

I-5 Bark Beetle Infestation

WSDOT Northwest region
Arborist Services



Northwest Region Arborist Services team



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Project overview

- Assessment request from Area 5 maintenance in early 2023
- Conduct phased field work to identify affected trees
 - Utilize level 1 (drive-by) and level 2 (detailed visual) assessment methodology to find new infestations
 - Record tree locations in GIS
 - Flag & Tag trees for removal
- Analyze collected data and research best management practices
 - Consult with DNR entomologist
 - Review existing literature from USFS, University Extension Services, etc.
- Develop removal protocol for infested trees
 - Prioritize active infestations
- Present findings and recommendations to Area Maintenance and WSDOT leadership
- Develop contract document for removal of infested trees
- Execute contract Spring/Summer 2024
 - Comments on timing
- Monitor area for additional infestation
 - 7 new infestations observed June 2024
 - We anticipate additional removals will be needed
- Replant with resistant species, weed control, watering and replacement for 3 years after initial planting
 - Restoration must balance many considerations, will likely be phased over several years
- Establish lines of communication to monitor for outbreaks in other areas within the Northwest Region

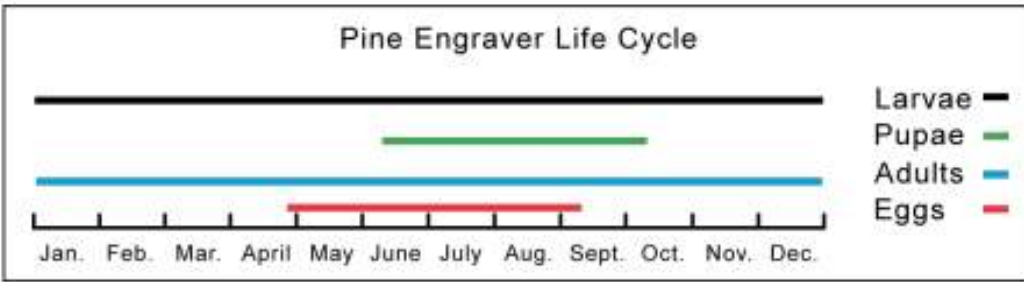


Figure 2. Life cycle of pine engraver beetles (from Johnson 1982).



Figure 5. Boring dust on bark of pine attacked by pine engraver beetles. Photo: Kenneth E. Gibson, USDA Forest Service, Bugwood.org.



Figure 1. Adult *Ips pini* beetle with depression and spines on end of elytra. Photo: Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org.

California Fivespined Ips

David E. Schultz¹ and William D. Bedard²



Bark Beetle Tree Removal Protocol

Green & Red Attacked trees – Priority 1

- Red attacked definition: Trees recently dead from beetle attack, live eggs/larvae likely present.
- Green attacked definition: Trees that are alive but show symptoms or signs of active beetle infestation.
- If large and small woody debris is to remain on site, it should be chipped.
- Debris can also be removed from the site and disposed of.
- If woody debris cannot be chipped on site or removed consider alternative mitigation options.

Grey Attacked – Priority 2

- Definition: trees completely dead from previous beetle attack, usually 1-2 years after initial attack.
- Selective removal as budget allows.
- Prioritize trees within striking distance of targets.
- Removal may occur any time of year.

WSDOT Maintenance and Arborists tackle bark beetle infestation, changing the look of I-5 in Seattle

By Aisha Dayal

When our maintenance crews were working along Interstate 5 in north Seattle, they noticed something on several nearby trees – something unusual, something different. The crews weren't sure what this meant, but they knew that someone needed to be notified, someone that was an expert.

An arborist team dedicated to tree risk and health care



A member of the arborist team training two crew members on proper tree protection at the site near Interstate 5 in north Seattle.

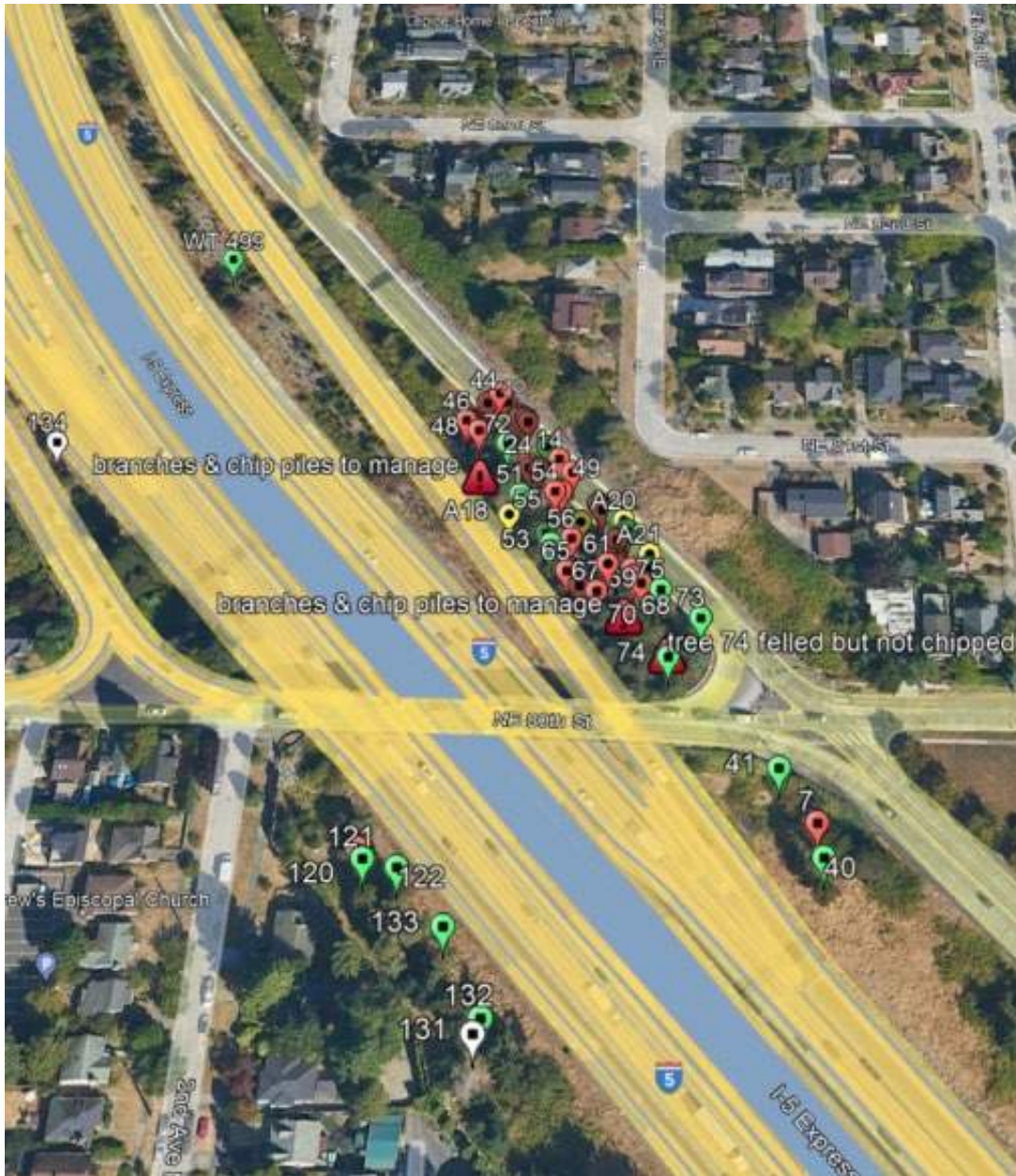


A view of the state right of way showing a site where there are several trees infested with bark beetles that will need to be removed.

Project Challenges

- Site Conditions
 - Modified urban soils
 - Compaction & site disturbance
 - Urban heat island
 - Lack of genetic diversity
 - Invasive vegetation
- Response Time & Seasonality
 - Prompt action is difficult to balance with need to follow internal procedures & safety needs
 - Mitigation measures for conducting work while beetles are active
- Limited management options
 - Chemical treatment has limited therapeutic effectiveness
 - Expensive and time-consuming to implement. Not feasible at scale
- Optics and Communication with the public
 - Removals have substantial visual impact on the landscape
- Site Access & Safety
 - Terrain makes mobilizing equipment difficult
 - High speed traffic with lots of merging impacts worker safety
 - Removals done at night due to work restrictions during peak hours

Project Successes & Opportunities



- Restoration planting will be more resilient and diverse
 - Species variety
 - Species adapted to new climate conditions
- Effective use of GIS technology to communicate findings and clarify management priorities
- The work done to-date is an effective collaboration between
 - WSDOT Area Maintenance
 - WSDOT Arborist Services
 - WSDOT Purchasing
 - Environmental Services
 - The Washington Dept. of Natural Resources
 - Facilities Services
 - Traffic Control
 - Communications
 - The private tree care sector
- Many of these trees provided ecological services since the initial I-5 landscaping in the 1960s. Not a bad lifespan for urban trees in these conditions.
- This work creates an opportunity for education about climate change, tree healthcare, and adaptive management

Questions & Comments

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