because, madrone
Help us Plant Madrones!

Saturday, Dec 11th, 2004

As a continuation of the Magnolia Boulevard Vegetation Management Plan and the stellar work of the Save Magnolia’s Madrones organization, we’ll be planting over fifty trees.

Dec. 11th, 10am to 2pm
Meet at the Magnolia Blvd. Viewpoint

Be sure to dress appropriately in clothes that can get dirty and bring a pair of work gloves. Shovels and other hand-tools will be provided.

For more information on the Urban Forestry Program, visit our website at: http://www.cityofseattle.net/parks/horticulture/forestrestoration.htm

FOR FURTHER INFORMATION, PLEASE CONTACT:
Peter Noonan at 615-0057 or peter.noonan@seattle.gov

Sponsored by:
SAVE MAGNOLIA’S MADRONES

Seattle Parks and Recreation
DEMYSTIFY MADRONE

Arbutus menziesii Pursh (Ericaceae)
Pacific madrone, madrone, madrona, arbutus
They are all sick
It is hard to grow
It is hard to transplant
Not a lot of nurseries grow it
If a tree is leaning, it is going to fall over
Don’t touch them; they’ll fall over
CONDITIONS

Soil Types bare/thin/mineral to rocky soils
Slopes abundant on rocky sites, such as bluffs, up to 5,000 feet
Aspect south facing, common near saltwater
Stand Type light canopy densities with Douglas-fir, ponderosa pine, redwood
Disturbance timber harvest, postfire environments
<table>
<thead>
<tr>
<th>Forest Type</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conifer/Madrone Mixed Forest</td>
<td>51.97</td>
<td>1.90%</td>
</tr>
<tr>
<td>Conifer/Deciduous Mixed Forest</td>
<td>361.5</td>
<td>13.20%</td>
</tr>
<tr>
<td>Conifer Forest</td>
<td>293.6</td>
<td>10.72%</td>
</tr>
<tr>
<td>Deciduous/Madrone Mixed Forest</td>
<td>50.88</td>
<td>1.86%</td>
</tr>
<tr>
<td>Deciduous Forest</td>
<td>1865.5</td>
<td>68.10%</td>
</tr>
<tr>
<td>Madrone Forest</td>
<td>25.27</td>
<td>0.92%</td>
</tr>
<tr>
<td>Palustrine Forested Wetland</td>
<td>69.3</td>
<td>2.53%</td>
</tr>
<tr>
<td>Riparian Forest</td>
<td>21.3</td>
<td>0.78%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2739.32</strong></td>
<td></td>
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</tbody>
</table>

*Table 1.* Forest types, cumulative acreage, and percent of each type present in Seattle’s public urban forests (from SUN’s 1999-2000 survey). Forest types presented in this report are highlighted in red.
CONIFER BROADLEAF EVERGREEN

PSME-ARME/GASH
Douglas-fir- Pacific madrone / salal

PSME-ARME/HODI/LOHI
Douglas-fir- Pacific madrone / oceaspray / honeysuckle

PSME-ARME/VAOV
Douglas-fir- Pacific madrone / evergreen huckleberry


NatureServe also maintains data on selected fungi, lichens, and algae. Although technically not plants, these groups have been traditionally included in botany departments. According to recent information from the Integrated Taxonomic Information System (ITIS), there are 28,931 native vascular plant species in the US, which include 17,345 angiosperms (flowering plants), 131 gymnosperms (cone-bearing plants and related species), and 972 ferns and related species. NatureServe Explorer provides detailed information on more than 60,000 plants, animals, and ecosystems of the United States and Canada from our central databases. Our NatureServe network member programs collect and manage information on the location and conservation status of the plants in their jurisdictions.
MADRONE HEALTH DECLINE

Climate
Management practices
Fire suppression
Urbanization
Fungi and oomycetes
Insects
Wildlife
Introduced pests and pathogens
MADRONE HEALTH DECLINE


2014 – warm phase
CONTRIBUTING FACTORS TO MADRONE ROOT FAILURES

- Decay Present: 20%
- Soil Failure: 13%
- Lean: 5%
- Rain: 5%
- Wind: 12%

Madrone Failures by Failed Part:

- Branch: 10
- Root: 50
- Stem: 20

Pacific North West Tree Failure Database www.pnwtreefailedb.com
MADRONE RECOVERY

1. Conservation of mature madrone
   • TreeSnap survey!
   • E-newsletter

2. Increase planting numbers of madrone

3. Develop Best Management Practices particular to madrone establishment
AVAILABLE NOW

Help Our Nation’s Trees!

Invasive diseases and pests threaten the health of America’s forests. Scientists are working to understand what allows some individual trees to survive, but they need to find healthy, resilient trees in the forest to study. That’s where concerned foresters, landowners, and citizens (you!) can help. Tag trees you find in your community, on your property, or out in the wild using TreeSnap! Scientists will use the data you collect to locate trees for research projects like studying the genetic diversity of tree species and building better tree breeding programs.

Meet the scientists that use TreeSnap data

Download on the Apple App Store or Google Play

treesnap.org funded in part by NSF Plant Genome Research
We are creating a database to update the madrone distribution map and learn more about the health condition of the species throughout its range.

For details about the data and representative photos to help you complete the survey, download the Pacific Madrone Assessment Guide, then complete the survey using one of the methods below.

Survey data can be collected in several ways:

1. Download the paper survey, complete, and return to WSU either by scanning/emailing, entering data in the webform on your computer, or snail mail.
2. Webform – use your smartphone and web browser (must have internet connection)
3. Smartphone app – download and use the smartphone app. If there is no internet access, data can be collected offline and uploaded later.
HEALTH ASSESSMENT

Tree Crown Assessment. What percentage of the tree crown looks unhealthy or appears damaged?

- < 10%
- 10% to 20%
- 20% to 50%
- 50% to 75%
- > 75%

defoliation from branch dieback with attached fruit stalks / dead leaves
closeup of dieback from *Botryosphaeria*, probably *B. dothidea* or *B. ribis*
attached, dead leaves on branches killed by *Botryosphaeria*
HEALTH ASSESSMENT

shoot and leaf blight

Neofusicoccum arbuti (Botryosphaeria spp.)
Phomopsis vaccinii (Diaporthe eres)
Phacidiopycnis washingtonensis

leaf spots & lesions on green shoots, petiole and dead, attached leaves
Neofusicoccum arbuti ("madrone canker") on stem
~19 different fungi are associated with leaf spots on madrone
HEALTH ASSESSMENT

Phytophthora root disease

Armillaria (A. gallica, A. mellea)

Heterobasidion occidentale

Mushrooms of Armillaria spp.

Phytophthora root disease
HEALTH ASSESSMENT

Insect and wildlife activity:

- Serpentine leaf miner
- Wood boring beetle
- Fall webworm

Rodents

Leaf miner wood boring beetle fall budworm
TAKEAWAYS

1. Contribute to TreeSnap survey
2. Collect seed, local propagation
3. Plant in a open setting, but not too close
4. Protect from injury, especially construction
5. Prune out and destroy cankered or dead branches?
6. Infrequent deep watering on new trees during extended drought periods
7. Avoid excessive pruning/removal surrounding trees
Pacific Madrone Research

Welcome to the WSU madrone research website. Here you will find information on:

- **About Pacific Madrone**: General information on propagating madrone, its ecology, champion trees, and more.
- **Diseases and Pests**: Find out what's killing these trees.
- **Research Projects**: Common garden study, disease resistance, identifying foliar pathogens, etc.
- **Distribution of Pacific Madrone**: Photos and maps showing the distribution of Pacific madrone and types of environments where it can be found.
- **The seed collection**: Locations where seed has been collected, seed available for experiments and plantings.

**What's New:**

- Help us collect data on the range and health condition of madrone

Common garden plantings have been established in each of California, Oregon, and Washington states, and two sites in British Columbia.

A serious foliar blight affected Pacific madrone in 2011. We would like more information about these trees, especially their relationship to environmental conditions and diseases.