

Cynipid Wasp at PHA – Treatment and Observations

Fireplace Oak *Quercus velutina* 2004-8 A

January 2012 Steve Masterson, PHA arborist, notices a **large split** in the trunk of this majestic black oak.

Spring 2012 Tim Boland PHA executive director writes an appeal letter asking for funds to help the tree.

June 4, 2012 Scott McArthur Tree Care donates tree pruning time to perform a complete **crown reduction** to reduce an unsafe weight load on the split trunk.

June 5, 2012 Bartlett Tree Experts installed 3 **cables** to aid support of the three major laterals branching from the trunk split on the east south east side. In addition 4 **rods** were installed through the split to pull together and stabilize the split. One additional rod was also put through the tree above the split to be the main support for the split.

During this work **cynipid wasp presence** was noticed.

July 2, 2012 Bartlett Tree Experts installed another bolt.

July 28, 2012 Dr. Neil Hendrickson, Bartlett Tree Experts, spoke and answered questions about cynipid or crypt gall wasp to a barn full of arborists, landscapers, homeowners and other interested professionals. "**No one knows**" was the most frequent answer. No one knows the life cycle, the nativity, how to kill it.

They donated an **experimental injection of acephate** (an organophosphate) into the base of the trunk of the tree. They calculated the dose from the dbh to be 10 ml. There were 36 holes, 1 for every 2" of dbh, 7/32" in diameter, 1/2 to 3/4" deep. This is an experimental treatment - on one iconic tree. The acephate is a systemic, active 90 days (kills all insects, including the beneficial ones), but will it penetrate the gall? And will this help?

Summer 2012 As part of the 'treatment' for cynipid wasp, overall tree health was addressed by:

Root invigoration program by Bartlett Tree – they applied Bio Char (manufactured by BioChar Solutions), gypsum, Moo Doo (composted cow manure), Bartlett Boost fertilizer (30-0-12), greensand and pelletized lime.

Grass and English ivy near and on the tree were **removed** to alleviate competition. The area near the tree was **air-spaded** to alleviate compaction. Soil level was lowered to reveal trunk flare.

The **path was closed off** for the winter, and in the spring it was redesigned with large slates and mulch, to help alleviate compaction.

PHA with help from volunteer Greg Palermo starts collecting reports from MVI of cynipid wasp activity.

This stopped after one season because – not enough input from professionals, too much work to verify, looking for pattern – and there wasn't one – its everywhere.

June 10 2013 Bartlett Tree Experts **inject Lepitect** (active ingredient **acephate**) for experimentally treating cynipid or gall wasp. The drill holes are lower, as the soil level is lower now.

July 10, 2013 *Quercus velutina* 01-005EE HP4 Removed due to cynipid wasp damage. Leafed out spring 2013 but very sparsely; 30-40% leaf cover. (Last year had twig cutters. This year twiggy dieback, thin, over ½ terminals dead or brown.)

September 4, 2013 Bartlett Tree Experts (Dr. Neil Hendrickson, Mark DiBiase and Nick Crawford) meet with PHA staff (Tom Clark, Steve Masterson, Ian Jochems & Nancy Weaver) to **assess tree**.

Decide to start collecting data on all 65 accessioned *Quercus velutina* at PHA. The fireplace oak gets a 3 on a 1 (dead) to 5 (excellent) scale. Last year it would have been a 4. The leaf color is good, but the ends (about 20") of about **15% of the branches have brown leaves**. There are noticeable **swollen nodes** on the twigs. When one of the brown-leaved branches is cut – **live larva** can be seen – translucent white and moving.

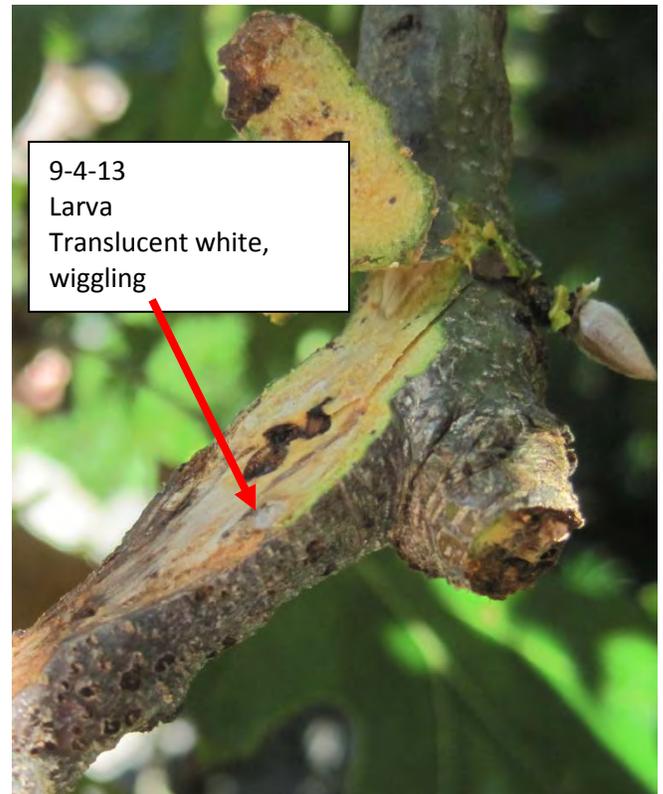
September 9, 2013 PHA staff – Ian Jochems, Steve Masterson & Emily Ellingson **rate the 65 accessioned *Quercus velutina*** at PHA on a 1-5 scale. Data collection is needed to learn about the cynipid wasp.

1-0trees, 2-4trees, 3-20trees, 4-25trees, 5-16trees, no rating-1tree

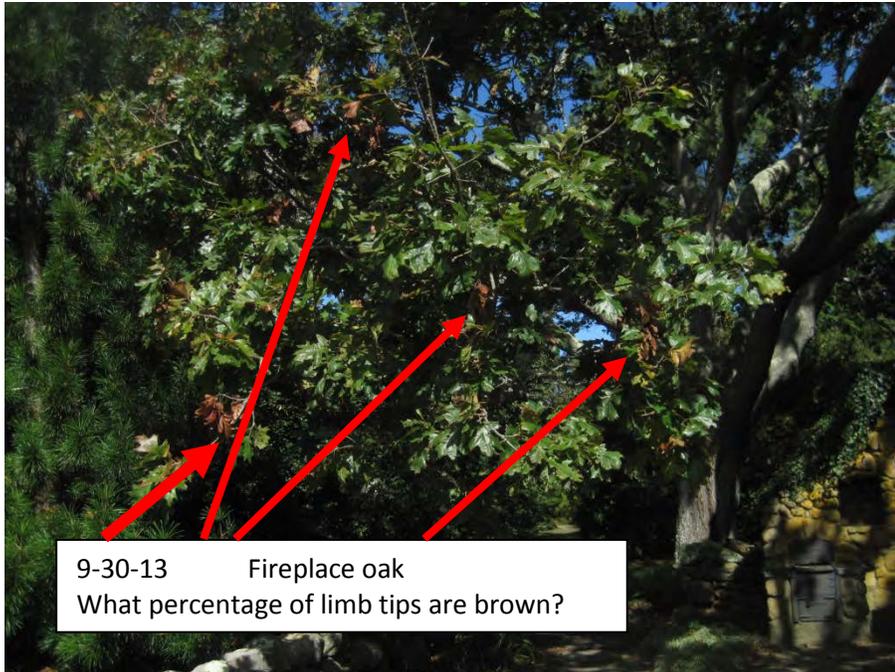
September 27, 2013 As an experiment to treat for cynipid wasps, 11 Black Oaks(3-2trees, 4-4trees, 4.5-2trees, 5-3trees) including the fireplace oak(3), were injected with Tree-age (Emamectin Benzoate 4.0% disrupts neurotransmitters) by Bartlett Tree Care.



Drilling holes for
Injecting Tree-age
9-27-13



9-4-13
Larva
Translucent white,
wiggling



9-30-13 Fireplace oak
What percentage of limb tips are brown?



Before 2012

Lower soil level, remove English ivy, remove grass, and dirt path.

Aerate soil, mulch, ad slate slabs for path.



After 2013

October 19, 2013 Peter Wild, CEO Arborjet, offers to donate Tree-age (emamectin benzoate) and injection equipment. Advises treating sooner, so it will be in tree for next hatching (will not kill gall). Says Tree-age has 2 year residual, Lepitect only 1 year (Based on Hawaii – 3 life cycle similar species). Found trees with 5 years of infestation – exit holes throughout.

Decide to accession Q. velutinas overhanging PlayPen.

November 7, 2013 Dr. Joe Elkinton, UMass entomologist visits for cynipid gall wasp research with grad. student Monica Davis, B.Globe reporter David Abel and photographer Julia Cumes.

Found samples with galleries packed with live adults, larvae and pupae of cynipid gall wasps.

Monica took untreated samples from PHA (WFN north of wall @Lindera, Sepiessa and Menemsha roadside). She'll measure and count exit holes. She's working on figuring out their life cycle. She is doing a project using donated Tree-age (Arborjet) in Dennis.

Winter moth research talk by Elkinton attended by P. Norris, G. Palermo, B. Wallace, Brad-Donaromas, Natasha-Davey Tree, Don Brown, A. Higgins, Ken Ivory, J. Bryant & Susie & Andy, Andrea Hartman, Jeremy Hauser & 2, NW, TC, SM.



November 12, 2013 I. Jochems & T. Clark visit Arborjet, given 2 \$500 bottles & \$600. Injection kit. 1 bottle will treat 33 10" dbh trees, at 3ml/inch of dbh. Plan to inject more trees as soon as temperature is over 45 degrees (Ideal time would be earlier in the year for better translocation). With this system a plastic plug stays in the tree, to keep injection in and environment out. According to Peter Wild, Treeage does not kill sucking insects (aphids, whiteflies).

How will the trees to inject be picked? Random? ½ an area? By size? By condition?

What will be the control group?

T. Clark will consult Dr. Elkinton, maybe.

November 18, 2013 Per T. Clark, decision on which trees to inject with Treeage will be more on which we want treated than as an experiment. No 2 rated trees will be treated.

November 22, 2013 I. Jochems & E. Ellingson may treat 01-005A rated 5 as an experience for EKE. 47 degrees F. & raining. This was not done.

Dr. Neil Hendrickson visited 8/20/2014

- Still lots of unanswered questions
 - How many life cycles? they feel there is only one
 - Myself and Dr. Cranshaw feel there are at least 2
 - Are they different looking at different cycles of year?
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 - Are there only females and no males?

- Does the treatment work?
- We all feel that there is a decline in new or continued infestation.
 - Possible the treatments or other natural things helped knock down the population
 - Really cold/ wet winter, late freeze in March this year. Could have affected them.
- Looking at the branched of treated and untreated trees, there doesn't seem to be much of a difference. We are seeing ova-positing sites "we think" but they are not developed.
- Dr. Hendrickson liked our *Quercus velutina* survey and would like the data after we review it again this year