence, 1995; Haack et al., 1998). Adults quickly colonize either recently cut pine stumps and logs, or, at times, infest the trunks of weakened trees. Some adults will disperse at least several hundred meters after emerging from brood material even when material suitable for colonization is abundant nearby (Poland et al., 2000), and marked adults have been recaptured as far as 2 kilometers/1.25 miles from a release point (Barak et al., 2000). Male and female pairs construct individual longitudinal egg galleries within the inner bark and outer sapwood (USDA, 1972). After eggs hatch, larvae construct irregular feeding galleries of 4-9 centimeters 1.5 to 3.5 inches in length that radiate from the egg gallery. Most larvae complete development, pupate, and transform into adults in May and June (Pasek, 2000).

Risk Element 4: Economic Impact

Introduced pests cause a variety of direct and indirect economic impacts, such as reduced yield, reduced commodity value, loss of foreign or domestic markets, and non-crop impacts. Factors considered during the ranking process included whether the pest would: effect yield or commodity quality, cause plant mortality, act as a disease vector, increase costs of production including pest control costs, lower market prices, effect market availability, increase research or extension costs, or reduce recreational land use or aesthetic value.

Adoxophyes spp.: High Risk

The economic impact of *Adoxophyes orana* is difficult to measure because it frequently occurs in mixed populations with other closely related species, and damage can result from the activity of secondary pests (Whittle, 1985). *A. orana* is a leafroller and immature forms will use foliage for shelter while feeding on fruit (Whittle, 1985; CPC, 2006). Larvae will feed externally on fruit creating a “gnawed” or misshapen appearance. Feeding directly on fruit can cause tremendous reductions in the quantity and quality of fruit. Crop losses from 10-50% have been attributed to this insect in fruit growing regions. In the Netherlands, damage in 33,000 hectare/81543 acre of apples amounted to $1.2 million in the late 1980s (de Jong et al., 1971; Whittle, 1985). External feeding may also enable the attack of secondary organisms which further damage the crop, and reduce shelf and storage life (de Jong and Van Dieren, 1974; Whittle, 1985; INRA, 2005). Although this insect feeds on foliage and young shoots in addition to fruit (CPC, 2006), this feeding may not significantly affect plant growth (INRA, 2005). The impact of *A. orana* on forest productivity has not been well studied. Establishment of *A. orana* in the United States could also adversely impact domestic and international trade. Australia considers this insect a high risk pest (CPC, 2006). Consequently, establishment of the insect would likely result in domestic or international quarantines and/or additional quarantine treatments to prevent the spread of this pest (Davis et al., 2005).

Agrilus spp.: High Risk

The economic impact of *Agrilus planipennis* (under official control in the United States) has already been substantial, and it would be staggering if this exotic pest continues to spread. It has the potential to virtually eliminate ash as a component of North American forests, with dramatic effects on ecosystem processes as well as plant and animal communities. Ash species, which inhabit a variety of soils and ecosystems, are dominant throughout the forests of eastern North America. Michigan and Ohio have already experienced a serious economic impact from *A. planipennis*. Ash has been one of the most commonly planted trees in landscapes and urban forests. In Michigan, *A. planipennis* has already caused an estimated $11.6 million in damage to landscapes and woodlots, and quarantines have restricted the sale of $2 million worth of nursery stock. In addition, costs of removing dead and dying ash trees have overwhelmed municipal budgets in the affected counties, and private property owners must often pay in excess of $1,000 per tree for removal of large shade trees. A quarantine on ash timber has also had a negative economic impact on sawmills, tool handle factories, and firewood dealers in Michigan and Ohio. Eradication costs for the localized *A. planipennis* infestation in Lucas County, Ohio in April 2003 exceeded $300,000, while projected costs of eradication in southeastern Michigan will exceed $350 million over the next 10 to 13 years (Herms et al., 2006).

Anoplophora spp.: High Risk

Anoplophora glabripennis (ALB) is a major forest pest in China. Recent introductions into the US demonstrate a formidable potential for causing damage to many important forest and urban trees in North America. Cavey (2000) rates *A. glabripennis* as a pest of High Economic Risk Potential because: a) the organism attacks hosts or products with significant commercial value (such as for timber, pulp, or wood products); b) the organism directly causes tree mortality or predisposes the host to mortality by other organisms; c) the damage by the organism causes a decrease in value of the host affected, for instance, by lowering its market price, increasing cost of production, maintenance, or mitigation, or reducing value of property where it is located; d) the organism may cause loss of markets (domestic or foreign) due to presence and quarantine significant status; and e) no effective control measure exists. Cavey (2000) also states that "eradication efforts in New York and Illinois have resulted in the destruction of thousands of trees. Affected areas lose aesthetic and property values as large infested trees are replaced by young, often less desirable ALB resistant trees. Because control options are presently limited to tree removal, control costs are and will likely remain high." Regarding *A. chinensis*, McDougall (2001) also gives it a rating of High for Economic Risk Potential because "the ability of this insect to attack a wide range of fruit and nut trees is expected to have a negative impact on fruit crops. This would result in higher production costs and higher costs to the consumer." Nowak et al. (2001) have estimated that the maximum potential national urban impact of *A. glabripennis* would be a loss of 34.9% of total canopy cover, 30.3% tree mortality (1.2 billion trees) and value loss of $669 billion USD.

Ceroplastes spp.: High Risk

Several *Ceroplastes* species are considered to be serious economic pests for a number of reasons. Most secrete large quantities of honeydew which often covers the leaves and stems of the host, and acts as a medium for black sootymolds that give the host plant an unsightly appearance. The large size and light color of most species cause their presence to be readily noticeable and

therefore detracts from the appearance of the host. Plants with heavy infestations often show evidence of a general decline in vigor and develop an unsightly "leggy" appearance with the leaves of most branches confined to rosettes of new growth at the tips. Severe infestations may cause dieback of the host. In nurseries, infestations of wax scale are a particular problem since many states require nursery stock to be free of disease and insect pests before sale, and costly spray programs may be necessary to destroy infestations (Gimpel, 1974).

Chilo spp.: High Risk

Chilo suppressalis is a serious pest of rice in Asia and causes heavy damage to corn, sorghum, and sugarcane in India, Iraq, and Egypt. In northern areas of Indochina, China, Formosa, and Japan, the insect is responsible for annual damage of 5 to 10 percent of rice crop with local damage up to 60 percent. All parts of sugarcane, sorghum, and corn plants are attacked except the roots (USDA, 1957). Larval infestation results in extensive damage and crop loss (Kanno, 1984). One larva may destroy up to 10 plants (Hill, 1983). Damage to rice was so heavy for several years in Hawaii that the crop became unprofitable and much of the land was abandoned. Likewise, cultivation of corn was discontinued in the Mesopotamia area of Iraq in 1918 following severe infestations in that region. Severely infested rice has a high percentage of dead shoots and laves and fails to set grain (USDA, 1957). In Asia, yield losses due to the two most important species of rice stem borer, the yellow and striped stem borers, range from 1-20%. However, during outbreak conditions, yield losses may range from 30 to 100% (Exosect, 2005).

Chlorophorus spp.: High Risk

Cerambycidae are all plant feeders, most feeding as larvae on woody material (trees, shrubs, bamboo) including leaves, stems, and roots. A few larvae species are specialized to develop in the stems of herbaceous plants. They attack mostly dead or damaged plants, but some may attack healthy and living individuals. Because of their moderate to large size and long developmental period, they can cause considerable damage to commercial timber trees or crops (CPC, 2006). Given the breath of the potential tree and crop hosts in the US, it is estimated that more than $30 billion in agriculture and forest production is at risk annually, including $20 billion of crop exports. Alone, US corn (maize) production in 2005 was valued at about $21 billion, of which $14.7 billion was exported. In addition to potential loss of crops, the cost of treatment with insecticide and integrated pest management is assumed to be considerable if the pest was to establish and spread widely in the US (Auclair et al., 2006).

Cryptotermes spp.: High Risk

Drywood termites (*Cryptotermes* spp.) cause a small portion of the economic losses due to wood-destroying insects in the United States. However, where they are abundant (southern Florida, southern California, and Hawaii), the costs for control and repair of their damage rival that of subterranean termites. Potential economic losses caused by all species of *Cryptotermes*, but primarily *C. havilandi* and *C. dudleyi*, could be comparable with those currently caused by the exotic *C. brevis*. If *C. havilandi* or *C. dudleyi* were to be as aggressive as *C. brevis*, an additional $100 million in damage and control costs within 30 years could result (Pasek, 2000).

Dendroctonus spp.: High risk

The economic damage potential for *Dendroctonu*s spp. is high because it attacks, weakens, and

sometimes kills mature trees of commercially important conifer species. This pest has successfully attacked Sitka, white, black, and blue spruces where these North American species have been planted in Europe, and Sitka spruce has been repeatedly shown to be even more susceptible than Norway spruce, its primary European host (Tkacz, 1991).

Dendrolimus spp.: High Risk

Dendrolimus spp. feed primarily on conifers which are widely distributed and are an economically important North American timber and ornamental crop. The greatest potential damage would be a reduction in expected yields of intensively managed stands. All *Dendrolimus* species are large and voracious feeders and possess urticating hairs. Accordingly, not only would defoliation foster high forest protection costs, but the presence of larvae would cause allergic responses in humans (Tkacz, 1991). Undoubtedly, the American public would react strongly against this "high-profile" pest, and the government would be pressured into spending millions in pest eradication programs (Tkacz, 1991).

Eutetranychus spp.: High Risk

Heavy infestations of *Eutetranychus orientalis* have occurred on citrus in Ethiopia and Iran. The species prefers citrus leaves, sucking the sap from the upper side of the leaf. The chlorotic leaves appear finely stippled and silvered. As the leaves drop from the tree, the twigs and branches dry. As a result of the defoliation by the oriental red mite, very young trees die but older trees lose the outer branches. In severe cases, the species may affect blossoming or fruit set. Under drought conditions, damage from a light infestation may be as serious as from a heavy one (USDA, 1969). *E. orientalis* was found to cause severe damage to both citrus and papaya. *E. orientalis* is recognized as an important pest of citrus in the Middle East, Africa, Asia, and Australia (Jeppson et al., 1975). *E. orientalis* is a major pest of citrus in India (Das and Gupta, 1991). The mite has been known as a pest on citrus in the Jordan Valley for almost a century (Palevsky et al., 2001). This species is not considered to be an important economic pest throughout most of Queensland in Australia (Walter et al., 1995). However, it does occur in the Emerald area of Queensland where it is a serious problem on citrus. Pesticide spray drift from adjacent cotton fields to citrus is believed to exacerbate the spider mite problem. High densities of spider mites then develop in the citrus orchards (Childers, no date). A severe infestation of *Eutetranychus* spp. could have a large impact in Florida and California. Because of its ability to cause severe economic damage, it is a pest of concern to the North American Citrus industry.

Hylobius spp.: High Risk

The economic damage potential for *Hylobius* spp. is high; they would readily breed in pines and spruce breeding material, and maturational feeding would destroy planted seedlings. Worse would be the potential vectoring of the black stain root disease. As carefully planned harvesting operations; thinking regimes; and replanting programs, utilizing expensively selected planting stock, become routing forestry practices, little growth loss or stand mortality will be tolerated. In other words, as the economic damage level allowed in intensively managed stands drops, *Hylobius* spp. will become an increasingly important economic pest (Tkacz, 1991). *Hylobius abietis* is a pest of great economic importance damaging young conifer plantations. In the UK, the protection of forest plantations against beetles of *H. abietis* costs the Forestry Commission approximately £2 million (≈ 4.2 million USD in 2005 dollars) per annum (Leather et al., 1999).

Hylurgus spp.: High Risk

A concern over the introduction of *H. ligniperda* is its potential as a vector of black-stain root disease [caused by *Leptographium wageneri* (Kendrick) M. J. Wingfield], which affects pines in the United States. The association of *Leptographium* spp. with *H. ligniperda* is very high (MacKenzie, 1992). Even if exotic species of this fungal group did not produce pathogenic effects similar to the native black-stain root disease, there could also be the potential for *H. ligniperda* to become a more efficient vector for black-stain root disease than the native vectors in the United States on the basis of the efficiency of spread it has demonstrated in other environments such as Chilean plantations of Monterey pine (Cogollor, 1991). *H. ligniperda* is occasionally a mortality agent (Neumann, 1987; Ciesla, 1988) and can infest seedlings or pole-sized trees if they are growing under stressed conditions.

Lymantria spp.: High Risk

Lymantria dispar is a serious pest of hardwood forests and shade trees in the United States. Even otherwise healthy trees defoliated by gypsy moths are seriously weakened, and defoliation over 2 consecutive years can kill a tree. Urban trees have a much greater value than those grown for timber, and the loss of an urban tree results not only in removal and replacement costs, but also a reduction in esthetic and property values. In 1973, the value of trees lost to the gypsy moth was estimated at $375 (≈ $1656 in 2005 dollars) per tree. An owner's willingness to pay to prevent damage has been estimated at $27 to $494 (≈ $119 to $2181 in 2005 dollars) per household in various studies (Leuschner et al., 1996). Loss of property value given 15 percent tree mortality due to gypsy moth defoliation has been estimated at about $1175 (≈ $5188 in 2005 dollars) per acre (Payne et al., 1973). Because forests are used for many types of activities, the value loss caused by the gypsy moth is more difficult to predict than for urban areas. Value loss to Northeastern forests, assessed in 1978, ranged from $0 to $468 (≈ $0 to $2066 in 2005 dollars) per acre, depending on use, and averaged $14 (≈ $62 in 2005 dollars). Since 1924, gypsy moth defoliation has fluctuated widely from a low of 50.5 hectare/125 acres in 1958 to a high of 52,151,09 hectare/12,886,535 acres in 1981 with an average defoliation per year of 42,593,2 hectare/1,052,479 acres per year (USDA Forest Service, 2006). Annual costs to control the gypsy moth since 1980 exceeded $35 million (≈ $42.5 million in 2005 dollars) (Wallner, 1996), and the USDA Forest Service has spent about $11 million (≈ $14 million in 2005 dollars) annually (Campbell and Schlarbaum, 1994).

Monochamus spp.: High Risk

Monochamus spp. represent a serious economic threat to Pacific Northwest forests and the forest industry. Larval feeding can significantly degrade the value of salvageable timber or logs in storage. Current outbreaks of western spruce budworm, Douglas fir tussock moth, and numerous bark beetle species are creating abundant breeding sites for these cerambycids if they were to be introduced into the United States. *Monochamus* spp. could drastically reduce the potential for salvaging timber damaged or killed by native pests or wildfires. In the Eastern United States, *Monochamus* spp. "often causes heavy losses in windthrown or fire-killed timber in sawlogs left too long in the woods before milling, and in improperly handled pulpwood" (USDA Forest Service, 1985). *Monochamus* spp. are vectors of the pine wood nematode species complex (*Bursaphelenchus* spp.). Direct damage by these beetles could be less important than their role in

introducing or vectoring nematode-induced pine wilt disease (Tkacz, 1991).

Scolytus spp.: High Risk

If *Scolytus* spp. were only to colonize trunks and branches of trees that had recently died or been cut, then there would be relatively little economic impact. However, because *Scolytus* spp. can attack and kill stressed oaks in its native range, it would likely behave similarly if introduced into the United States. The major concern with *Scolytus* spp. is that it is likely to serve as an efficient vector of oak wilt fungus. Oak wilt, which occurs in the Eastern United States, is now transmitted primarily by native sap beetles in the family Nitidulidae and to a lesser degree by the native branch- and twig-infesting bark beetles in the genus *Pseudopityophthorus*. Because *Scolytus* spp. is known to carry the spores of other wilt disease pathogens in Europe, it is possible that it could also transmit the oak wilt fungus. If *Scolytus* spp. were to spread the oak wilt fungus, then the potential losses of the oak resources of the United States would be great. Oaks are common trees in cities, yards, parks, campgrounds, and forests throughout the United States. If oak wilt reached outbreak levels, huge dollar amounts would have to be spent by governments and private citizens on tree removal and replanting efforts (Pasek, 2000).

Sirex spp.: High Risk

Sirex spp. has the potential to cause significant mortality in overstocked pine plantations and stressed forest stands. In Australia, *Sirex noctilio* caused up to 80% tree mortality in *Pinus radiata* plantations. In 1 year, *S. noctilio* killed 1.75 million trees in 570,619 hectares/141,000 acres of plantations aged 10 to 30 years (Haugen and Underdown, 1990). The potential damage due to *S. noctilio* in Australia was estimated at $Aus 1-4 billion (≈ $1-2 billion in 1998 US dollars) for each rotation (Pasek, 2000). An introduced population of *S. noctilio* would potentially have significant economic losses in *P. taeda* plantations in the Southeastern United States. The species is currently under official control in the United States. Pine forests of the Western United States could be impacted by *S. noctilio* introduction. The susceptibility of the commercial western pine species to *S. noctilio* attack is not known. However, even with a conservative estimation of tree mortality, an economic analysis projected losses of $24-$130 million (≈ $32.5-$176 million in 2005 dollars) in the Western United States (USDA Forest Service, 1992). An efficient biological control agent is available that can reduce and maintain *S. noctilio* populations below the economic damage threshold. A parasitic nematode, *Deladenus siricidicola* Bedding, can be mass produced and inoculated into *S. noctilio* populations as they invade and colonize new territories (Bedding, 1972; Bedding and Akhurst, 1974, 1978). The minimum cost to establish the nematode was estimated at $3.50 per acre (≈ $4.81 per acre in 2005 dollars), but a less intensive program could be implemented in natural stands compared with pine plantations.

Tomicus spp.: Medium Risk

Most often *Tomicus* spp. breeds in dead, dying, and downed pine material, and feeding by larvae seldom results in economic loss. Exceptions have been observed in Yunnan, China, where extensive tree mortality occurred because of trunk attacks in Yunnan pine stands stressed by winter drought and in areas affected by fires during the 1970's (Haack et al., 1999). In Russia, beetle populations have built up after fires and in some cases have caused serious damage (Pasek, 2000).

Risk Element 5: Environmental Impact

The ratings for this risk element are based on three aspects. The first aspect is whether the pest appears capable of disrupting native plants based on the pest's habits exhibited within its current geographic range. The second aspect is whether the pest's presence will stimulate the need for additional chemical or biological control programs. The third aspect is whether the pest is likely to directly or indirectly impact species listed as Threatened or Endangered (50 CFR § 17.12) by infesting or infecting a listed plant that is in the same genus as its hosts. When a pest is known to infest or infect other plants within the same genera, and feeding preference data does not exist with the listed plant, then the listed plant is assumed to be a potential host.

Adoxophyes spp.: High Risk
Adoxophyes orana has the potential to directly affect forest composition and ecosystem function because it feeds and develops on a number of forest understory species. *A. orana* may indirectly harm the environment by stimulating management actions that inadvertently impact non-target species. Parasitoids have been identified for *A. orana*, so biological control seems like a viable management option (Cross et al., 1999). The establishment of *A. orana* or any new pests of fruits and vegetables destined for fresh markets is likely to stimulate greater use of either chemical or biological controls to ensure market access (Davis et al., 2005). *Adoxophyes* spp. is known to infest three genera on the Threatened and Endangered (T&E) Species list: *Betula*, *Prunus*, and *Ribes* (50 CFR § 17.12).

Agrilus spp.: High Risk
While most borers native to the United States only kill severely weakened trees, *Agrilus planipennis* also kills healthy trees. Some of the trees attacked by the insect appear to have been stressed or weakened by drought, disease, or poor soil. However, many healthy ashes have been infested and killed as well. A. planipennis larvae tunnel under the bark of the host tree, feeding on the phloem tissue. The damage caused by the larvae disrupts the flow of nutrients between the tree's roots and canopy. This damage results in canopy thinning, branch dieback, and eventually tree death. Larvae can destroy ashes within two to four years, but a heavy infestation could kill a tree in as little as one year. If not contained, A. planipennis has the potential to wipe out ash as a component of US forests and landscapes. Ash is one of the most common Ohio trees. It is also one of the primary commercial hardwoods in the United States and a very popular landscape tree. The spread of this insect threatens natural resources, as well as the wood manufacturing, nursery, landscaping, and firewood industries that rely on ashes (OSU, 2004). *Agrilus* spp. is known to infest one genera on the Threatened and Endangered (T&E) Species list: *Quercus* (50 CFR § 17.12).

Anoplophora spp.: High Risk
According to Cavey (2000), because of its wide host range and ability to kill both healthy and stressed trees, *Anoplophora glabripennis* (ALB) has the potential to alter many North American ecosystems. This insect has attacked trees in North America not recorded as hosts in Asia (e. g. horse chestnut) and may find more suitable hosts in areas not presently infested. New hosts could include trees with limited natural ranges. ALB is likely to alter tree species composition and age

structure in broadleaf forests, especially those comprised largely of maples or poplar. Because willows are among ALB's preferred hosts, additional adverse impacts may occur in wetlands. Moreover, protection of urban areas could involve use of chemical insecticides with accompanying effects on non-target organisms. Cavey (2000) rates *A. glabripennis* as a pest of High Environmental Risk Potential because: a) the organism is expected to cause significant direct environmental effects, such as extensive ecological disruption or large scale reduction of biodiversity; b) the organism is expected to have direct impacts on species listed by Federal, Provincial, or State agencies and endangered, threatened, or a candidate; c) the organism is expected to have indirect impacts on species listed by Federal, Provincial, or State agencies and endangered, threatened, or a candidate; d) the organism may attack a host with a small native range; and e) the introduction of the organism would likely result in control/eradication programs that may have potential adverse environmental affects. *Anoplophora* spp. is known to infest nine genera on the Threatened and Endangered (T&E) Species list: *Betula*, *Hibiscus*, *Juglans*, *Lindera*, *Prunus*, *Quercus*, *Rhus*, *Styrax*, and *Ziziphus* (50 CFR § 17.12).

Ceroplastes spp.: High risk

Infestations of *Ceroplastes japonicus* occur on the foliage, stems, and branches. This results in reduced vigor and general debility of the host plant. Heavy infestations may result in chlorotic spotting and premature shedding of leaves, wilting, and dieback of stems. Honeydew deposited on the leaves and fruit serves as a medium for the growth of black sooty molds. The sooty mold results in a reduction of photosynthetic area and lowers the market value of ornamental plants and produce (GPDD, 2006). *Ceroplastes* spp. is known to infest 21 genuses on the Threatened and Endangered (T&E) Species list: *Abutilon, Amaranthus, Asplenium, Berberis, Betula, Buxus, Cucurbita, Eugenia, Euphorbia, Gardenia, Helianthus, Hibiscus, Ilex, Lindera, Prunus, Rhododendron, Rhus, Solanum, Spiraea, Ternstroemia,* and *Ziziphus* (50 CFR § 17.12).

Chilo spp.: High Risk

Rice stem borers are serious pests of rice. They infest plants from the seedling stage to maturity. Symptoms of stem borer damage are deadhearts and whiteheads. These physical symptoms on affected plants vary with the growth stage at which plant infestation began. Young stem borer larvae feed on young rice leaves then penetrate and feed on the leaf sheath and the inner tissues. Later, they eat their way into the stem and feed inside it. Stem borer larvae may feed within the stem without severing the growing plant parts at the base. This can redult in reduced plant vigor and many unfilled grains. Because the larvae and pupae, which cause the most damage, are concealed inside the stem, these pests are very difficult to control with insecticides (Exosect, 2005). *Chilo* spp. is known to infest three genuses on the T&E Species List: *Cyperus*, *Panicum*, and *Zizania* (50 CFR § 17.12).

Chlorophorus spp.: High Risk

Once established, *Chlorophorus annularis* would have the potential to damage the environment both directly, through feeding on crop and timber species, and indirectly because of environmentally harsh methods used to control pest populations. Several insecticides would probably be effective against the adults. Insecticide treatments may be of little or no value because of the expense for broad-scale under forest conditions. Indirect environmental damage could be caused when pesticides applied to control *C. annularis* leave the field, either as drift or

contaminated groundwater, and affect other species in the ecosystem. There is no literature indicating *C. annularis* serves as a vector of other pests or plant diseases if introduced into the US. Experience with other exotic species acting as disease vectors, however, suggests that this possibility should not be disregarded (Auclair et al., 2006). *Chlorophorus* spp. is not known to infest any genera on the T&E Species List (50 CFR § 17.12).

Cryptotermes spp.: Low Risk
Cryptotermes spp. would not likely cause large outbreaks or kill an excessive number of trees. Drywood termites would most likely feed on dead wood in live trees or dead wood on the ground (Pasek, 2000). *Cryptotermes* spp. is known to infest several genera listed on the T&E Species List (50 CFR § 17.12).

Dendroctonus spp.: High Risk
Alaskan and Pacific Northwest forests are largely composed of susceptible hosts for *Dendroctonus* spp. and these forests are often on steep watersheds important for the spawning of valuable stock of anadromous fish. Also, remnant, ancient forests with aesthetic and biological values could be affected if *Dendroctonus* spp. were to become established in the United States (Tkacz, 1991). *Dendroctonus* spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Dendrolimus spp.: High Risk
Damage by the *Dendrolimus* spp. is dramatic because even relatively few larvae can completely defoliate small conifers. Repeated defoliations of conifers result in severe attacks of secondary insects, such as *Ips sublongatus* and various species of Buprestids and Cerambycids, e.g., *Monochamus urussovii* on *Abies sibirica* and *P. sibirica*. A characteristic that makes *Dendrolimus* spp. particularly threatening is their wide ecological niche. They are found on a variety of coniferous hosts and have significant variations in their life cycles to "accommodate" different hosts and climatic conditions. Further indications of this plasticity is noted in the number of different species of the genus found in the coniferous forests of Northern China, e.g., *D. huashanensis*, *D. rubripennis*, and *D. taibaiensis*. Besides these examples, there is considerable taxonomic debate on the affinity of several other Lasiocampid genera that also attack conifers (Tkacz, 1991). *Dendrolimus* spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Eutetranychus spp.: High Risk
Feeding by this species on the upper leaf surface produces a multitude of gray spots, which gives leaves a chlorotic appearance. Infested leaves weaken and finally drop; twigs dry, which results in bare trees in the nursery or young neglected orchards. Injury is most severe in the fall, especially if the trees lack moisture. The combined effect of insufficient water and a few mites causes as much leaf drop and twig dieback as does a heavy mite population. In Israel, high populations can cause extensive defoliation and fruit drop (Childers, no date). Bodenheimer (1951) states that the mite is present on citrus trees in Israel all year, but damage does not become apparent until summer. The mites feed on the upper leaf surface, forming gray patches which cause the leaf to become chlorotic and to eventually drop. On young trees, the feeding causes the leaves to become chlorotic within a few weeks. Untreated, fruit-bearing trees become

severely affected, suffering leaf drop and dried twigs and branches; blossoming appears to be affect and fruit drop occurs as well (Baker, no date). *Eutetranychus* spp. is known to infest five genuses on the T&E Species List: *Manihot*, *Prunus*, *Solanum*, *Vigna*, and *Ziziphus* (50 CFR § 17.12).

Hylobius spp.: Medium Risk

Although the economic damage caused by these insects would not cause environmental problems, one of the suggested control strategies would. Seedling mortality can be reduced by dipping bare rooted seedlings in a slurry containing a pesticide. This potential practice would raise environmental concerns (Tkacz, 1991). In the absence of control measures, more than 50% of all planted trees will die in the first few years of establishment of *Hylobius abietis* (Heritage and Moore, 2000). In Northern Ireland, damage is highly variable and on some sites it may be minimal whereas on others it may cause the death of up to 90% of newly-planted seedlings (Wilson and Day, 1996). In southern and central Sweden, reforestations planted with unprotected conifer seedlings revealed an average of over 30% plant mortality caused by *H. abietis* after the first 2 years (Eidmann, 1981). *Hylobius* spp. is known to infest two genuses on the T&E Species List: *Betula* and *Quercus* (50 CFR § 17.12).

Hylurgus spp.: High Risk

If *Hylurgus ligniperda* was introduced and became a more efficient vector of the fungus that causes black-stain root disease, its activity could result in greater damage to the pine component of mixed-species forests. There could also be environmental concerns if this beetle-fungus relationship led to greater levels of pesticide use as a result of increased tree damage. Currently, the fungus *Leptographium procerum* is uncommon in the Northwestern United States (Sinclair et al., 1987), although it has been detected there on occasion (CPC, 2006). The introduction of *H. ligniperda* could broaden the distribution of this occasionally pathogenic fungus to pine forests or Northwestern Christmas tree plantations not previously exposed to the fungus that causes procera root disease. Other ecological effects of introduction could include the displacement of native bark beetles, such as *Hylastes* spp. and *Dendroctonus valens*, which occupy the same niche as *H. ligniperda* (Pasek, 2000). Hylurgus spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Lymantria spp.: High Risk

The capacity to colonize new environments has consistently been demonstrated by the European gypsy moth. It is anticipated that the Asian gypsy moth, with its vagile females and broader host preferences, will spread more rapidly and more aggressively colonize a variety of habitats (and especially larch forests) that can be found in North America. Negative impacts upon tree growth and mortality can be expected, as has been the experience with the European gypsy moth. However, the behavioral and physiological traits of the Asian gypsy moth will necessitate developing and adopting new techniques and management strategies at additional costs. Defoliation by the European gypsy moth has altered the composition of eastern forests, and the Asian gypsy moth can be expected to exacerbate the problem there. Perhaps the highest risk is to Western North America forests where larch, Douglas fir, and a variety of oak forests abound (Tkacz, 1991; Pasek, 2000). *Lymantria* spp. is known to infest 3 genuses on the T&E Species List: *Abies*, *Betula*, and *Prunus* (50 CFR § 17.12).

Monochamus spp.: High Risk

If *Monochamus* spp. populations reach high densities by breeding in damaged or dead trees, they could exacerbate problems associated with outbreaks of indigenous pests and wildfires. Feeding by adults could weaken healthy trees predisposing them to attack by indigenous insects. This could lead to more frequent or prolonged pest outbreaks. The larvae could also impact the natural community of organisms decomposing logs. Because these beetles feed on living trees, there is also the possibility that they could become important vectors of native or introduced pathogens (e.g., *Bursaphelenchus* spp. or *Ceratocystis* spp.). If adults introduce and vector an exotic pathogenic species/pathotype of pine wood nematode, for example, to healthy trees, great environmental damage resulting from tree mortality and tree species composition shifts could occur (Tkacz, 1991). *Monochamus* spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Scolytus spp.: High Risk

If *Scolytus* spp. were only to colonize recently dead host material, then there would be relatively little environmental damage. However, given that *Scolytus* spp. will attack and kill drought-stressed oaks and is likely to be an efficient vector of the oak wilt fungus, the potential environmental damage that would result from its introduction would be great. Because oaks (a) are the dominant tree species in many forest types throughout the United States, and (b) provide food and shelter to numerous wildlife species, including several game species, any sudden decline in oak coverage would have major impacts on ecosystem stabilization and biodiversity (Pasek, 2000). *Scolytus* spp. is known to infest three genuses on the T&E Species List: *Betula*, *Quercus*, and *Prunus* (50 CFR § 17.12).

Sirex spp.: High Risk

The effect of *Sirex noctilio* on the native pine forests of the United States could be significant. Changes in stand composition could occur with the selective mortality of pines. The potential damage to these stands would be increased during droughts or other climatic events that reduce tree vigor. Also, an increase in *S. noctilio*-associated tree mortality may enlarge the populations of other destructive pests such as bark beetles or root rots. The introduction of *S. noctilio* into the forests of the United States would affect the populations of other insects. *S. noctilio* would be in competition with native siricids, and because *S. noctilio* is more aggressive, it might reduce populations of native species. An expanding *S. noctilio* population would result in population increases of the native parasites of siricids [e.g., *Rhyssa* spp., *Megarhyssa nortoni* (Cresson), *Schlettererius cinctipes* (Cresson), and *Ibalia* spp.)], which could further decrease the native siricids fauna (Kirk, 1974, 1975; Taylor, 1978). A significant reduction in the genetic base of *Pinus radiata* could occur if *S. noctilio* became established in the remaining native stands. *Sirex* spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Tomicus spp.: High Risk

Generally, the greatest impact from infestation by the pine shoot beetle (except in instances of trunk attack when outbreak levels are reached) results from shoot feeding of the adults in stressed and apparently healthy trees. Shoot feeding can cause a loss of growth and disfigurement of the tree. With severe shoot feeding, some trees may be killed. Shoot attack can be increased by

recent fires, the presence of log decks or slash, or downed material resulting from storm damage that provides breeding sites fro population buildup. Large accumulations of breeding material are most likely to occur in natural pine stands where removal of such material is not feasible. Breeding material is commonly generated by thinning and harvest activities, storm damage, windthrow, or fire. Unknowing landowners may cut and pile infested trees near healthy stands or nurseries, thereby increasing damage (Pasek, 2000). The pine shoot beetle is a vector of several blue stain fungi in the genera *Ophiostoma*, *Leptographium*, *Graphium*, *Hormonema*, and *Aureobasidium* in Europe (Gibbs and Inman, 1991; Solheim and Langstrom, 1991). Further, the pine shoot beetle, by means of its shoot-feeding and overwintering behaviors, may be able to transmit pathogenic fungi such as *Fusarium circinatum* [= *Fusarium subglutinans* (Wollenw. and Reinking) Nelson et al. f. sp. *pini* Correll et al.] found in the United States (Pasek, 2000). *Tomicus* spp. is known to infest one genera on the T&E Species List: *Abies* (50 CFR § 17.12).

Likelihood of Introduction

The Likelihood of Introduction for a pest is rated relative to six factors (APHIS, 2000). The assessment rates five of these areas based on the biological features exhibited by the pest's interaction with the commodity. These areas represent a series of independent events that must all take place before a pest outbreak occurs. These five areas are: the availability of post-harvest treatments, whether the pest can survive through the interval of normal shipping procedures, whether the pest can be detected during a port of entry inspection, the likelihood that the pest will be imported or subsequently moved into a suitable environment, and the likelihood that the pest will come into contact with suitable hosts. The value for the Likelihood of Introduction is the sum of the ratings for the Quantity Imported Annually and these biologically based areas (Table 6). The following scale is used to interpret this total: Low is 6-9 points, Medium is 10-14 points and High is 15-18 points.

Table 4 - Risk Rating for Likelihood of Introduction for Representative Genera from Table 2

		Risk Element						
		#1	#2	#3	#4	#5	#6	
	Pest	Quantity Imported Annually	Survive Post-Harvest Treatment	Survive Shipment	Not Detected at Port-of-Entry	Moved to Suitable Habitat	Contact with Host Material	Cumulative Risk Rating
1	Adoxophyes spp.	3	3	3	2	3	3	17
2	Agrilus spp.	3	3	3	3	3	3	18
3	Anoplophora spp.	3	3	3	3	3	3	18
4	Ceroplastes spp.	3	3	3	1	3	3	16
5	Chilo spp.	3	3	3	1	3	3	16
6	Chlorophorus spp.	3	3	3	3	3	3	18
7	Cryptotermes spp.	3	3	3	3	3	3	18
8	Dendroctonus spp.	3	3	1	3	3	3	16
9	Dendrolimus spp.	3	3	3	3	3	3	18
10	Eutetranychus spp.	3	3	3	2	3	3	17
11	Hylobius spp.	3	3	3	2	3	3	17
12	Hylurgus spp.	3	3	3	2	3	3	17
13	Lymantria spp.	3	3	3	3	3	3	18
14	Monochamus spp.	3	3	3	2	3	3	17
15	Scolytus spp.	3	3	3	3	3	3	18
16	Sirex spp.	3	3	3	3	3	3	18
17	Tomicus spp.	3	3	3	3	3	3	18

Risk Element 6, sub-element 1: Quantity Imported Annually

All Pests: High Risk

The rating for this risk element is based on the amount reported by the country of proposed export converted into standard units of 40-foot long shipping containers (APHIS, 2000). It is estimated that over 1000 containers per annum are imported, but no official estimates are available. For example, a single recall in late 2004 on artificial trees involved 30-40 containers and over 100,000 trees. Due to the large number of containers, all pests were given a risk rating

of high.

Risk Element 6, sub-element 2: Survive Post-harvest Treatment

All Pests: High Risk
The transit survival risk ratings for all the pests is high, based on the absence of any approved growing season inspections for pathway pests, that no pre-clearance program is in place, and no post harvest treatment program is in place.

Risk Element 6, sub-element 3: Survive Shipment

This sub-element evaluates the mortality of the pest population during shipment of the commodity.

Dendrolimus spp: Low Risk; All Other Pests: High Risk
Since all the pests (except for *Dendrolimus* spp.) have been intercepted as live pests (PEST ID, 2006), the possibility of each surviving shipment is high. *Dendrolimus* spp. is given a risk rating of low due to the fact that it hasn't been intercepted alive.

Risk Element 6, sub-element 4: Not Detected at Port of Entry

In general, careful inspection for the mobile life stages of insect pests can detect them despite the fact that some are small in size (Carter, 1984; Borror et al., 1989; Hill, 1987; Rosen, 1990). The very high number of interceptions of these pests from various countries and commodities confirms that trained inspectors can detect these insect pests in shipments (PEST ID, 2006). However, the presence of bark on the wood products where pests can be concealed greatly reduces likelihood of pest detection.

Adoxophyes spp.: Medium Risk
Alive immature *Adoxophyes* spp. have been intercepted 3 times at a US port of entry (PEST ID, 2006). However, the symptoms of *Adoxophyes* spp. are external and easy to see. During the summer, larvae and/or pupae can be found by visual inspection of the leaves. Especially when the leaves are attached to each other, to a fruit or to a branch, the larvae can be found between the two. Shoot damage after the first summer generation, which is mostly evidenced by the shredding of the upper shoots of the tree, indicates the presence of the pest. Finally, the presence of fruit damage is a useful detection method since control measurements can still be taken for the next generation. Therefore, *Adoxophyes* spp. is given a risk rating of medium.

Agrilus spp.: High Risk
Alive immature and adult *Agrilus* spp. have been intercepted 44 times at a US port of entry (PEST ID, 2006). Previous introductions of *Agrilus* spp. are evidence that it should be considered a high quarantine risk. Because *Agrilus* spp. is a wood borer, larvae may be difficult to detect during routine quarantine inspections at ports of entry and because it's an internal pest. Adults may be more easily detected on the surface of wood products.

Anoplophora spp.: High Risk
Alive immature and adult *Anoplophora* spp. have been intercepted 44 times at a US port of entry (PEST ID, 2006). Regardless of how many interceptions actually represent *Anoplophora* spp., this beetle has repeatedly entered North America. Asian Longhorned Beetle (ALB) populations currently infest trees in New York, New Jersey, and Illinois. ALB and larvae identified as "*Anoplophora* sp." associated with Chinese cargo have escaped detection at ports of entry and were found in warehouses in numerous states within the US and in Canada (Pasek, 2000).

Ceroplastes spp.: Low Risk
Alive immature, pupae, adult, and eggs of *Ceroplastes* spp. have been intercepted 5,030 times at a US port of entry (PEST ID, 2006). *Ceroplastes* spp. has a frequent interception rate and therefore has a low risk of not being detected at the port of entry.

Chilo spp.: Low Risk
Alive immature, pupae, and adult *Chilo* spp. have been intercepted 93 times at a US port of entry (PEST ID, 2006). Infestations of *Chilo* spp. in rice crops may be detected by looking for dead hearts in young crops and white heads in older crops. Stems showing symptoms should then be dissected to retrieve larvae and pupae in order to rear adults for positive identification (CPC, 2006). Since *Chilo* spp. is relatively easy to detect and has a history of being intercepted, it is given a risk rating of Low.

Chlorophorus spp.: High Risk
Alive immature, pupae, and adult *Chlorophorus* spp. have been intercepted 40 times at a US port of entry (PEST ID, 2006). The risk rating of not detecting the pests at US ports of entry was high for *Chlorophorus* spp. The fact that some cerambycids can enter the growing tip of the bamboo without leaving entry/exit holes makes detection especially uncertain. Due to the cryptic nature of *Chlorophorus* spp., it can be difficult to detect in trade.

Cryptotermes spp.: High Risk
Alive immature, pupae, adults, and eggs of *Cryptotermes* spp. have been intercepted 122 times at a US port of entry (PEST ID, 2006). Drywood termites could survive quite well during transit and may not be detected if they are within the wood. The most like indication of the presence of drywood termites is the appearance of piles of characteristic fecal pellets on horizontal surfaces, but these pellets are usually not obvious until colonies are well established in the wood (Pasek, 2000).

Dendroctonus spp.: High Risk
Alive immature, pupae, and adult *Dendroctonus* spp. have been intercepted 48 times at a US port of entry (PEST ID, 2006). Except for dispersal and host-finding by emerged adults, all life stages occur beneath the bark in the cambial zone. The entire life cycle requires 1 to 3 years, depending on variations in ambient temperatures and other factors (Tkacz, 1991). Therefore, *Dendroctonus* spp. is given a risk rating of high because of its 1 to 3 year longevity beneath the bark.

Dendrolimus spp.: High Risk
Dendrolimus spp. have never been intercepted at a US port of entry (PEST ID, 2006). Because

Dendrolimus spp. overwinter in the duff and litter on the ground, diapausing larvae could be introduced if sufficient duff, litter, and soil were included in the product shipments (Tkacz, 1991). Since this pest has never been detected at a US port of entry, it is given a risk rating of high.

Eutetranychus spp.: Medium Risk
Alive immature, pupae, and adult *Eutetranychus* spp. have been intercepted 20 times at a US port of entry (PEST ID, 2006). The presence of *Eutetranychus* spp. can be detected by discoloration of the host leaves and pale-yellow streaks along the midribs and veins. Adult females are larger than the males. They are oval and flattened and are often pale brown through brownish-green to dark green. *Eutetranychus* spp. is relatively easy to detect but has only been intercepted 20 times, so it is given a risk rating of Medium.

Hylobius spp.: Medium Risk
Alive immature, pupae, and adult *Hylobius* spp. have been intercepted 234 times at a US port of entry (PEST ID, 2006). If only larch were imported, the entry of this insect group would be potentially low. Since there are several species of wood being imported, the entry potential is markedly increased (Tkacz, 1991).

Hylurgus spp.: Medium Risk
Alive immature, pupae, and adult *Hylurgus* spp. have been intercepted 312 times at a US port of entry (PEST ID, 2006). See *Hylobius* spp. above.

Lymantria spp.: High Risk
Alive immature, pupae, and eggs of *Lymantria* spp. have been intercepted 3 times at a US port of entry (PEST ID, 2006). A low interception rate and previous introductions of the gypsy moth (*Lymantria dispar*) are evidence that it should be considered a high quarantine risk. Egg masses are perceived to be the major threat of the introduction because the resilient life stage remains viable for up to 9 months. The egg masses are often laid in cracks or crevices in the bark or wood and thus are difficult to detect. The widespread distribution of this insect makes it a virtual certainty that an outbreak is occurring annually somewhere (Montgomery and Wallner, 1988), and the potential for infesting pallets and wood packing is an annual threat (Pasek, 2000).

Monochamus spp.: Medium Risk
Alive immature, pupae, and adult *Monochamus* spp. have been intercepted 586 times at a US port of entry (PEST ID, 2006). There is a high probability that untreated wood products entering the United States would harbor living *Monochamus* spp. (all life stages, but especially larvae in the wood). *Monochamus sutor* is frequently found in timber imported in to Great Britain from Europe. Older larvae and pupae could be transported in debarked and green or air-dried wood (Tkacz, 1991). However, due to the large number of interceptions, *Monochamus* spp. is given a risk rating of medium.

Scolytus spp.: High Risk
Alive immature, pupae, adult, and eggs of *Scolytus* spp. have been intercepted 119 times at a US port of entry (PEST ID, 2006). *Scolytus* spp. have been intercepted on dunnage, crating, pallets,

lumber, and inside live host material. Previous introductions of *Scolytus* spp. (*Scolytus schevyrewi*) are evidence that it should be considered a high quarantine risk.

Sirex spp.: High Risk
Alive immature, pupae, adult, and eggs of *Sirex* spp. have been intercepted 75 times at a US port of entry (PEST ID, 2006). Siricids are the most common Hymenoptera intercepted at ports of entry (Haack and Cavey, 1997). Survival of *Sirex noctilio* larvae in wood packaging material can be very high. Survival greatly depends on a suitable moisture content for fungal growth (Talbot, 1977). Survival of pupae and adults within the untreated wood would be very high. Because its life cycle is generally a year or longer, *S. noctilio* could easily survive the transit period within the wood and escape detection at the port of entry (Pasek, 2000). Because eggs, larvae, and pupae are found deep in the sapwood, there is a high probability that siricid broods would survive storage and shipment to the United States and emerge from logs after arrival (Tkacz, 1991).

Tomicus spp.: High Risk
Alive immature, pupae, and adult *Tomicus* spp. have been intercepted 215 times at a US port of entry (PEST ID, 2006). In 1992, the pine shoot beetle (*Tomicus piniperda*) was discovered in a Christmas tree farm in Ohio and was probably introduced into the United States with solid wood packing material associated with maritime cargo from Europe (Haack, 1997; Haack and Kucera, 1993; Haack et al., 1997b). The pine shoot beetle was the seventh most commonly intercepted bark beetle found on wood articles at US ports of entry between 1985 and 1996 (Haack and Cavey, 1997). Within a month of the initial discovery, surveys indicated that populations were present in at least six states. Even though *Tomicus* spp. has been intercepted 215 times since 1985, previous introductions of *Tomicus piniperda* are evidence that it should be considered a high quarantine risk (Pasek, 2000).

Risk Element 6, sub-element 5: Imported or Moved to an Area Suitable for Survival

All Pests: High Risk
The risk rating for domestic movement and site survival of all pests is high. Given the fact that a large number of wood products are entering into the Unites States and the fact that these items are distributed to all states and points of sale in the US by major retailers gives great cause for concern.

Risk Element 6, sub-element 6: Contact with Host Material

All Pests: High Risk
Lack of suitable hosts restricts the opportunities for pests to establish populations. While passive factors such as wind, water, or animals may aid in the dispersal of stages of the insect pests (Kosztarab and Kozar, 1988; Rosen, 1990), suitable hosts must be available to sustain a pest population over time. The risk rating for the pests' survival at domestic sites was high for all pests based on the broad availablility of potential hosts within climatically suitable areas. That many of the products are meant for use outdoors in gardens and backyards supports the high risk rating. Affected hosts are several keystone forest genera and economically important agricultural crops.

There may be a low likelihood of spread by contact with live hosts for scales and mites under some circumstances, because of their lack of high mobility and high exposure to detection. In the case of wood products with bark, the likelihood of contact is considered high because the scales and mites may be concealed and protected under bark which could increase their ability to survive.

Cumulative Pest Risk Potential

The sum of the Cumulative Risk Ratings for the Consequences of Introduction and the Cumulative Risk Rating for the pests from Table 3 and 4. The estimated levels of risk were all high (27-33 points). Results clearly indicated that each species poses a High Pest Risk Potential.

Table 5. Cumulative Pest Risk Potential for Representative Genera from Table 2
Cumulative score = results from Table 3 and Table 4

	Pest	Consequences of Introduction Cumulative Risk Rating	Likelihood of Introduction Cumulative Risk Rating	Pest Risk Potential
1	Adoxophyes spp.	15	17	32
2	Agrilus spp.	15	18	33
3	Anoplophora spp.	15	18	33
4	Ceroplastes spp.	14	16	30
5	Chilo spp.	15	16	31
6	Chlorophorus spp.	15	18	33
7	Cryptotermes spp.	12	18	30
8	Dendroctonus spp.	15	16	31
9	Dendrolimus spp.	15	18	33
10	Eutetranychus spp.	14	17	31
11	Hylobius spp.	14	17	31
12	Hylurgus spp.	15	17	32
13	Lymantria spp.	15	18	33
14	Monochamus spp.	14	17	31
15	Scolytus spp.	15	18	33
16	Sirex spp.	15	18	33
17	Tomicus spp.	14	18	32

IV. Risk Mitigation (Treatment Options) for Quarantine Pests Likely to Follow the Pathway

During the period from 2002 to early 2005, over 300 quarantine pest detections associated with wooden products from China has resulted in regulatory measures being implemented. Currently, the importation of wooden products from China has been discontinued (USDA APHIS, 2005a and USDA APHIS, 2005b). The pest risk associated with the importation of these products can likely be managed using fumigation or heat treatment options described below. The suggested mitigations for arthropods could allow trade in these products to continue.

Because of the undefined nature of the commodity regarding its origin, plant species, and parts represented, risks will vary depending on many variables that are situational and cannot be anticipated or defined in advance. The information provided in Table 2 assisted recommendations for mitigation options provided below: 1) life stage of the organism likely to follow the pathway, 2) the plant parts likely to be associated with organisms potentially following the pathway, and 3) the biology of the organism with regard to its feeding pattern.

Arthropods with an internal (includes those referred to as borers) feeding pattern require a more rigorous treatment procedure. The categories in Table 6 used for this analysis were derived from importation data on wooden commodities from China within the last ten years (USDA, 2005a, USDA, 2005b). Those pests in Table 2 that live in wood as internal feeders would be likely to follow the pathway and enter with wood products.

Table 6. Categorization of Manufactured Wood Products from China and Likelihood that Internal Feeders will Follow the Pathway

Category of Wood Product	Internal Feeders Likely to Follow Pathway
Animal artifacts made from wood	Yes
Art décor/wood carvings	Yes
Baskets and boxes	Yes
Bird houses (with wooden support poles)	Yes
Garden and lawn/patio furniture (wooden)	Yes
Potpourri (possibly including wood/fruit of trans-shipped origins)	Yes
Artificial trees (typically *Ficus* sp., possibly including wood of trans-shipped origins)	Yes
Trellis towers (including garden fencing, some hardwoods, mainly of bamboo species)	Yes
Bamboo slats and bamboo garden stakes	Yes
Unspecified wood items (varying in size, origin, and description)	Yes

Fumigation. When fumigation is chosen as a mitigation option, APHIS approved Treatment

404-d should be used for all categories of wood products under 15.2 centimeters/6 inches in diameter (USDA, 2006). This treatment is effective for all known external and internal feeders, including wood borers. Any handicraft items that contain wood that is larger than 15.2 centimeters/6 inches in diameter should be treated with heat treatment only because fumigation is not an effective phytosanitary option for those articles.

Pest: Borers and *Trogoderma granarium* (khapra beetle)

Treatment: T404-d MB at NAP-tarpaulin or chamber

Tempreature °F (°C)	Dosage rate (Ib/1000 ft^3)	Minimum concentration readings (in ounces) at :				
		0.5 hrs.	2 hrs.	4 hrs.	16 hrs*.	24 hrs.
80 (26.66) or above	3.5	36	33	30	25	17
70-79 (21.11 to 26.11)	4.5	50	45	40	25	22
60-69 (15.56 to 20.56)	6	65	55	50	42	29
50-59 (10.0 to 15.0)	7.5	80	70	60	42	36
40-49 (4.44 to 9.44	9	85	76	70	42	42

*If the 16 hour reading is not performed, the 24 hour reading must have the following minimum concentrations:

Temperature °F (°C)	Minimum concentration readings (ounces) at : 24 hrs
80 (26.66) or above	25
70-79 (21.11 to 26.11)	25
60-69 (15.56 to 20.56)	42
50-59 (10.0 to 15.0)	42
40-49 (4.44 to 9.44)	42

- Due to label restrictions, use MB-100 gas may not be used at 60°F (15.56 °C) or below.
- MB Q-gas may be used at any temperature above 40°F (4.44 °C) .
- An Ascarite® filter must be mounted on the T/C analyzer when taking concentration readings for the above treatment.

The methyl bromide treatment 404-d was chosen for handicrafts due to the possible presence of boring insects infesting all handicrafts. All packaging must be approved by the USDA for fumigation as outlined on pages 2-3-5 and 2-3-6 of the USDA Treatment Manual (USDA 2006). Other applicable guidelines for chemical treatments using methyl bromide are to be followed as outlined in sections 2-3, 2-4 and 2-5 of the USDA Treatment Manual (USDA 2006).

Heat treatment and safeguards. When using heat treatments for mitigating the risk of pests associated with handicrafts, the requirements outlined in 7 CFR 305.8 (USDA, 2011) and the procedures outlined in the treatment manual as pertaining to heat treatment or heat treatment with moisture reduction should be used.

305.8 Treatments and safeguards (CFR 2011).

(a) **Certified facility.** The treatment facility must be certified by APHIS. Recertification is required annually, or as often as APHIS directs, depending upon treatments performed, commodities handled, and operations conducted at the facility. In order to be certified, a heat treatment facility must:
(1) Have equipment that is capable of adequately circulating air or water (as relevant to the treatment), changing the temperature, and maintaining the changed temperature sufficient to meet the treatment schedule parameters in the PPQ Treatment Manual.
(2) Have equipment used to record, monitor, or sense temperature, maintained in proper working order.
(3) Keep treated and untreated articles separate so as to prevent reinfestation and spread of pests.

(b) **Monitoring.** Treatment must be monitored by an official authorized by APHIS to ensure proper administration of the treatment. An official authorized by APHIS approves, adjusts, or rejects the treatment.

(c) **Workplans.** Facilities located outside the United States must operate in accordance with a workplan. The workplan must be signed by a representative of the heat treatment facilities located outside the United States, the national plant protection organization of the country of origin (NPPO), and APHIS. The workplan must contain requirements for equipment, temperature, water quality, circulation, and other measures to ensure that heat treatments are administered properly. Workplans for facilities outside the United States must include trust fund agreement information regarding payment of the salaries and expenses of APHIS employees on site. Workplans must allow officials of the NPPO and APHIS to inspect the facility to monitor compliance with APHIS regulations.

(d) **Treatment procedures.**
(1) Before each treatment can begin, an official authorized by APHIS must approve the loading of the commodity in the treatment container.
(2) Sensor equipment must be adequate to monitor the treatment, its type and placement must be approved by an official authorized by APHIS, and the equipment must be tested by an official authorized by APHIS prior to beginning the treatment. Sensor equipment must be locked before each treatment to prevent tampering.
(3) The treatment period begins when the temperature specified by the treatment schedule has been reached. An official authorized by APHIS may abort the treatment if the facility requires an unreasonably long time to achieve the required temperature.

V. Conclusion

Phytosanitary measures for both internal and external arthropod pests have been identified. The use of methyl bromide fumigation and/or heat treatment is appropriate for all categories of China wood products.

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VII. Appendices

Appendix 1 – Climate/Host Interaction – Hardiness Zones