Chlorophorus strobilicola (Champion)

Coleoptera: Cerambycidae

Slender banded pinecone longhorned beetle

Host(s)	CAPS-Approved Survey Method
Major/Primary hosts *Pinus roxburghii* (Chir pine) **Other hosts** *Pinus kesiya* (Benguet pine)* (Champion, 1919; Beeson and Bhatia, 1939; Duffy, 1968; Lingafelter, 2003; Pande and Bhandari, 2003; 2004; Singh et al., 2005; reviewed in CAB, 2006; Pande and Bhandari, 2006) *Host is questionable (USDA, 2004)	Visual

Reason for Inclusion in Manual

Chlorophorus strobilicola was a target species in the original EWB/BB National Survey Manual.

Pest Description

"This species is a member of the large group of slender, colorful clytine longhorned beetles. This group is recognized by the long, narrow body, long legs, relatively short antennae (rarely longer than the body), and bright stripes and patterns on the outer wings. *Chlorophorus strobilicola* Champion is about 0.8 to 1.2 cm [approx. $^{5}/_{16}$ to ½ in] long" (Lingafelter, 2003). The patterned, relatively narrow bands of white pubescence are diagnostic for adults of this species (Lingafelter, 2003).

For a full description, see the Pine Commodity-based Survey Reference (Davis et al., 2008).

Chlorophorus strobilicola adult (http://www.doacs.state.fl.us/pi/enpp/ento/eb-india.html)

Biology and Ecology

Females deposit eggs one at a time in the crevices between scales on mature, green pine cones. There are approximately 15 to 20 eggs laid per cone. Larvae will hatch in approximately two

weeks and bore directly into the cone where they feed on the internal woody tissue. Pupation usually occurs on the cone's broad scale head but can occur on the cone's central axis among other places. Pupation lasts two weeks before adults emerge through oval holes in the scale head. The life cycle is usually 1 year with emergency occurring in April and the first half of May (pre-monsoon period) (USDA, 2004).

Countries of Origin

C. strobilicola is native to India (USDA, 2004).

Current Distribution

C. strobilicola is currently distributed in India (USDA, 2004).

Distribution in United States

C. strobilicola is not known to be established in the United States (USDA, 2004); however, it has been intercepted multiple times at U.S. ports of entry in NC, CA, CT, FL, MA, NJ, MY, and WV from scented pine cones and potpourri products originating from India (USDA, 2004).

There have been no positive reports of *C. strobilicola* entered into NAPIS (K. Handy, personal communication, 2009).

Pathway

Larvae of this pest have moved in international trade through infested pine cones (USDA, 2004). The larvae of this species only develop in pine cones of the host species, so it is unlikely to travel internationally through wood products such as crates, pallets or dunnage.

Pathogens Vectored

C. annularis is not a known vector and does not have any associated organisms.

Damage

Eggs are deposited singly in the crevices between the scales of mature green pine cones, approximately 15 to 20 on each cone. After about two weeks the larvae hatch and bore directly into the cone where they feed on the internal woody tissue, chiefly in the cellular parts of the scales and central axes thereby avoiding the more strongly lignified vascular tracts.

C. strobilicola larva (Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org)

C. strobilicola damage (Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org)

Pupation takes place nearly always in the broad scale heads but sometimes in the central axis or elsewhere. After a pupation period of about two weeks the adults emerge through oval holes in the scale head. Adults emerge though elliptical emergence holes from the cone (Champion, 1919; Beeson and Bhatia, 1939; Duffy, 1968; Pande and Bhandari, 2006).

Survey

CAPS-Approved Method

Visual Inspection. There are no known attractants for *C. strobilicola*.

The only practical way to survey for the pest is through visual inspections of host trees and cones. Cones infested with *C. strobilicola* are characterized by being both filled with dust and light (Champion, 1919) which can contain oval-shaped emergence holes (Beeson and Bhatia, 1939). Also, infested cones can appear glossy, immature, and be easily broken off by the wind (Champion, 1919; Beeson and Bhatia, 1939). When checking cones "check for exit holes in the cone, sawdust–like material on the scales, or egg sacs in the crevices" (USDA APHIS-PPQ, 2004). "During cold weather, infested pine cones may fall to the ground. The scales of healthy, ripe cones separate after falling to the ground, but the scales of infested cones won't" (USDA-APHIS-PPQ, 2004).

Time of year to survey

In India, emergence occurs in April and the first half of May (Duffy, 1968).

Identification

CAPS-Approved Method

Morphological. The relatively narrow bands of white pubescence on the elytra are diagnostic for adults of this species.

Mistaken Identities

This pest is similar to *Chlorophorus annularis* and *C. varius*, neither of which is currently present in the United States. Duffy (1968) provides a key to distinguish between *C. strobilicola* and *C. annularis*.

Resources and High Resolution Images

The Pine Commodity-based Survey Reference:
http://caps.ceris.purdue.edu/survey_manuals

Screening aids

Duffy, E. A. J. 1968. A Monograph of the Immature Stages of Oriental Timber Beetles (Cerambycidae). Trustees of the British Museum (Natural History), London.

References

Beeson, C. F. C. and B. M. Bhatia. 1939. On the biology of the Cerambycidae (Coleopt.). Indian Forest Records (new series). 5: 235 pp.

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Champion, H. G. 1919. A cerambycid infesting pine cones in India, *Chlorophorus strobilicola*, n. sp. Entomologist's Monthly Magazine 58: 219-224.

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Handy, K. J. 2009. NAPIS data for EWB/BB target species. Personal communication (email) to L. Jackson on 23 March 2009, from KJ Handy (USDA-APHIS-PPQ-EDP).

Lingafelter, S. 2003. The slender banded pinecone longhorn beetle (*Chlorophorus strobilicola* Champion) (Coleoptera: Cerambycidae: Clytini). USDA APHIS.

Pande, S., and R. S. Bhandari. 2003. Effect of chir pine cone beetle, *Chlorophorus strobilicola* (Coleoptera: Cerambycidae) on the seed efficiency of *Pinus roxburghii*. Indian Forester 129: 1499-1503.

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Singh, S., S. A. Belokobylskij, N. Chauhan, and S. Pande. 2005. Description of a new species of the genus *Spasskia* Belokobylskij, 1989 (Hymenoptera: Braconidae) from India, with first record of the genus in the Oriental Region. Annales Zoologici (Warsaw) 55: 95-98.

USDA. 2004. Stakeholders Announcement: Plant Protection and Quarantine Employees Uncover Pests in Imported Scented Pine Cones. United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine.