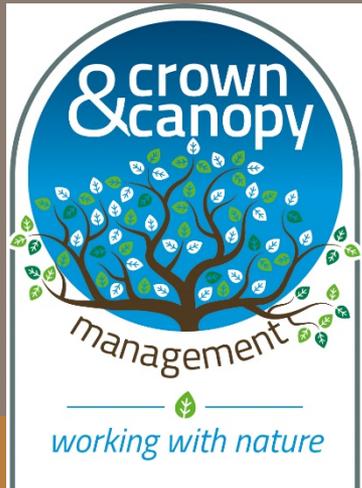


# “REDUCE THE CROWN, RETAIN THE TREE”



AA Annual Conference  
Exeter , UK  
September 11, 2019



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# Philip van Wassenauer





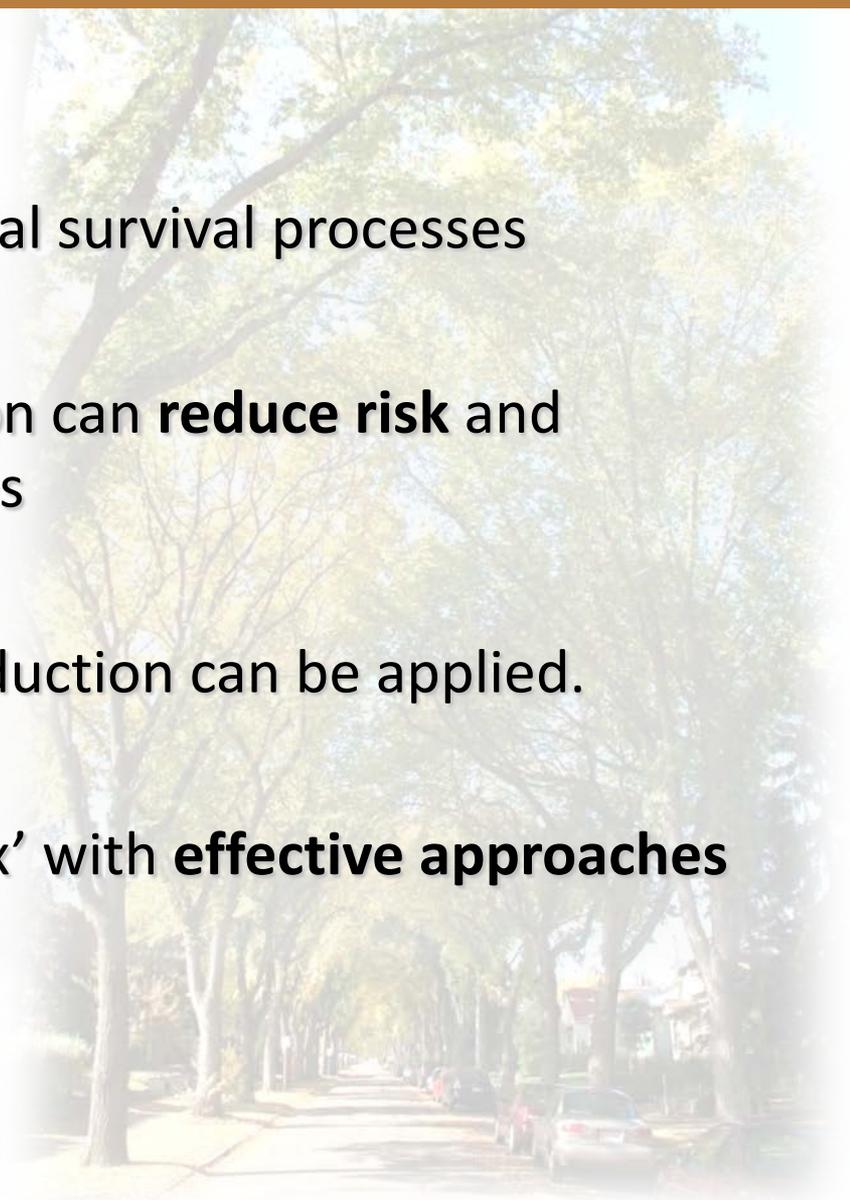
*Neville Fay at  
Ashton Court*



*Ted Green in  
Great Windsor Park.*

# Objectives

- Review life stages and natural survival processes
- Explore how crown reduction can **reduce risk** and enable **conservation** of trees
- Provide scenarios where reduction can be applied.
- Expand the arborist 'toolbox' with **effective approaches**



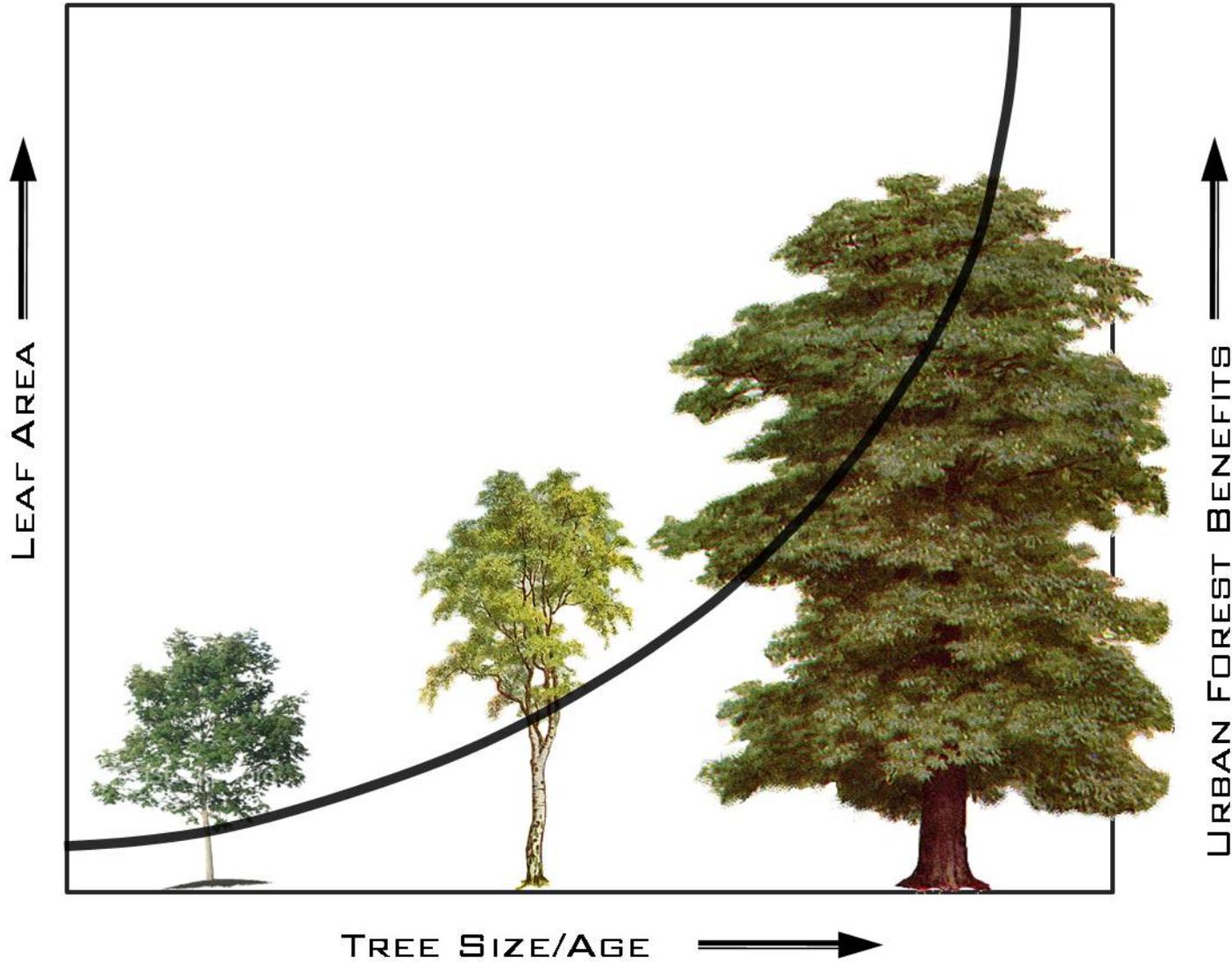
# Urban Forest Benefits

*The urban forest provides a wide range of services, such as:*

- Improved air quality
- Micro-climate effects (e.g. shading)
- Property value & Aesthetics
- Storm-water attenuation
- Energy conservation
- Noise reduction
- **Wildlife habitat**
- Physical & Psychological wellbeing
- etc.



# Maximizing Leaf Area





## HERITAGE TREES AND CONSERVATION ARBORICULTURE



# Life Stages of a Tree

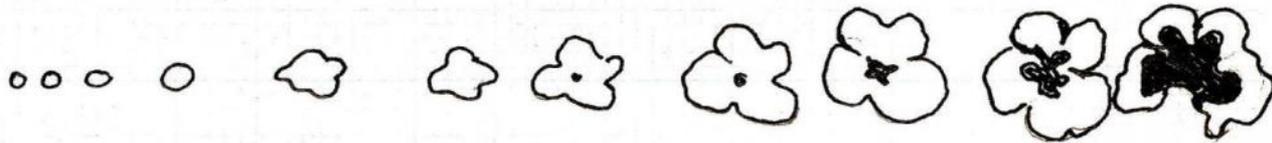
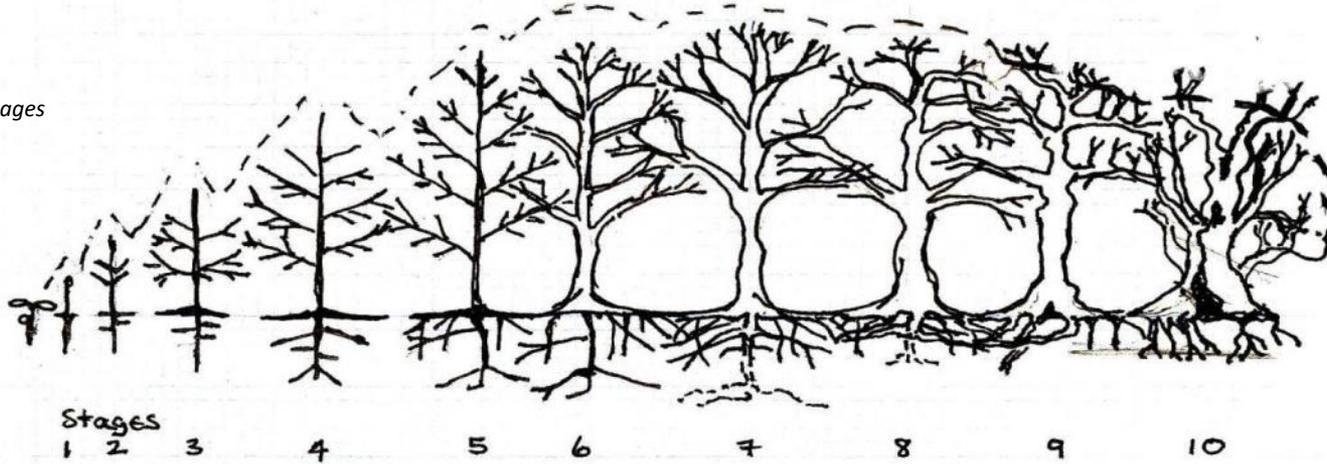
Neville Fay –  
Treework Environmental Practice

PRE-MATURITY

FULL  
MATURITY

EARLY ANCIENT LATE ANCIENT

Pierre Rambault- Tree  
Morphology and Life Stages



Reduce Crown, Retain Tree



## Retrenchment / Reiteration

- **Retrenchment:** natural survival process for aging trees. Trees reduce in height and spread. “Old trees must get smaller”
- **Reiteration:** canopy is reinvented, lower to the ground and closer to the stem. New growth is the “future tree”. Dormant buds are often source for this new growth.



# Retrenchment / Reiteration



*Reduce Crown, Retain Tree*







Photo: Scott Baker - TreeSolutions

# Tree Statics/Tree Pulling



*Reduce Crown, Retain Tree*

# Port Credit Red Oak



*Reduce Crown, Retain Tree*



# Port Credit Red Oak



*Reduce Crown, Retain Tree*



# Real Life





## CROWN REDUCTION PRUNING



## Crown Reduction Introduction

- Corrective/Structural/Formative pruning is an option for young trees
- Mature or complex trees require a more complex approach
- Improvement, not correction
- Each application compounds improvement



## Crown Reduction Challenges

- Balance the pruning dose
- Large cuts = compromised aesthetics & structure  
& function  
= short-term risk reduction
- Small cuts = may not have enough impact
- Reduced leverage = reduced likelihood of failure



## Case Study 1 – White Pine

- Single stem? Choose a leader?  
*Too late for that.*
- Instead, **both stems were reduced.**
- **2 cables** were installed



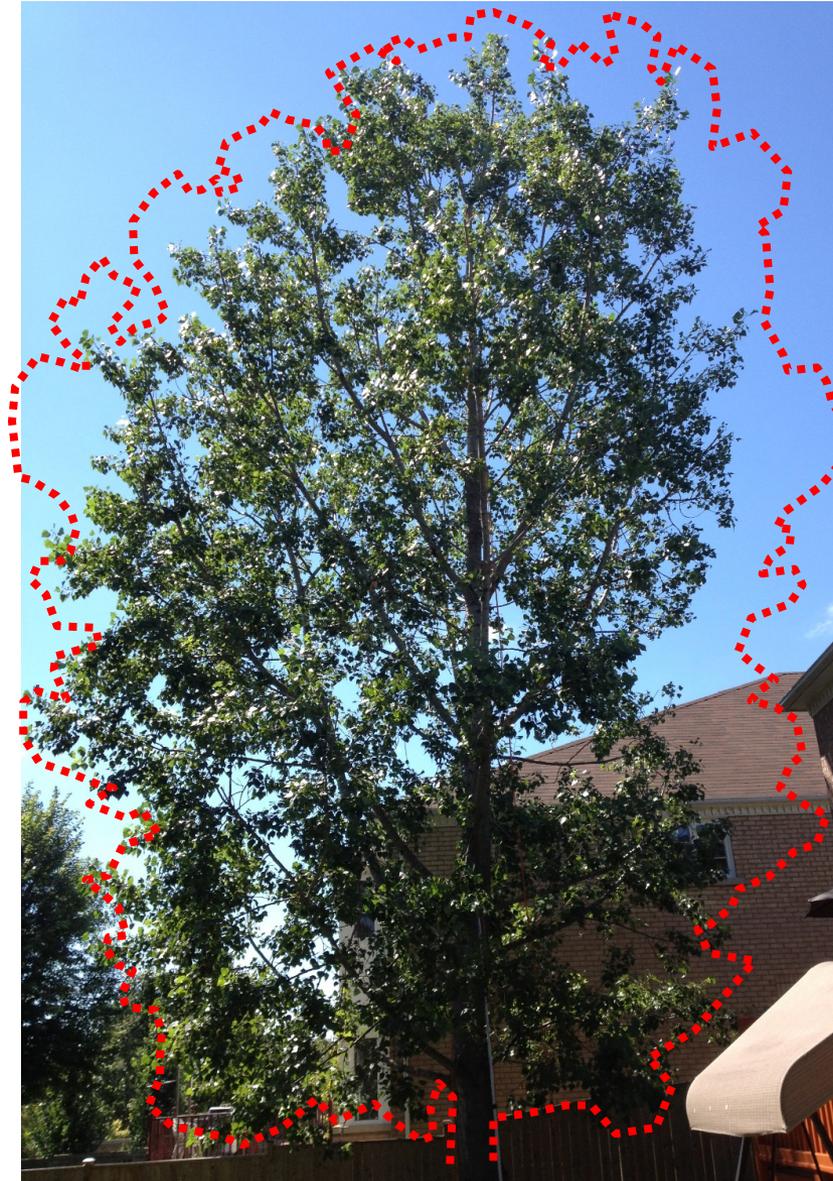
## Case Study 1 – White Pine

- Top is **thinned and reduced**
- Height reduced below surrounding trees





## Case Study 2 - Poplar



*Reduce Crown, Retain Tree*



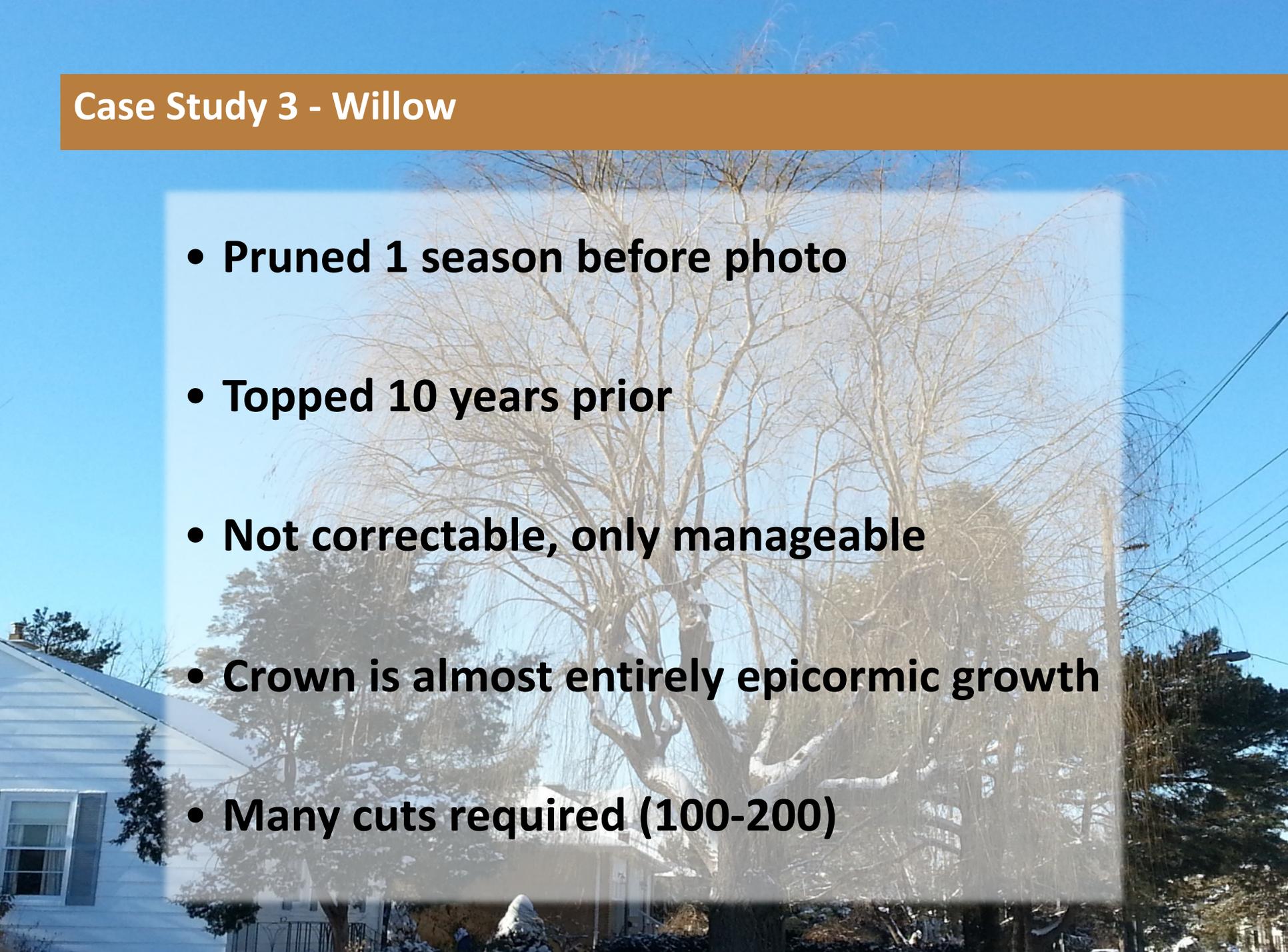
## Diameter Range of Cuts

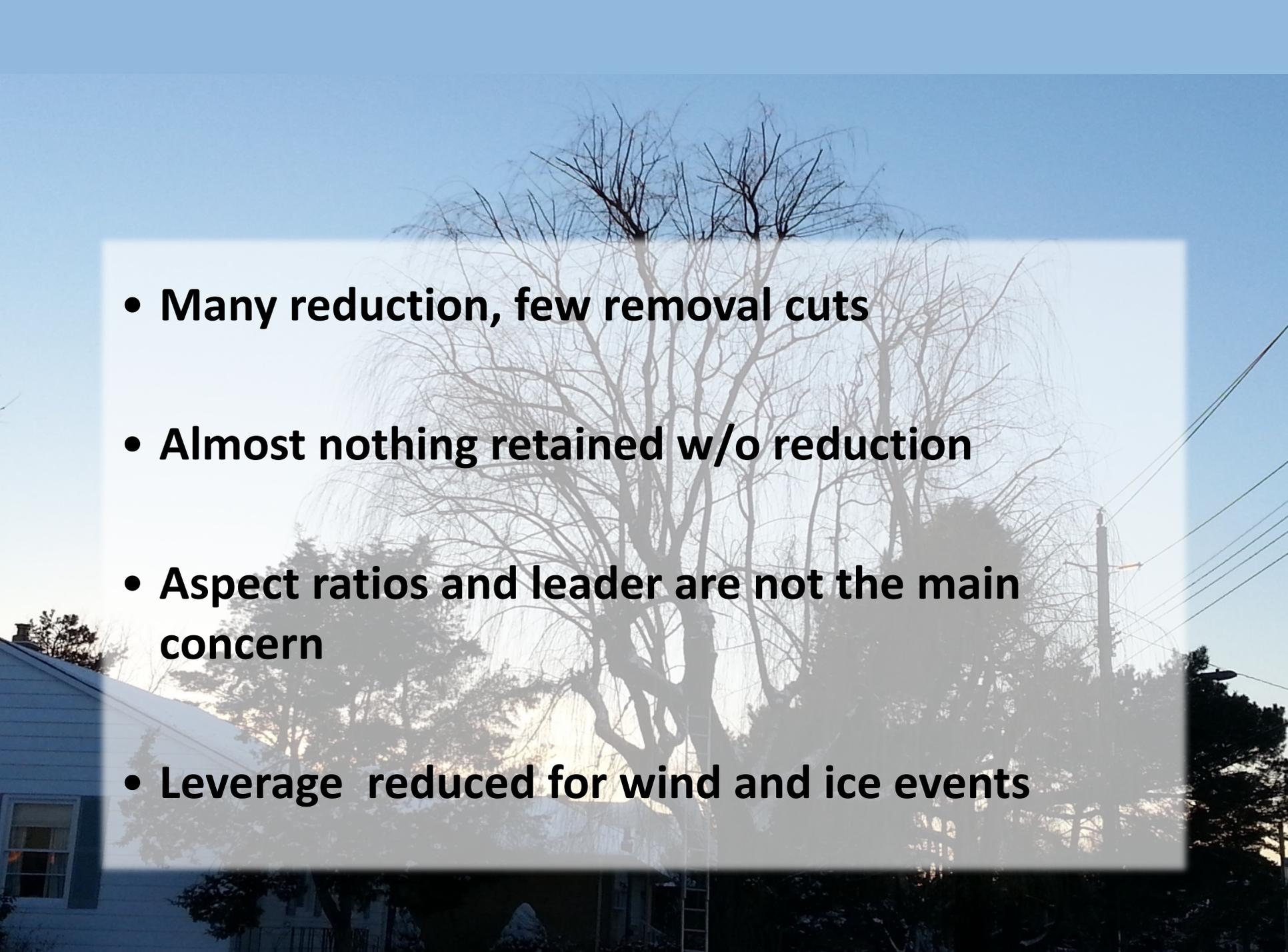


- 36 x 6'-7' pieces @ 3/4" to 1-1/8" dia.
- Many smaller pieces were slender and prone to shedding



## Case Study 3 - Willow

- **Pruned 1 season before photo**
  - **Topped 10 years prior**
  - **Not correctable, only manageable**
  - **Crown is almost entirely epicormic growth**
  - **Many cuts required (100-200)**
- 
- A large, bare willow tree with a dense, tangled crown of epicormic growth, standing in a residential yard with a white house and snow on the ground. The tree's branches are thin and numerous, creating a complex, web-like structure. The background shows a clear blue sky and other trees, some with snow on their branches. A white house with a window is visible on the left side of the image.

- 
- **Many reduction, few removal cuts**
  - **Almost nothing retained w/o reduction**
  - **Aspect ratios and leader are not the main concern**
  - **Leverage reduced for wind and ice events**

December 30, 2013



***CROWN  
REDUCTION  
WORKS!***

## Case Study 4 – Silver Maple



*Reduce Crown, Retain Tree*







*Reduce Crown, Retain Tree*



# First Crown Reduction Pruning



*Reduce Crown, Retain Tree*





Not enough reduction on this limb over house.

Failed in a summer thunderstorm.

Still alive - note new growth on high left





*Reduce Crown, Retain Tree*







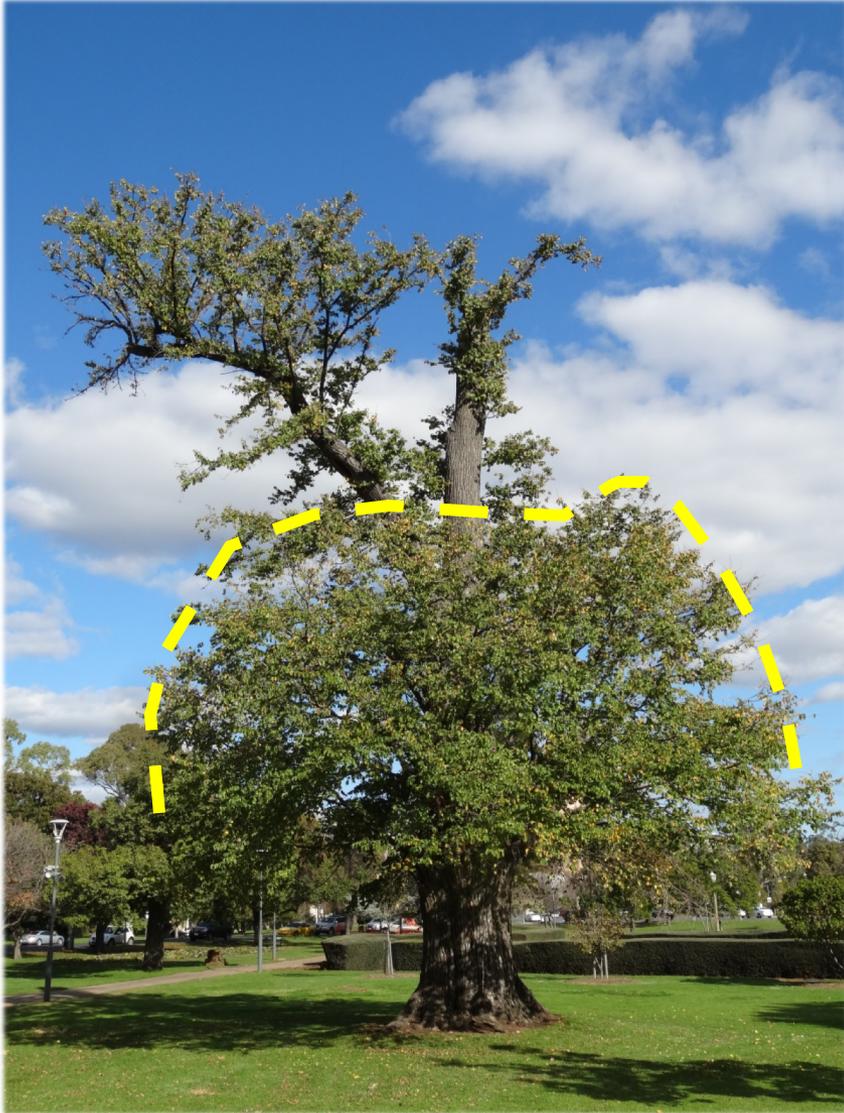


*Reduce Crown, Retain Tree*

Survived December 2013  
Ice Storm, lost just one  
small live branch



# Elm in Adelaide, Australia



*Reduce Crown, Retain Tree*



# *Robinia* in Europe



*Reduce Crown, Retain Tree*



# *Robinia in Europe*



*Reduce Crown, Retain Tree*



# Reduction in Bavaria



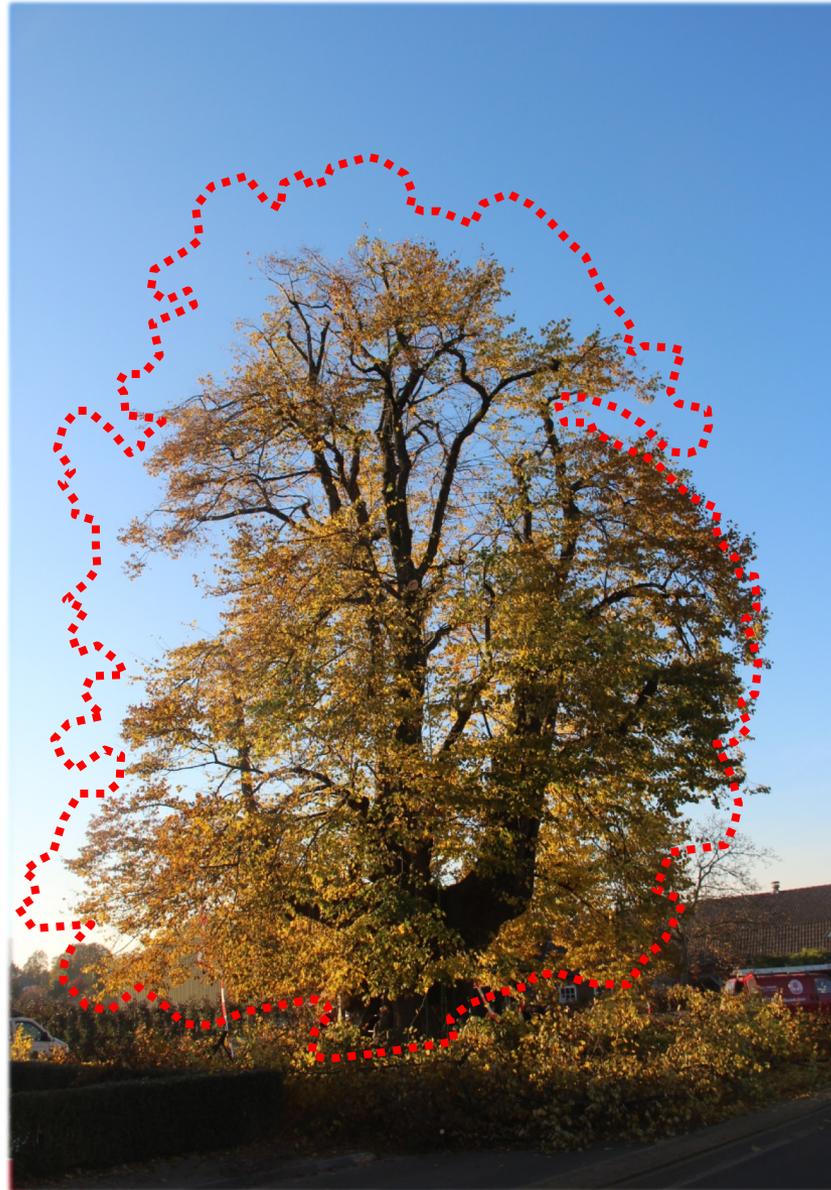
*Reduce Crown, Retain Tree*





Google

# Sambeek *Tilia* - Netherlands



Reduce Crown, Retain Tree













Chorus

P





# Stabilization of extended branches

## Reduce leverage

- 'Bring in' the canopy to reduce loading
- Reduce likelihood of failure
- Replicate natural limb shedding/retrenchment processes

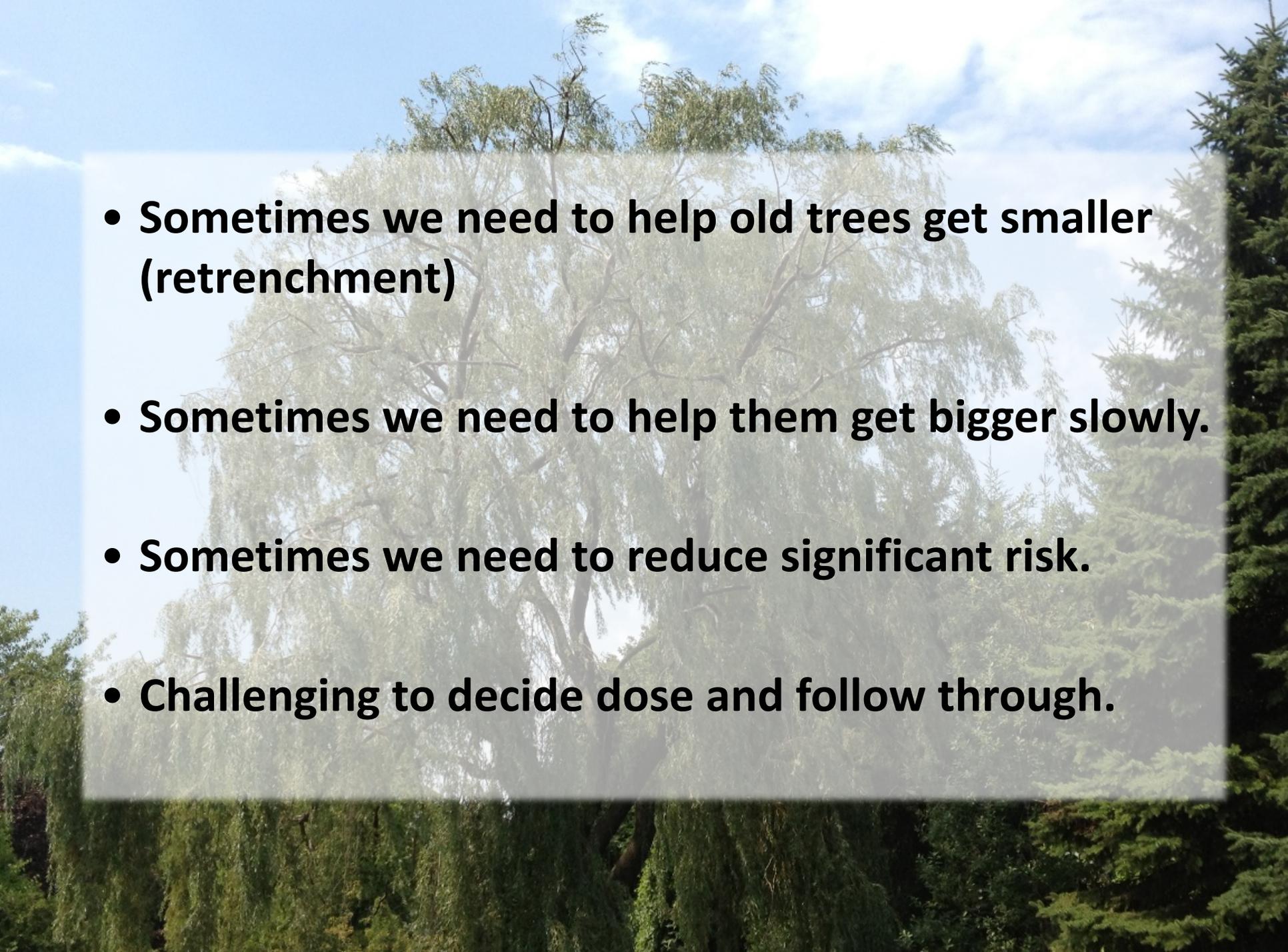


Ed Gilman



Neville Fay



- 
- **Sometimes we need to help old trees get smaller (retrenchment)**
  - **Sometimes we need to help them get bigger slowly.**
  - **Sometimes we need to reduce significant risk.**
  - **Challenging to decide dose and follow through.**

## Better Structure, Lower Risk

- When approached for a removal, we can often apply (and sell) reduction instead.
- “Save money, save trees.”
- Progressive, long-term application and management instead of removal or ‘correction’





**Thank you!**

# Case Study – Ashbridge Willow

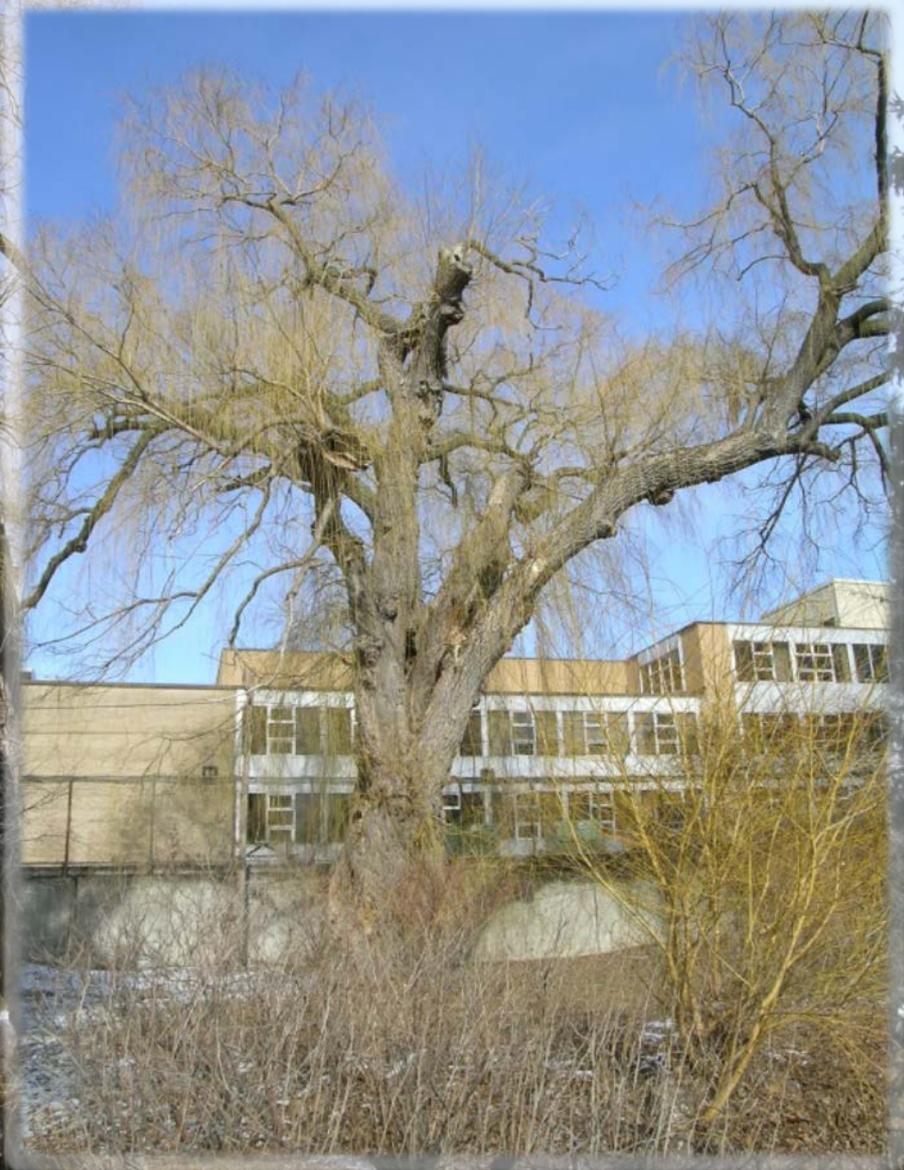
Heritage willow at  
Ashbridge Estate  
Toronto, Ontario.



## THE ASHBRIDGE ESTATE

This property was home to one family for two centuries. Sarah Ashbridge and her family moved here from Pennsylvania and began clearing land in 1794. Two years later they were granted 600 acres (243 hectares) between Ashbridge's Bay and present-day Danforth Avenue. The Ashbridges prospered as farmers until Toronto suburbs began surrounding their land in the 1890s. They sold all but this part of their original farm by the 1920s. Donated to the Ontario Heritage Foundation in 1972, it was the family estate until 1997. As they changed from pioneers to farmers to professionals over 200 years on this property, the Ashbridges personified Ontario's development from agricultural frontier to urban industrial society.

Ontario Heritage Foundation, an agency of the Government of Ontario





## Case Study

First reduction

Large sections removed  
for risk mitigation - 2007



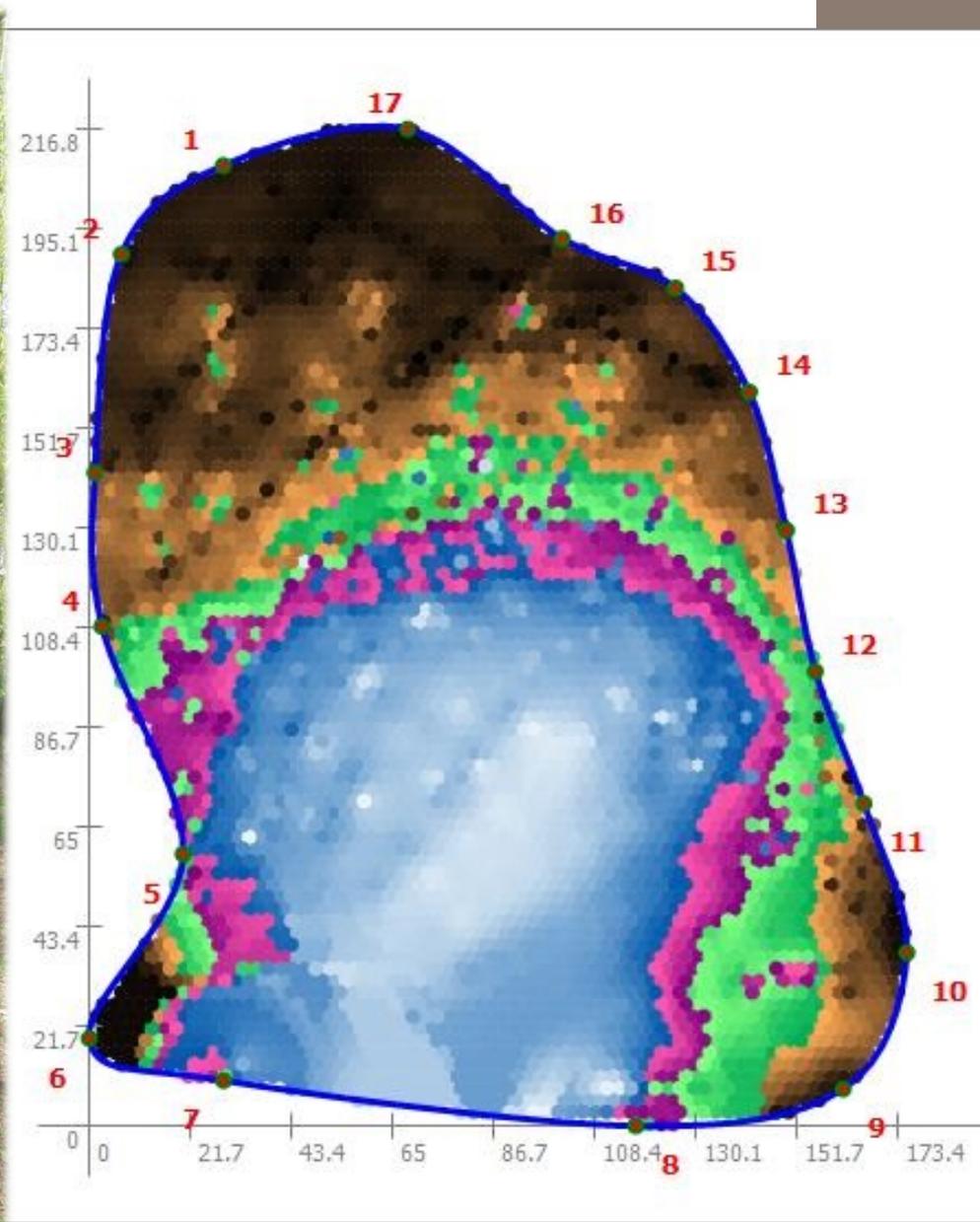
## Case Study 1 - Ashbridge Willow



After trunk fire...removal ordered by City



Spring 2009 after trunk fire – tomograph assessment



Tomograph results – tree was retained



2010 – three years after initial pruning



Target Exclusion Fencing— Composted wood chip mulch added within fence to encourage root development



Fall 2013 – tree retained in heritage landscape and still going strong!





*Brad Cadwallader*



*Brad Cadwallader*



*Brad Cadwallader*

## Better Structure, Lower Risk

Reduce Crown, Retain Tree



- *English oak (1842) in Richmond*
- *No previous management*
- *15 m height, 20 m x 25 m canopy*

Brad Cadwallader



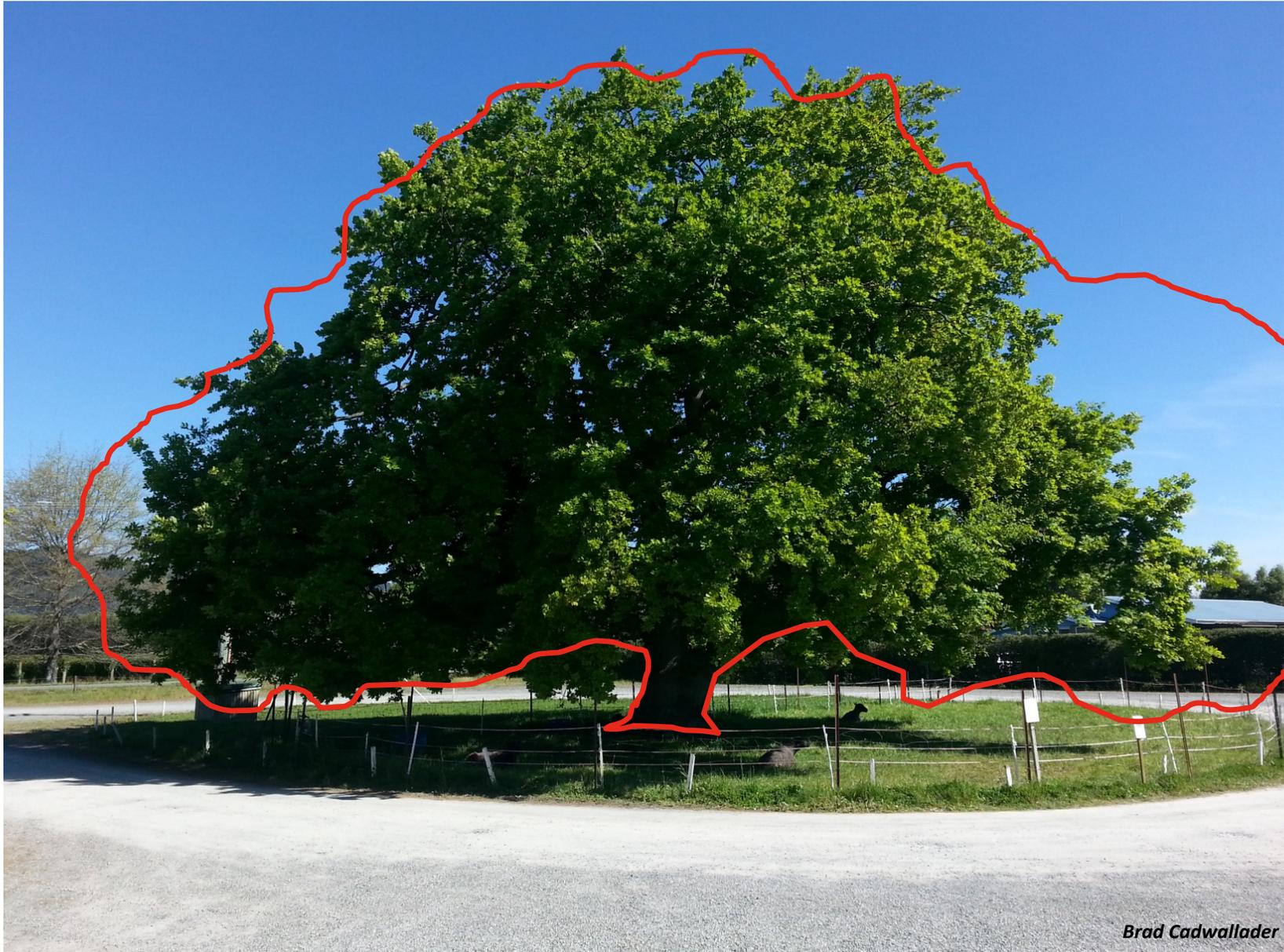
# Better Structure, Lower Risk

*Reduce Crown, Retain Tree*



*Brad Cadwallader*

# Better Structure, Lower Risk



Reduce Crown, Retain Tree





# Questions? Comments?

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