SAP YIELDS AND TAPPING STAINED WOOD

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*1 .0 Category 1 Continuing Forestry Education Credit (CFE) available

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USDA Agricultural Marketing Service: Acer Development Grant

Visit the Upcoming Events page
at Maplemanager.org to complete your registration.

Date	Time	Session Topic
Wed. September 30th	7 pm EST	Fall Tapping and Tap hole Longevity
Wed. October 14th	7 pm EST	Forestry and Maple Panel Discussion
Wed. October 28th	7 pm EST	Tubing Systems and Forest Management
Wed. November 4th	7 pm EST	Digital Entrepreneurship and Online Sales
Wed. November 11th	7 pm EST	Sap-Only Enterprises
Wed. December 9th	7 pm EST	Appraisal and Valuation of a Sugarbush

Maple education Resources

www.maplemanager.org

Business Plan

Ask the Team

Legal Resources and Templates

Forestry

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White (Functional) Wood

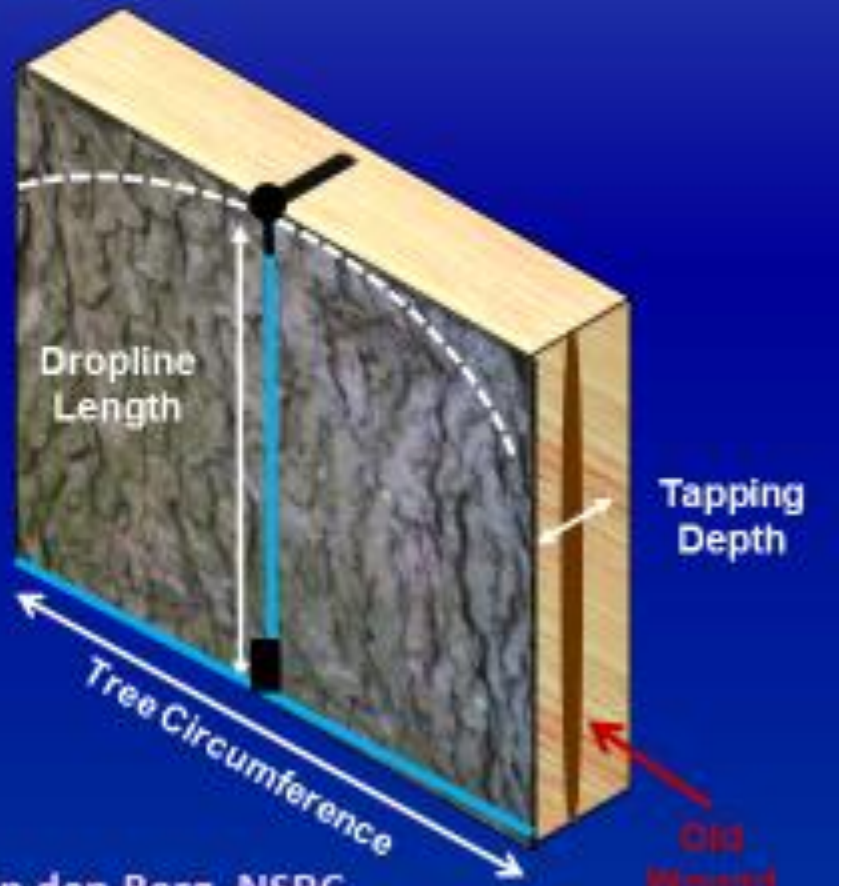
Brown (Non-functional) Wood

Tapping Guidelines

(based upon wounding and growth rates)

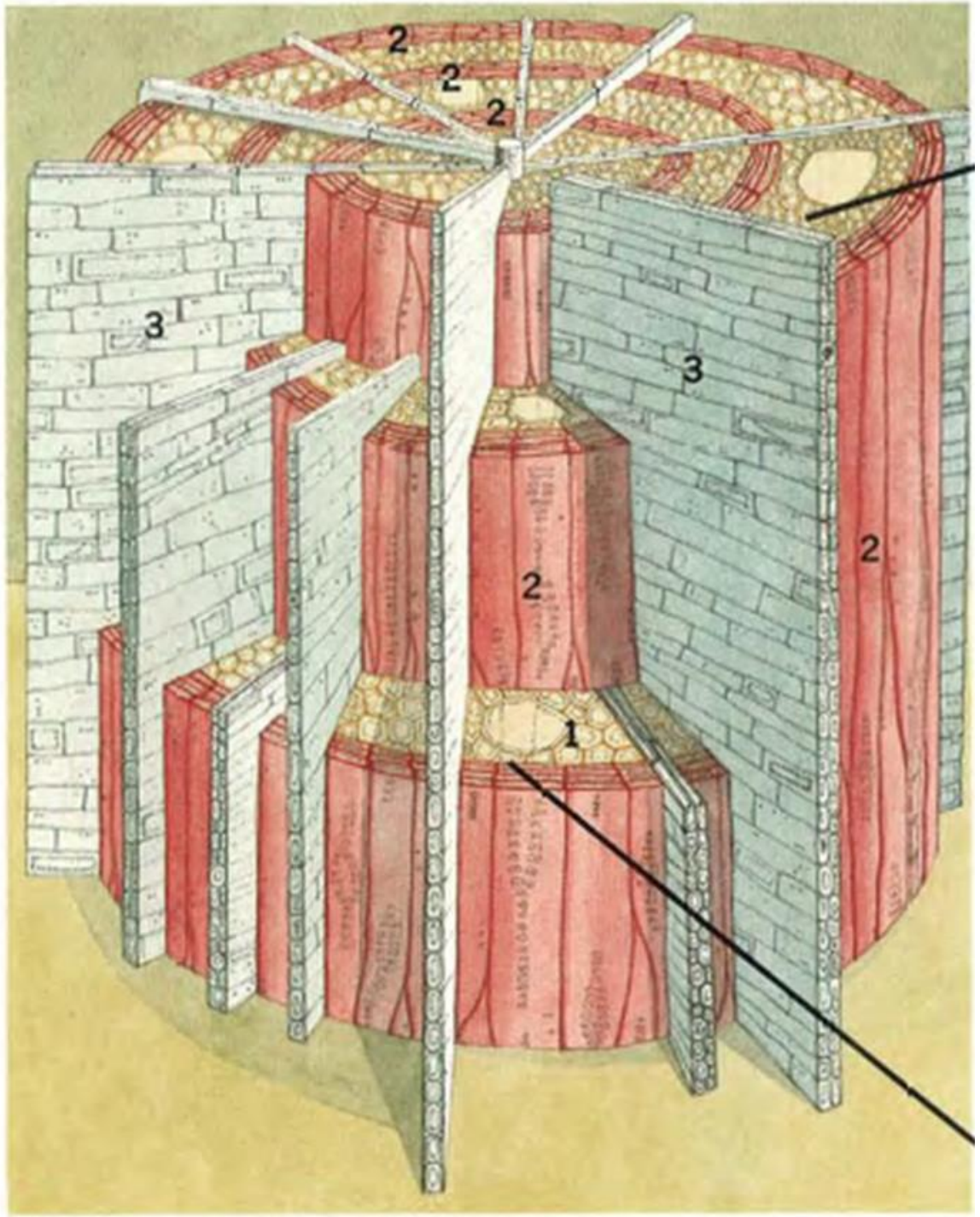
IMPORTANT FACTORS

- Tree growth (often unknown)
- Tree size
- Drop line length
- Bit/spout size
- Tapping depth
- Number of taps
- Ability to move lateral line up/down
- Status of tree compartmentalization (tapping history)



Dr. Abby van den Berg, NSRC
"Tapping Zone Model"

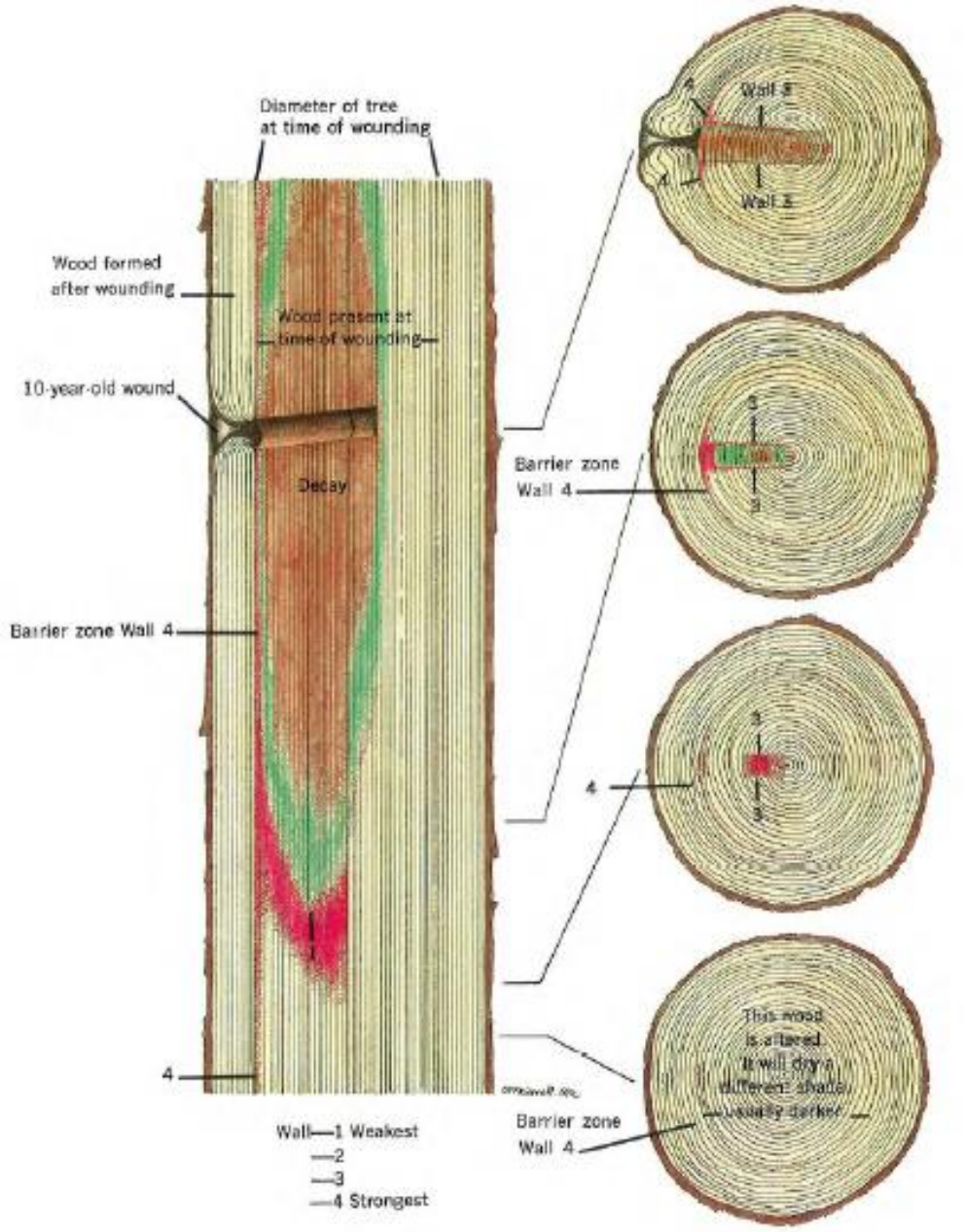
Compartmentalization is the trees natural defense against decay



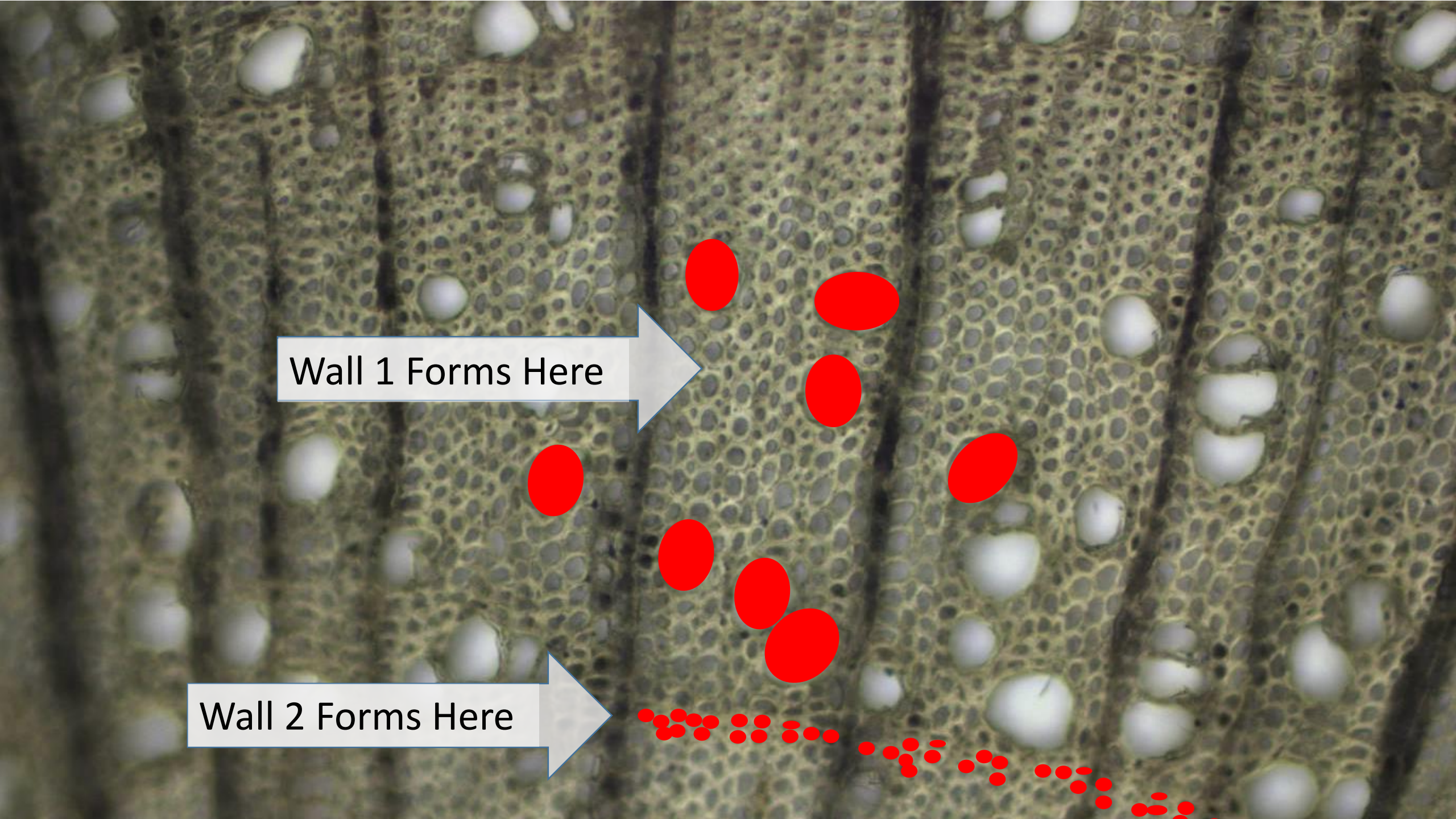
Shigo & Marx 1977

What does tapping do?

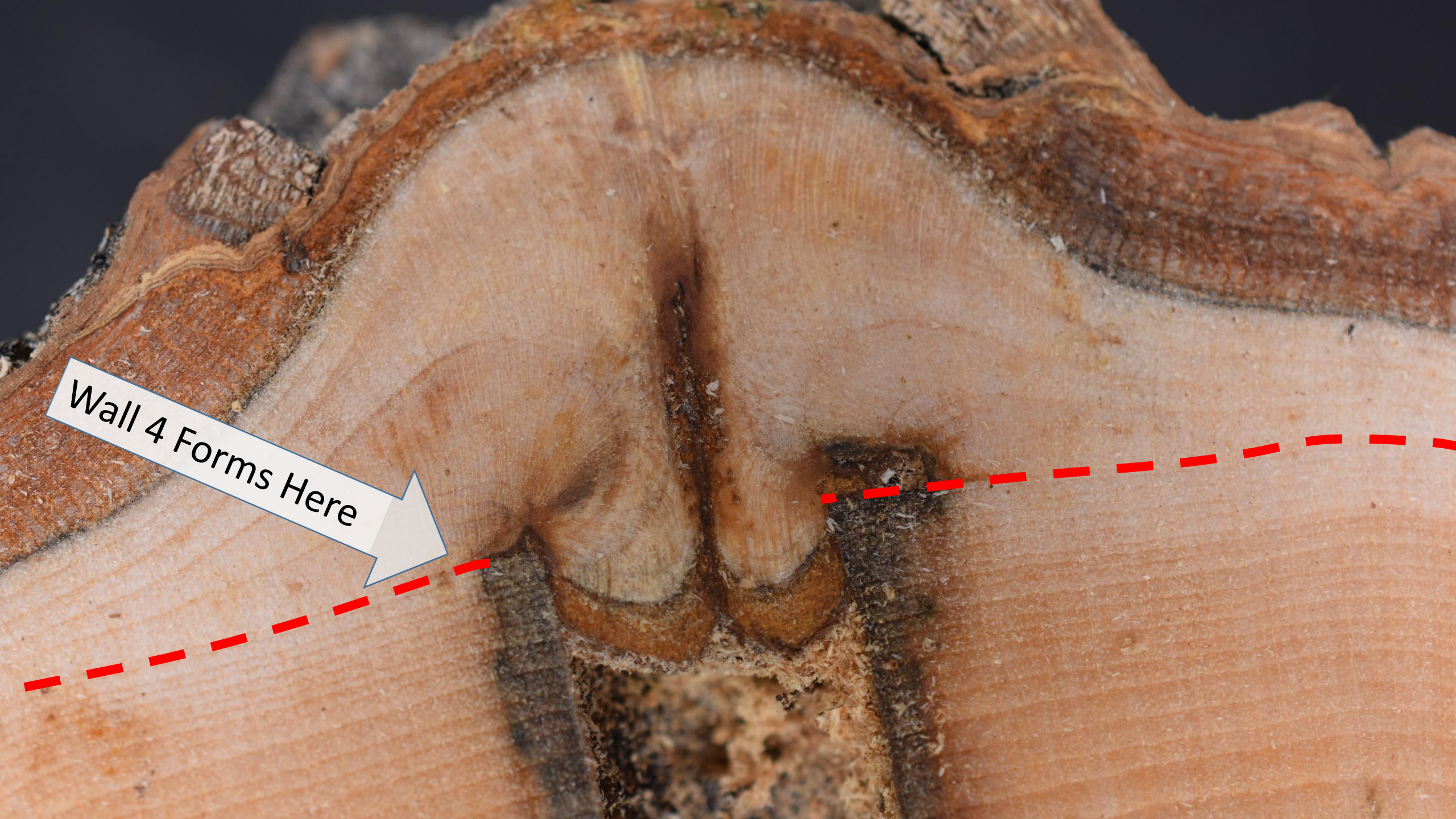
- Generates permanently nonconductive wood
- Number of compartmentalized areas determined by the **tapping intensity**
- Diameter growth *adds* conductive wood



Shigo & Marx 1977


Wall 1 Forms Here
Wall 2 Forms Here

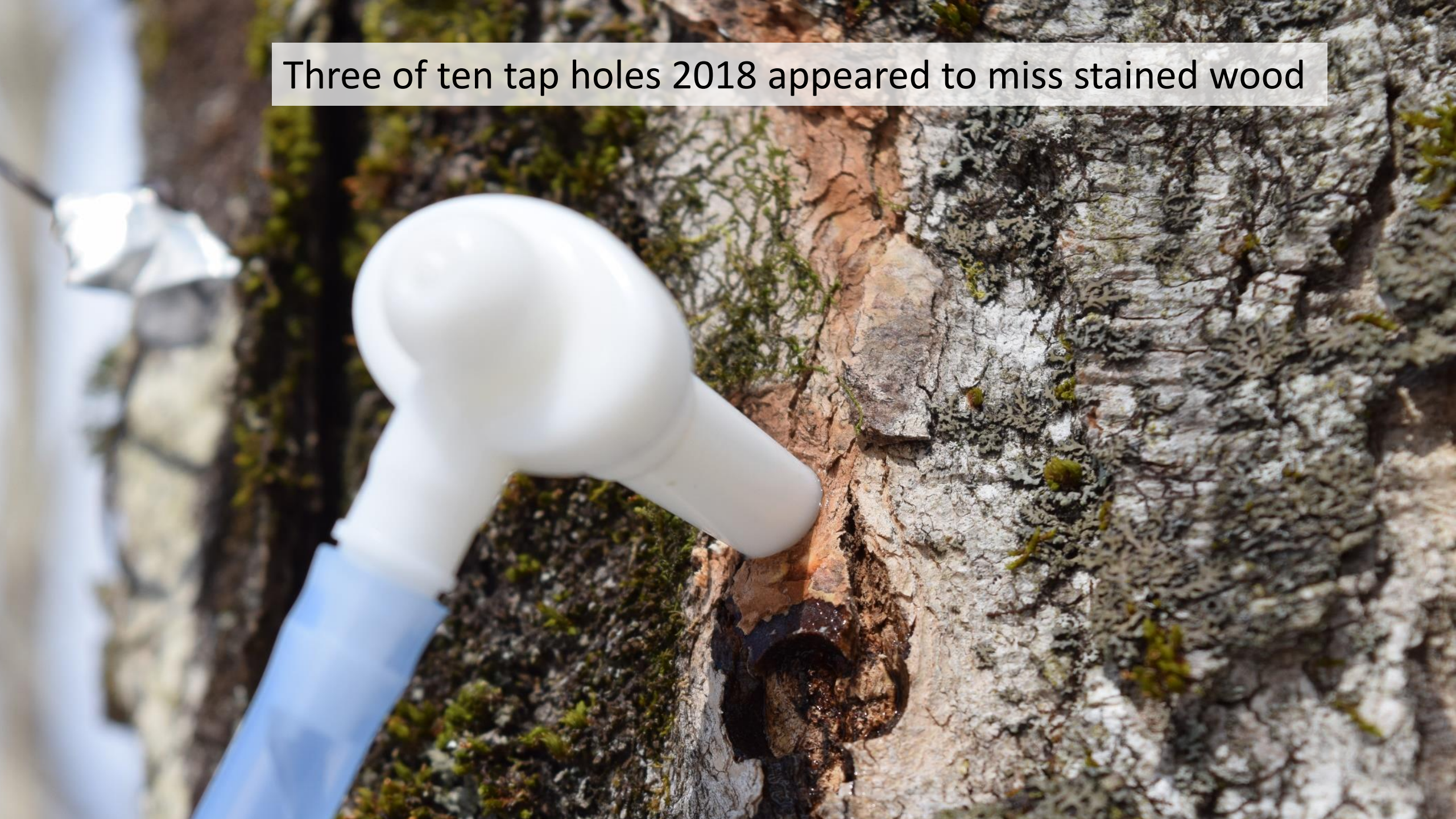

Wall 3 Forms Here

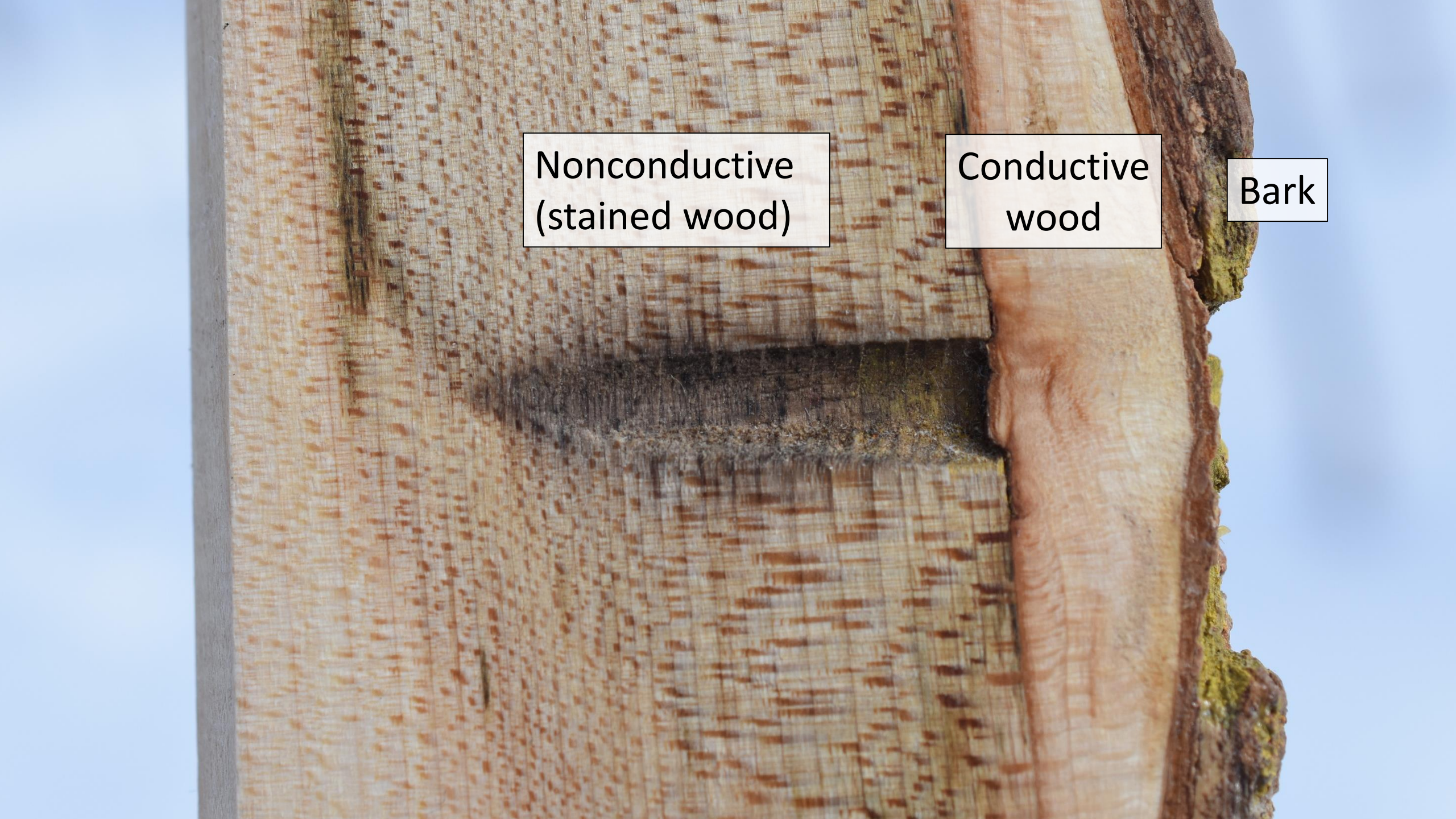

Wall 4 Forms Here


How much sap do you collect when tapping into stained wood?

- 20 Trees with history of tapping
- 3/16” gravity lines, 1 tree/line, 1 tap/tree
- 10 trees tapped directly above previous years taphole
- 10 trees tapping into clean wood
- Season total sap production and average sap sweetness for 2018 and 2019
- Wood chip mass

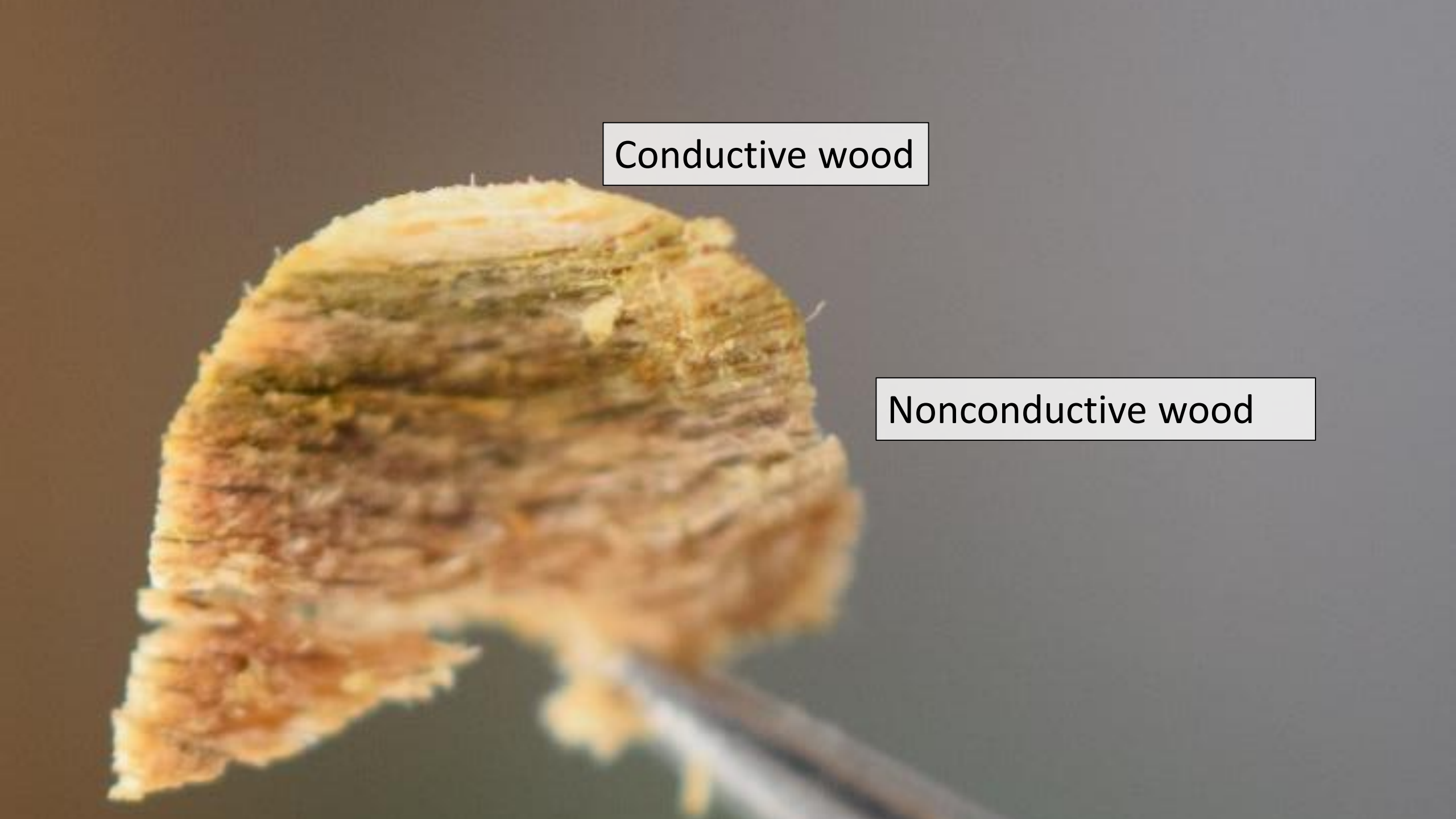

5/16” holes, 1.5” deep directed above previous years hole

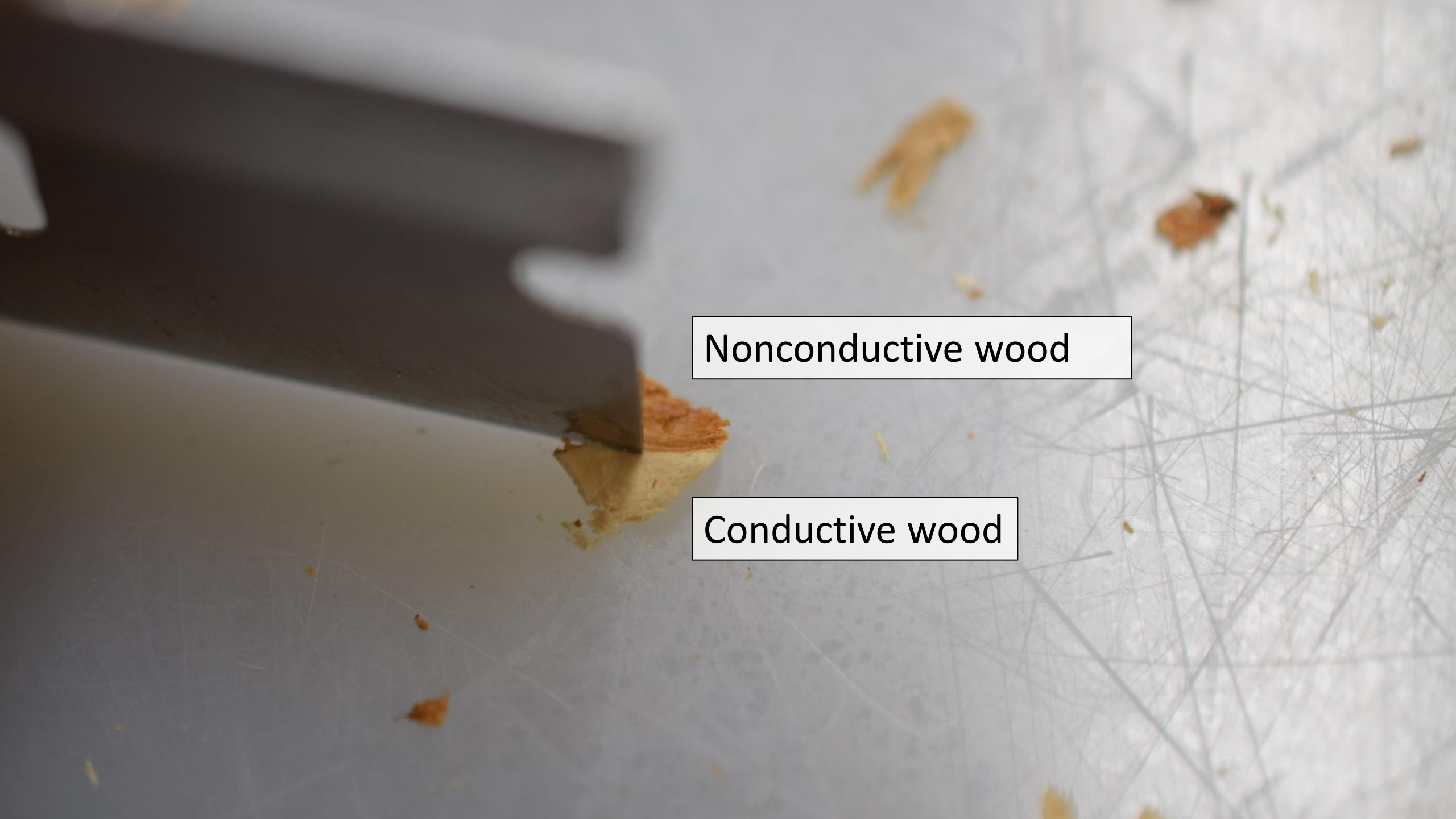

Three of ten tap holes 2018 appeared to miss stained wood


Nonconductive
(stained wood)
Conductive
wood
Bark

Wood chips from all trees were collected

Wood chips from all tapholes were collected


Conductive wood
Nonconductive wood


Nonconductive wood
Conductive wood

Conductive wood

Bark

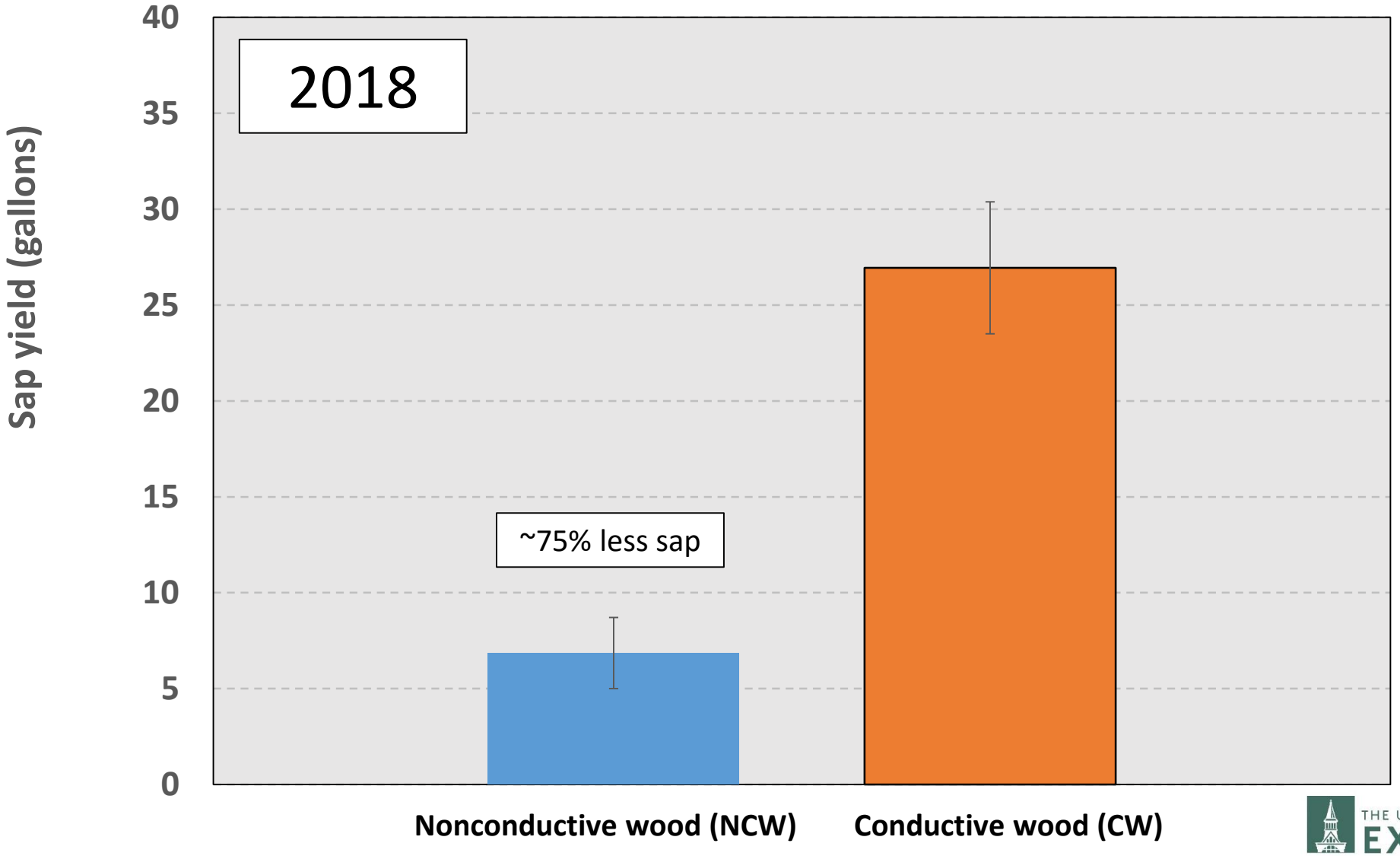
Nonconductive (stained wood)

Conductive wood

Bark

Results

Sap Production from taps placed into non-conductive wood (NCW) and conductive wood (CW)



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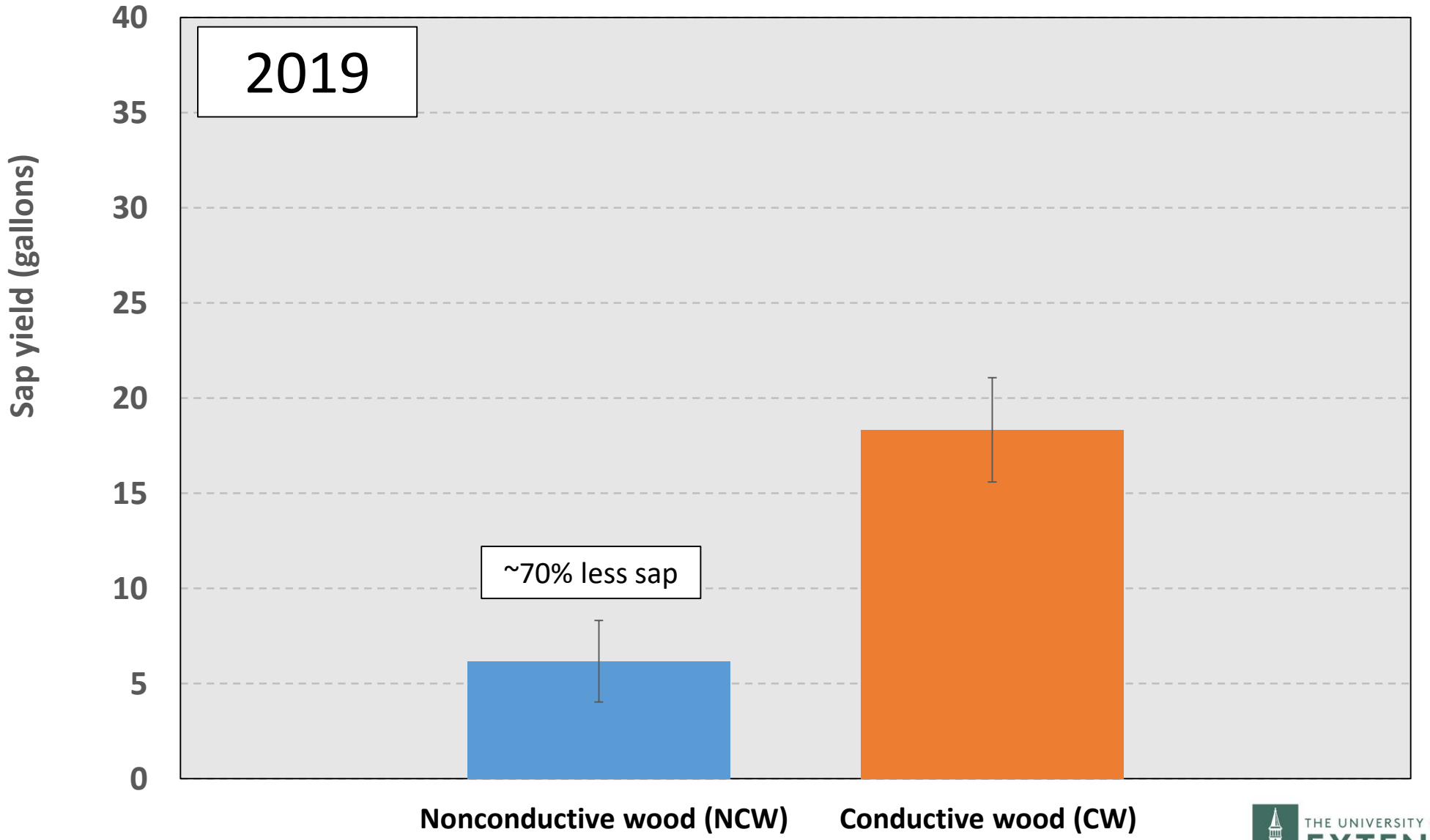
Sap Production from taps placed in non-conductive wood (NCW) and conductive wood (CW)



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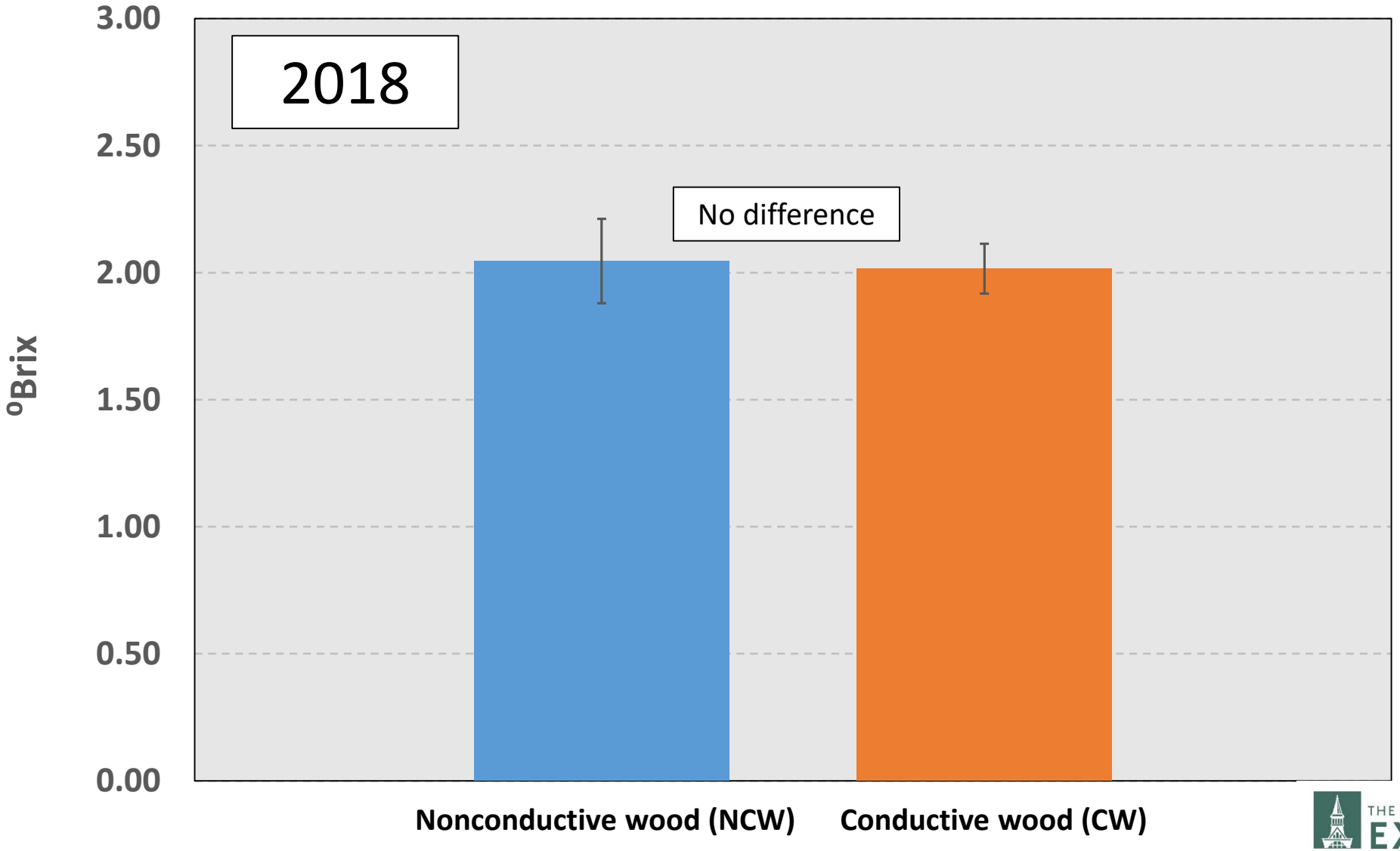
Sap sweetness from taps placed in non-conductive wood (NCW) and conductive wood (CW)



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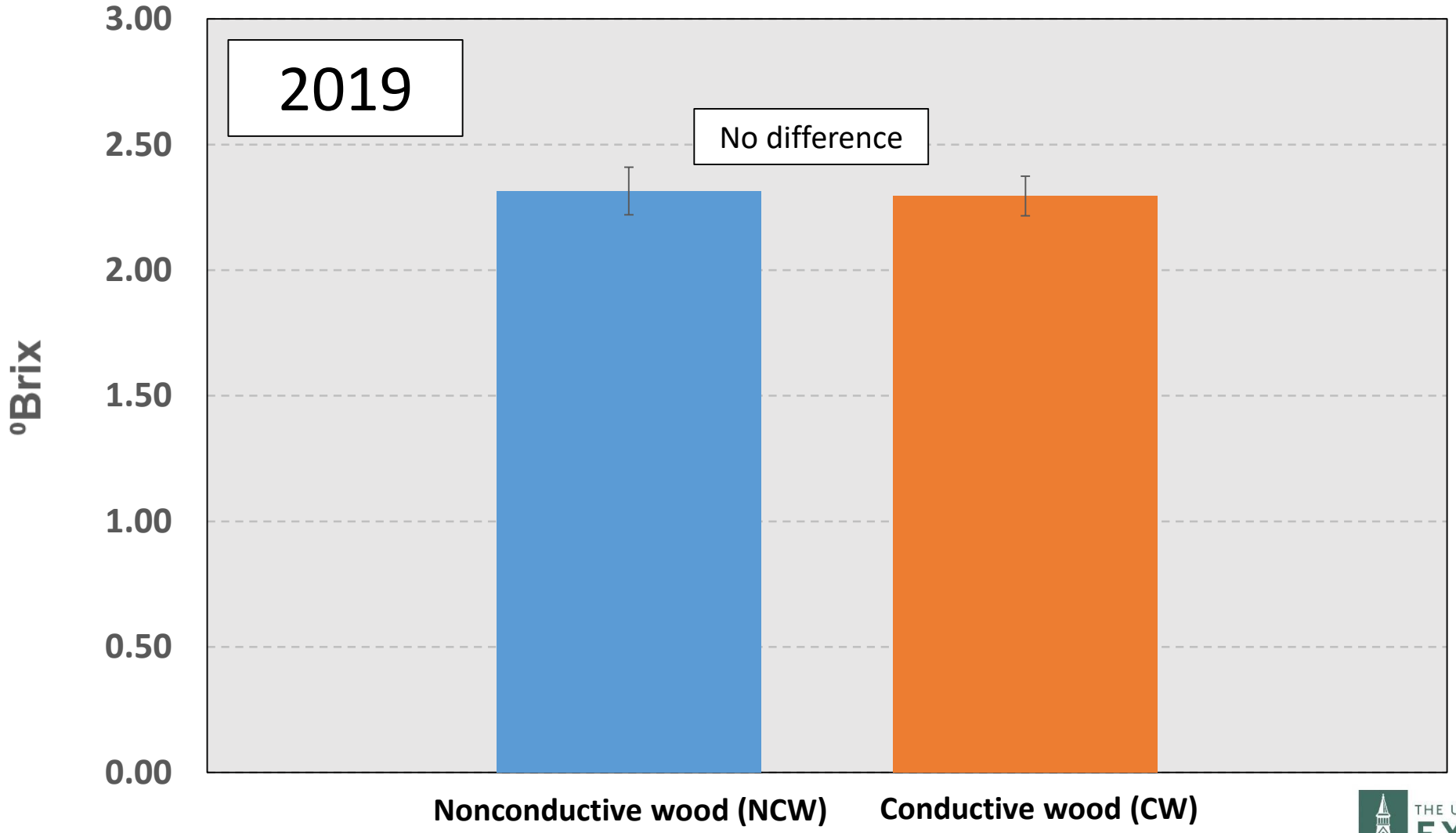
Sap sweetness from tapholes in non-conductive wood (NCW) without 3 CW trees and conductive wood (CW)



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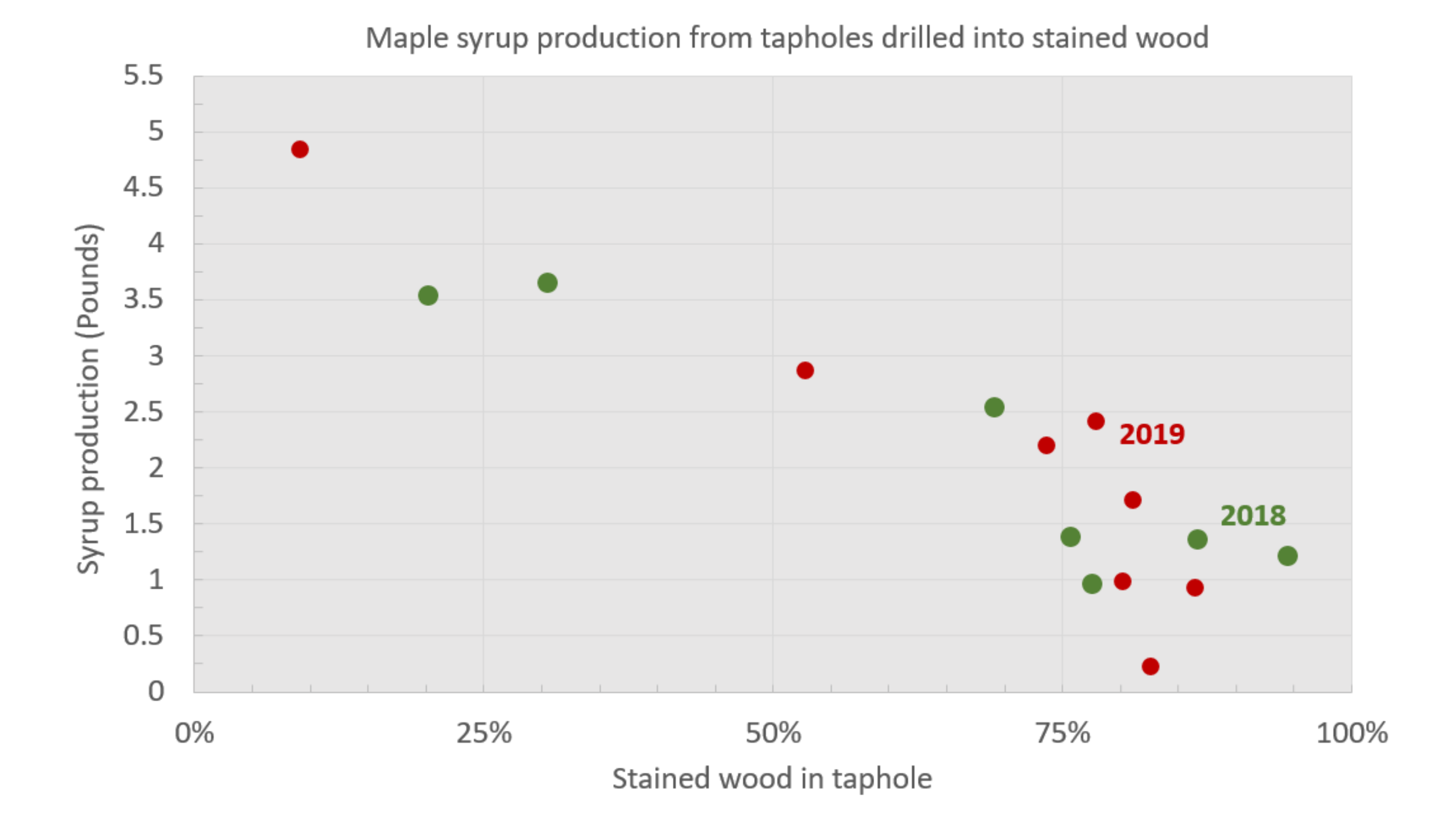
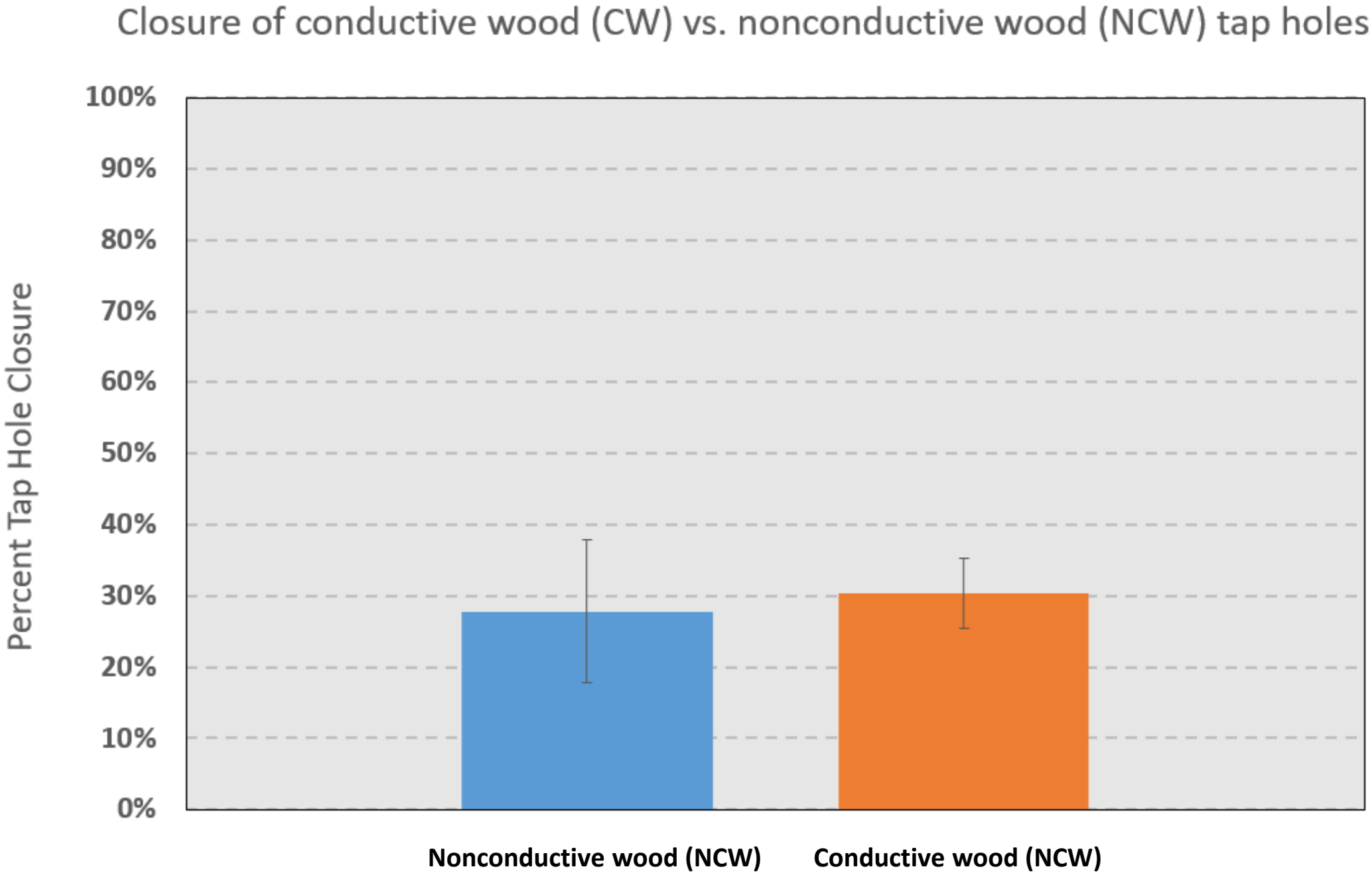
What is the relationship between amount of nonconductive wood and yield?

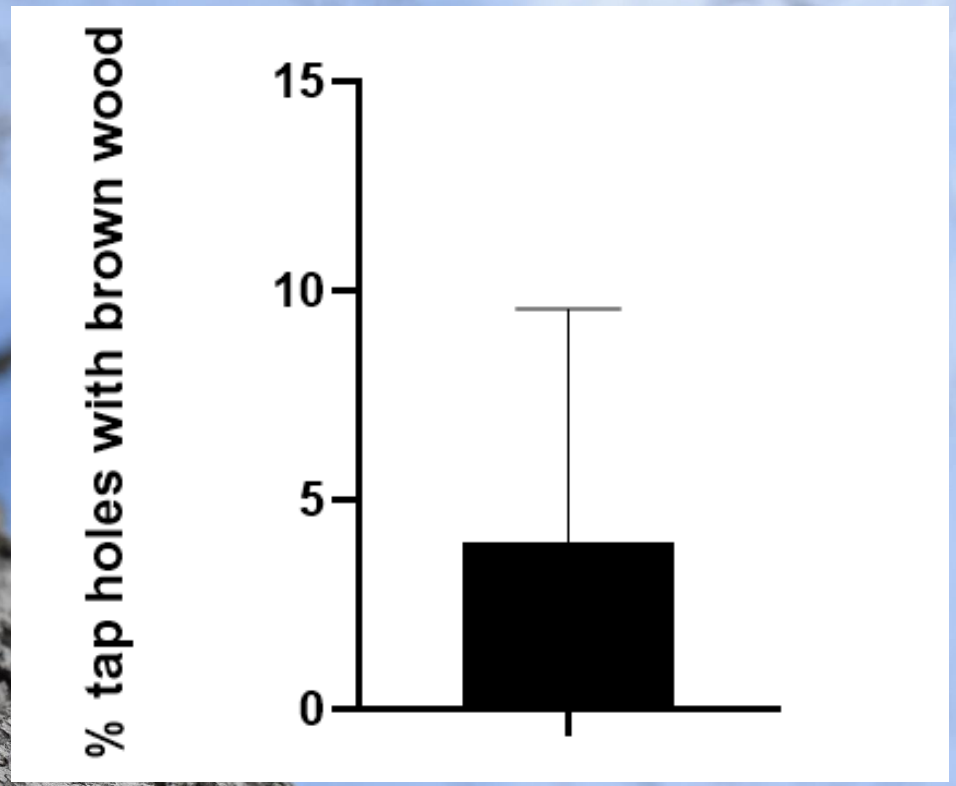

Maple syrup production from tapholes drilled into stained wood
Syrup production (Pounds)
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0%
25%
50%
75%
100%
Stained wood in taphole
2019
2018

Taphole closure


Closure of conductive wood (CW) vs. nonconductive wood (NCW) tap holes
Percent Tap Hole Closure
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Nonconductive wood (NCW)
Conductive wood (NCW)

How often do sugar makers hit brown wood?

- Survey of 312 sugar makers from VT, NY, ME, MA, CT, PA, NH, OH and NJ
- Operations ranged from 1 to 100k taps
- Average rate of hitting brown wood >4.5% (±5.5%)
- Range from 0 to 41%



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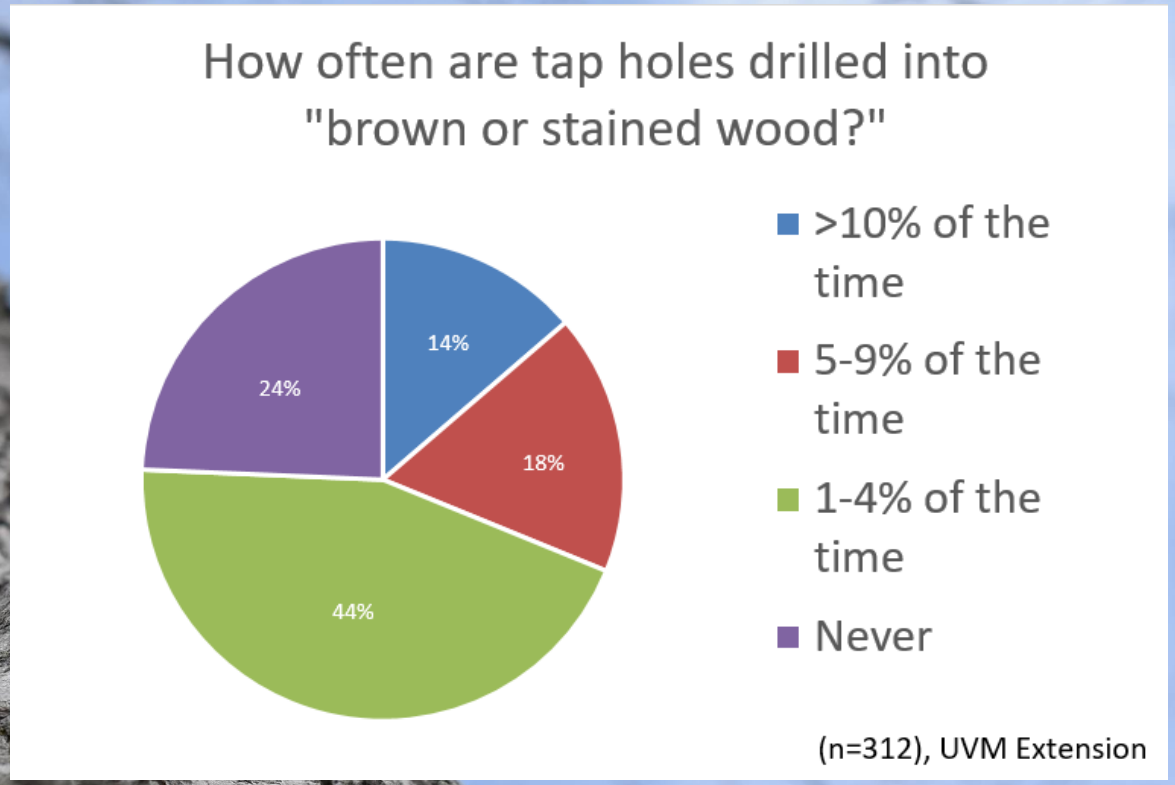

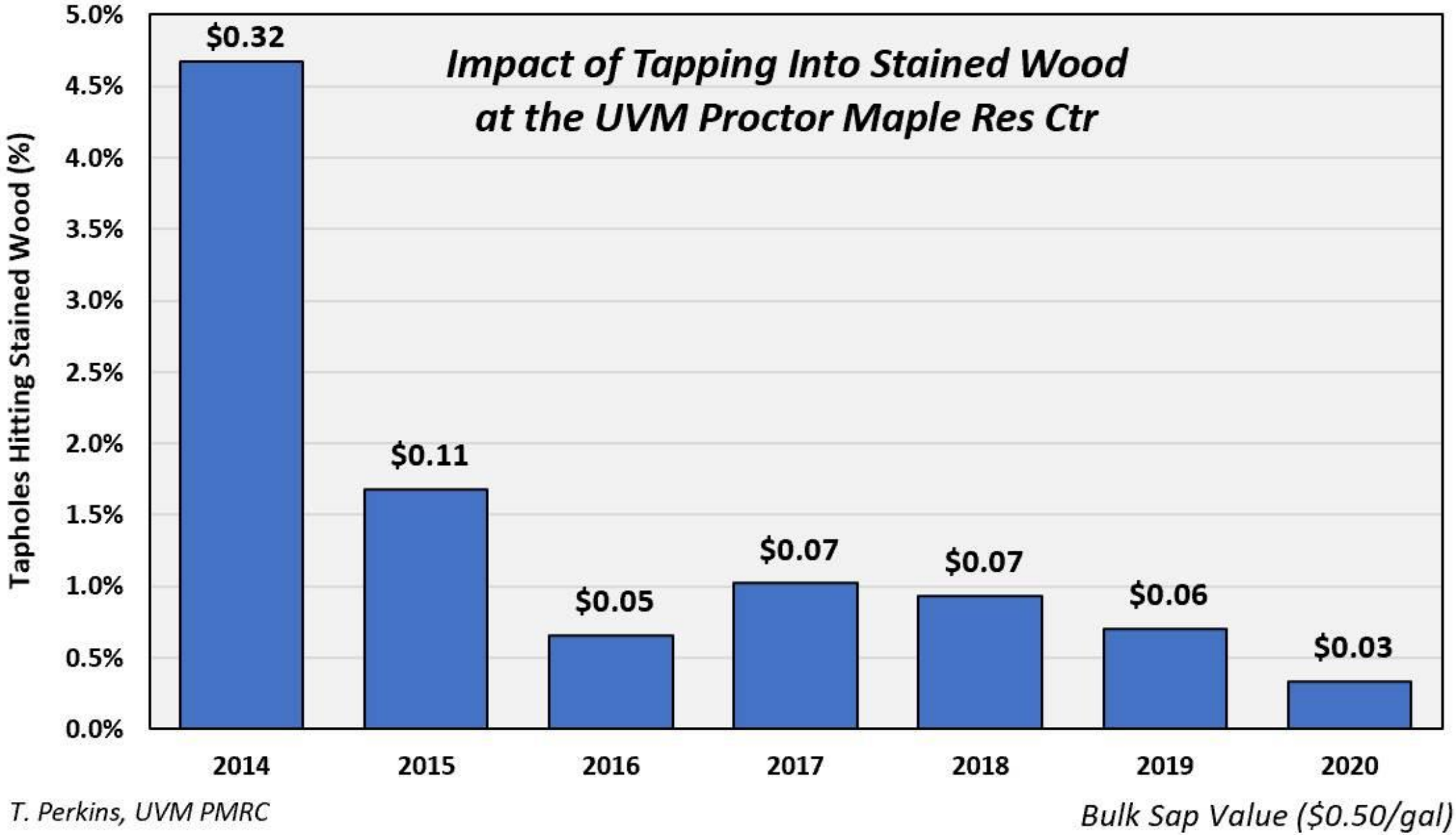
Impact of Tapping Into Stained Wood
at the UVM Proctor Maple Res Ctr
Tapholes Hitting Stained Wood (%)
5.0%
4.5%
4.0%
3.5%
3.0%
2.5%
2.0%
1.5%
1.0%
0.5%
0.0%
$0.32
$0.11
$0.05
$0.07
$0.07
$0.06
$0.03
2014
2015
2016
2017
2018
2019
2020
T. Perkins, UVM PMRC
Bulk Sap Value ($0.50/gal)

Conclusions

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- Hitting nonconductive wood while tapping can significantly impact sap yields
- The impact on sap yield is roughly proportional to the amount of nonconductive wood exposed
- Sap sweetness is not impacted
- Taphole closure after 1 year not impacted

Recommendations

- Careful management to help crop trees grow will add more conductive wood
- Take extra time while tapping to avoid obvious mistakes
- Record how often tapholes hit stained wood
- Expand the tapping zone

Recommendations

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- Tapping below the lateral or moving bucket location
- Shallower tapholes
- Smaller diameter spouts
- Fewer taps per tree
- Longer drops

YouTube proctor maple research center

Keys to High Sap Yields

10 videos • 797 views • Last updated on Aug 17, 2020

by UVM Proctor Maple Research Center

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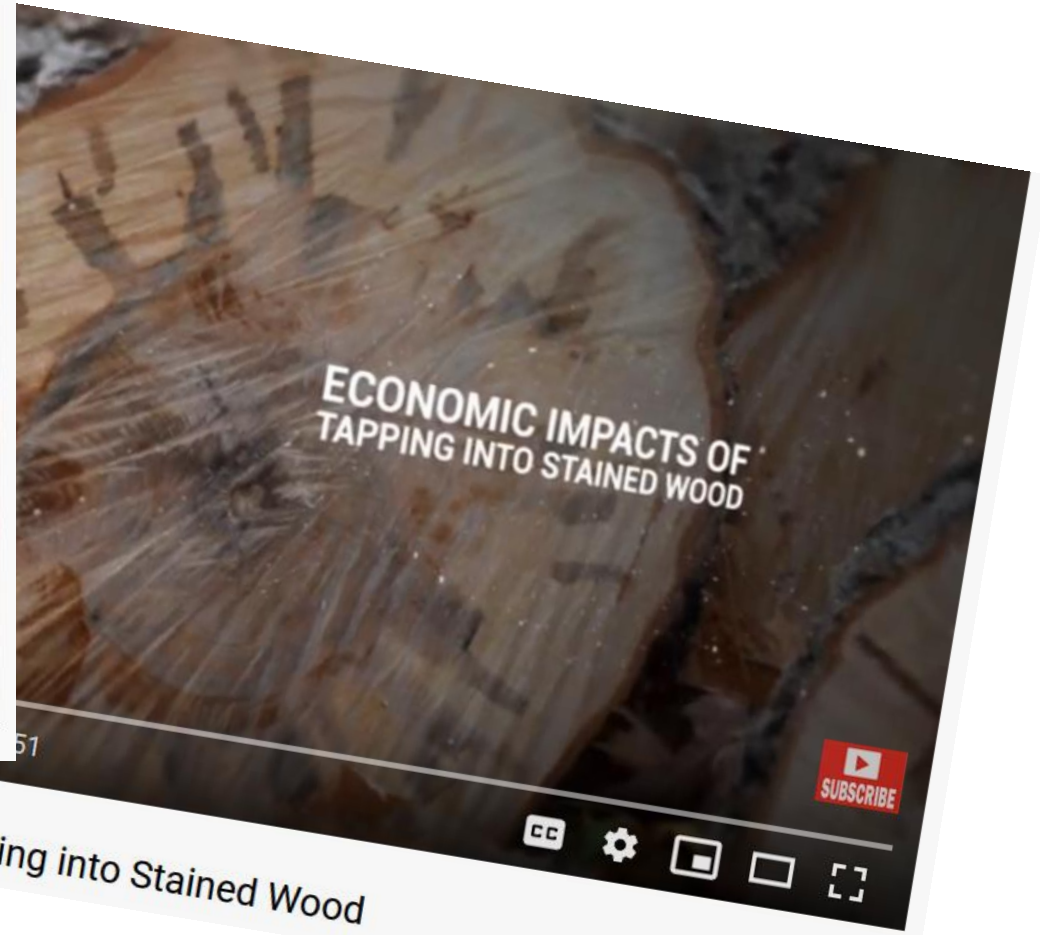

Economic Impacts of Tapping into Stained Wood

Questions?