

Stone Fruits—Biology

Cherry Bark Tortrix in Cherry

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The first U.S. detection of CBT was reported by WSDA on March 29, 1991. The find was a larval collection from an ornamental cherry tree at the Peace Arch State Park, Blaine, Whatcom County, Washington. The trees have extensive tunneling throughout the bark of the trunk and the bark of the larger limbs. The tunneling has nearly girdled the trees. Park gardeners consider these 60-year-old Mt. Fuji cherry trees to be a total loss and will be removing them soon.

The cherry bark tortrix (CBT), *Enarmonia formosana* (Scopoli), is native to Europe and Siberia. It was first mentioned as a pest of stone fruits in Europe by Kollar in 1837 and as a pest in the British Isles by Theobald (1909). CBT has been reported to cause serious damage in stone fruit, apple, pear and other trees (Thomsen 1920, Samal 1926). CBT is sometimes locally serious but is generally considered to be a pest of minor importance in the British Isles (Masse 1954).

**Biology and Identification**

CBT feeds on the bark and sapwood of a variety of plants of the family Rosaceae including *Prunus* (cherry, plum, peach, apricot, nectarine and almond), *Malus* (apple), *Pyrus* (pear), *Pyracantha* (firethorn), *Sorbus* (mountain ash) and *Cydonia* (quince). Infested hosts identified in Washington to date (via larval collections, voucher specimens in WSDA Yakima collection) have been mature cherry and apple trees. A CBT infestation of mountain ash in Vancouver, B.C., Canada, was reported in June of 1992.

CBT is a moth in the family Tortricidae. It is related to another important tortricid apple pest, the codling moth. Codling moth was once named *Enarmonia pomonella*.

Adult CBT are fairly easily recognized by the distinctive and well-defined orange and black mottled wings. The various morphological aspects of the species along with photographs and illustrations can also be found in Benander (1950), Bradley et al. (1979), and Bentinek and Diakonoff (1968).

Eggs are similar to other tortricids, being lenticular or fried egg shape and milky white at oviposition. After two or three days they turn bright red. Eggs are attached to the bark with a gummy secretion and are usually laid in groups of two or three around bark wounds or cracks. Larvae are 8 to 11 mm in length, flesh colored or slightly pink like a codling moth larvae. The pupae are 7 to 9 mm in length, light brown and usually found within silken frass material on the surface of the bark or within cracks. We also found CBT pupae within the larval galleries in Whatcom County. In 1992, a clerid beetle larva was collected within a CBT gallery in Bellingham, Washington. No parasites have been reared from any Washington CBT specimens.

Roediger (1956) did a detailed study of CBT on stone fruit trees in Germany.

### **Control**

Winfield (1964) also summarizes the biology and control of CBT in England. The prolonged adult flight makes chemical control for the adult stage impractical. Some dormant treatments were successful but were fairly labor intensive. Gerber (1992) did an initial methyl bromide fumigation trial on cherry wood infested with CBT. The dosage was 40 g methyl bromide for 90 minutes. Seventy-five percent of the larvae were killed.

### **Program History**

Agriculture Canada reported CBT in 1990 from at least nine sites in British Columbia's Fraser Valley (Dang 1990). The first adult CBT trapped in Washington state was caught in a pheromone trap on May 14, 1991, at the Peace Park. Klaus (1991, 1992) reported eight western Washington counties infested in 1991 and nine counties infested in 1992.

### **Risk Analysis**

The USDA, APHIS New Pest Advisory Committee met on March 16, 1992, to review a Pest Risk Assessment (Orr 1992). The committee recommended that it is not feasible for APHIS to attempt any action at this time. The committee stated that the nature of this pest is such that it does not lend itself to normal regulatory/eradication efforts. The committee recognized that CBT does have the potential to become economically important

### **Survey Objectives**

The objectives of the 1992 survey were to:

1. Delimit the current range of CBT in Washington.
2. Make preliminary biological observations of CBT under Washington conditions.

### **General Survey**

In 1992 WSDA and USDA, APHIS, PPQ cooperated in a CBT pheromone survey of western Washington and portions of eastern Washington. Traps were placed and monitored from May 14 to Sept 23. Table 1 summarizes 1992 pheromone trap survey results.

### **Observations**

In general, current CBT distribution encompasses the Puget Sound region, with highest populations in Canadian border counties. Population levels rapidly decrease in counties to the south. The catch pattern clearly indicates natural spread of the pest, with no outlying catches elsewhere in the state.

Adult moths were collected in pheromone traps from the first placement on April 16 until traps were removed in September. Peak moth catch was in mid-July in 1992 compared to mid-August in 1991.

Preliminary field observations of host trees have corroborated the pheromone trap results. A high percentage of cherry trees in Whatcom County are heavily infested with CBT. Many

cherry trees in Whatcom County are severely stressed and show widespread dieback. It is not known what role CBT has in the situation. Many of the severely infested trees observed in Whatcom County and in Vancouver, B.C., Canada, also showed symptoms of the bacterial canker, *Pseudomonas syringae*. Most researchers consider *P. syringae* a weak pathogen, an opportunist that capitalizes on a host that has been weakened by some predisposing condition (Moore 1988). Nematode damage to trees has been cited as another predisposing factor to *P. syringae* infections in California (English 1982).

Most infested trees observed to date have been mature ornamental and fruiting cherry and apple varieties. In 1991, young ornamental cherry trees were inspected for CBT infestation at the Peace Park. These trees were within one hundred yards of infested older trees, yet were free of CBT in 1991. However, in 1992, larval frass tubes were found on these trees. Damage was noted at the point where the support wires rubbed against bark.

Visual observations were made at four other uninfested 1991 Whatcom County sites. Re-examination of these sites in 1992 showed that these trees are now lightly infested with CBT. One site had no sign of CBT in 1991. However, on April 14, 1992 one larval frass tube was detected. On May 27, 1992 two frass tubes were noted. On June 24, 1992, one frass tube was found. On Sept 9, 1992, eleven frass tubes were counted on this ornamental cherry tree in Bellingham.

**Table 1.** 1992 CBT trapping results.

County	No. of trap sites	No. of positive sites
<b>Eastern Washington</b>		
Adams	2	0
Asotin	0	0
Benton	5	0
Chelan	20	0
Columbia	0	0
Douglas	31	0
Ferry	0	0
Franklin	0	0
Garfield	0	0
Grant	25	0
Kittitas	17	0
Klickitat	17	0
Okanogan	51	0
Skamania	9	0
Spokane	5	0
Stevens	0	0
Walla Walla	0	0
Whitman	3	0
Yakima	0	0
Totals	185	0
<b>Western Washington</b>		
Grays Harbor	25	0
Jefferson	8	0
King**	14	12
Kitsap*	11	3
Mason	21	0
Pierce**	39	3
Thurston**	67	0
Lewis	90	0
Cowlitz	31	0
Clark	44	0
Whatcom	30	30
Totals	380	48
Statewide totals	565	48

\*new county record.

\*\*previously infested county.