

Biological Control

Cherry Bark Tortrix Biology, Phenology and Host Preference

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Biology and Phenology

The cherry bark tortrix (CBT), *Enarmonia formosana* (Scopoli) (Lepidoptera: Tortricidae), is a major exotic pest of cherry and other fruit trees in western Washington, specifically in Whatcom County. A survey of randomly selected cherry trees in Bellingham, WA, 1996, found that 75-80% of the trees were infested by CBT. In 1997, we found that CBT has infested 100% of the sweet cherries sampled in Bellingham. This insect has the ability to expose a tree to disease, insect and freezing mortality factors. High infestations of CBT can directly cause girdling and eventually death of cherry trees.

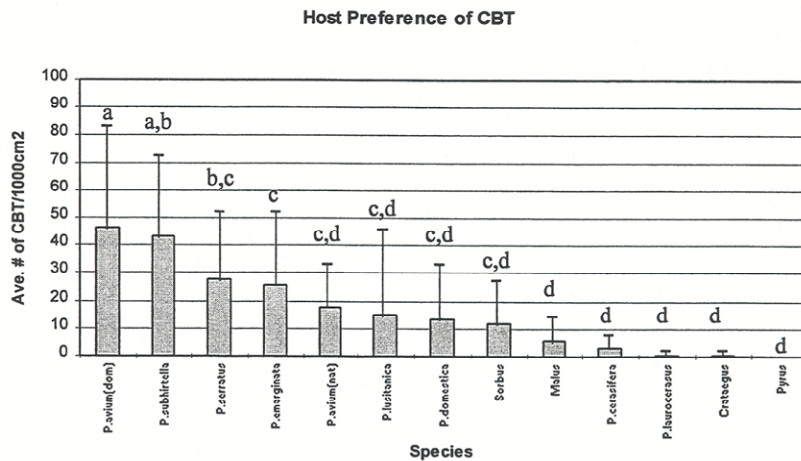
Seven sites were chosen to monitor CBT flight activity in Whatcom county, WA: 2 in Ferndale, 1 in Lynden, 1 in Deming, and 3 in Bellingham. Typically in the Pacific Northwest, CBT has a large peak of activity in late June and a smaller peak in August. However, in Whatcom county, the general trend showed a peak in mid-June and a larger peak in late July. After the last peak, populations basically crashed. Closer to the foothills in Deming, flight activity was prolonged with gradually declining populations. This bimodal flight pattern is consistent with that observed in Europe.

Coastal sweet cherry trees (naturalized *Prunus avium*) were used to monitor life stage distributions. These trees were removed in monthly intervals from a site located in Blaine. Once this stand was depleted, sites in Bellingham were harvested. Larvae and pupae were removed sequentially from individual logs until 30 larvae had been sampled. Each larva was measure for head capsule width. Head capsule measurements were classified into 5 size regimes based on instar designation by Roediger, 1956. Once 30 larvae had been recorded, the area sampled was intensely screened for the number of unhatched eggs. One 1.5 ft log usually was sufficient for sampling. No true diapausing stage occurs; larvae remain active with increased activity in warmer temperature. Based on the phenology observed this year, it is clear that CBT populations have only one functional generation per year in the Pacific Northwest.

Host Preference

Host preference was determined by sampling 30 representative trees of each species or genera. Sampling sites were restricted to the Bellingham area since it has been illustrated that infestations are relative to coastal environments. Sampling areas were consistent for all species of trees. A 1000 cm² frame was used to standardize the sampling area, this was the maximum size possible to accommodate all genera sampled. The number of active frass tubes was counted for that given area. The genus *Prunus* was sampled by species while other genera, such as *Malus* and *Sorbus*, remained as a single classification. Figure 1 represents the average number of frass tubes found on each classification of tree. Trees in the genus *Prunus* are still the most preferred

group of hosts for CBT. Frequency of infested trees followed the same trends as the densities. Interestingly, CBT was more common on cultivated *P. avium* while naturalized *P. avium* was relatively less susceptible.



Average densities per 1000 cm² of CBT frass tubes for each tree species surveyed. Letters indicate a significant difference between means using Tukey's mean separation ($\alpha=0.05$).