Howland Island WMA

Stands Location

North Montezuma WMA

Montezuma National Wildlife Refuge

LEGEND

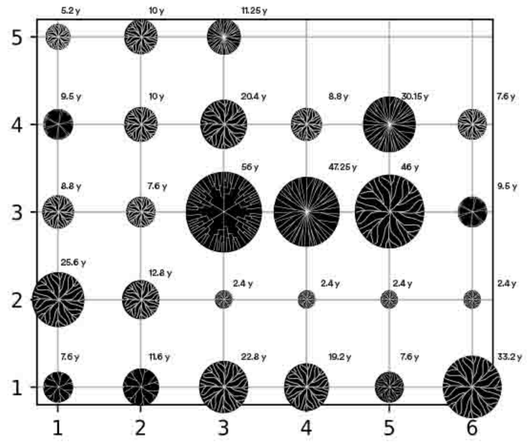
- Mixed Forests
- Evergreen Forest
- Deciduous Forest
- Wetland Woods
- Erie Canal Trail
- River
- Streets

Stands: Parcel 6 Plot 4
Location: 43.043926, -76.597426

Current Stands Condition:

This stand consists of 41 trees, among which 27 trees are in fair/good growing conditions. Over half of them are Ash trees.

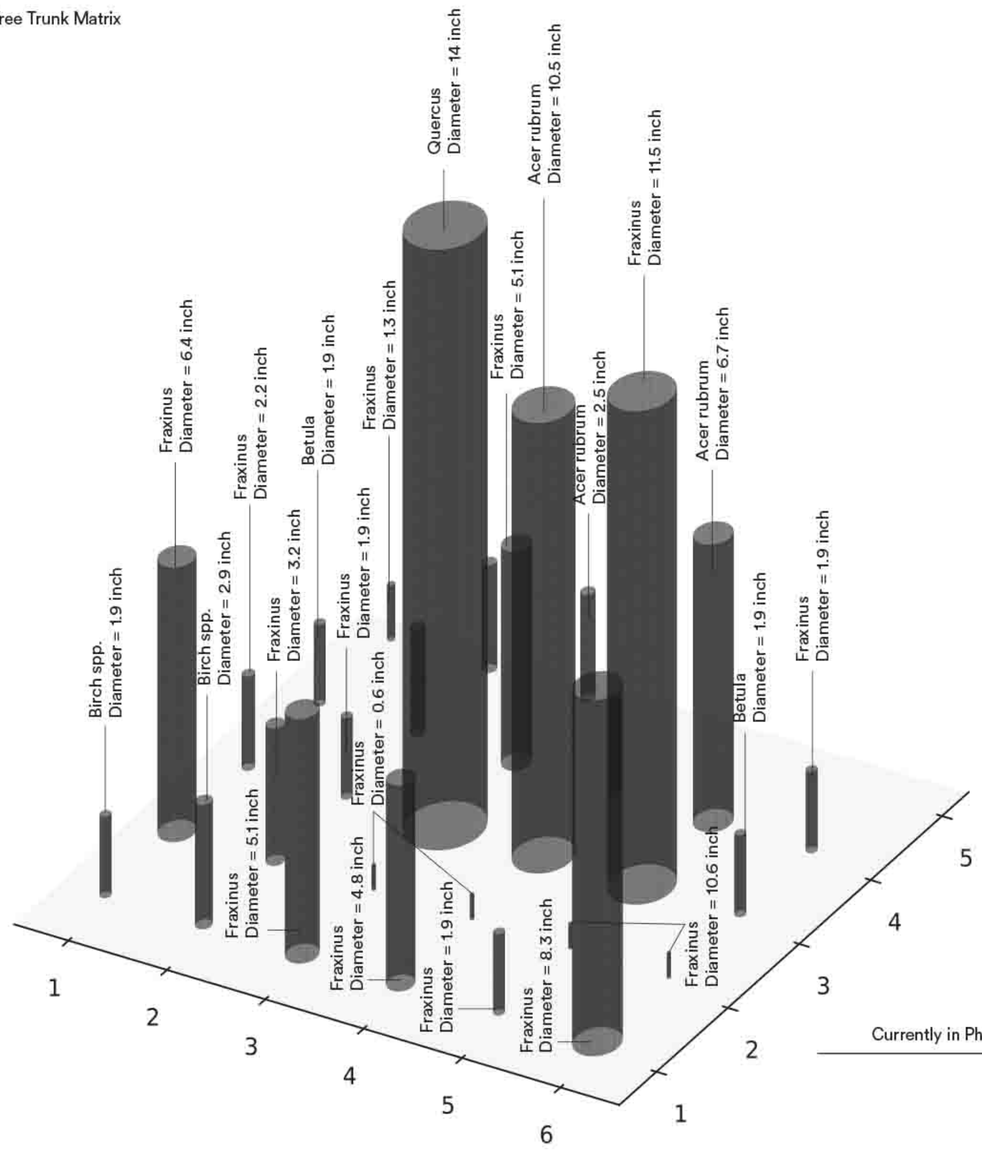
The age class of the current stand is diversified, ranging from 2.4 - 56 years old. According to the Growth Dominance Coefficient, the stand is in the fourth phase -- the reverse growth dominance -- where smaller trees contribute more to the total stand growth.



Tree Species	Quantity
Fraxinus	19
Acer rubrum	3
Birch spp.	2
Quercus	1
Betula	2
Total	27

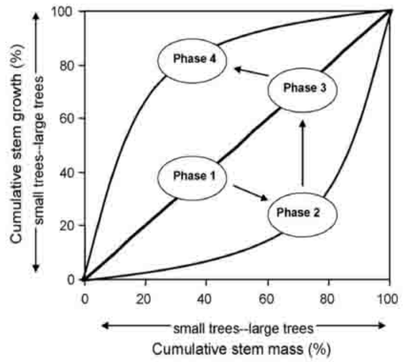
DBH
0 10 20 inch

Tree Trunk Matrix



Currently in Phase 4

Growth Dominance Coefficient
Four Phases



Growth Dominance Coefficient (GDC) is an indicator comparing the contribution to the stand growth between larger and smaller trees.

It is defined as positive when larger trees in the stand display proportionally greater growth than smaller trees, and negative when smaller trees display greater growth than larger trees.

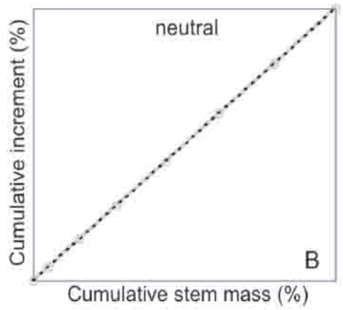
It can be used to assess the efficacy of thinning treatments designed to reduce the source competition between trees and promote high levels of productivity.

Phase 1: Null Growth Dominance (Early development)
Resource competition is low and total stand growth is proportionate to its mass.

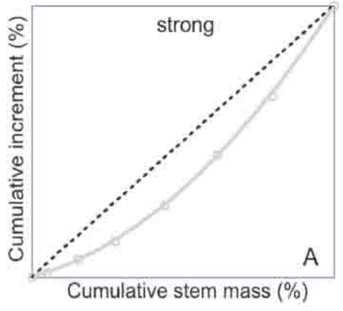
Phase 2: Positive Growth Dominance
Larger trees gain dominance, increase their use of resources, and suppress the growth of smaller trees.

Phase 3: Null Growth Dominance
Larger trees grow more slowly due to one or more factors.

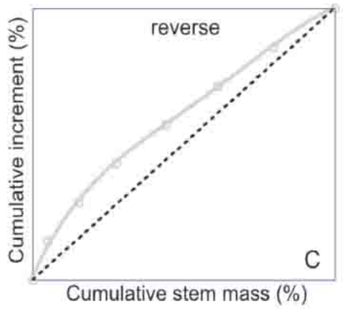
Phase 4: Negative Growth Dominance (Reverse growth dominance)
Smaller trees contribute more to the total stand growth.



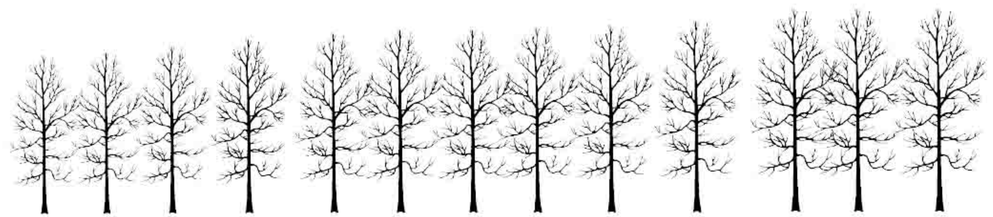
Phase 1 & 3

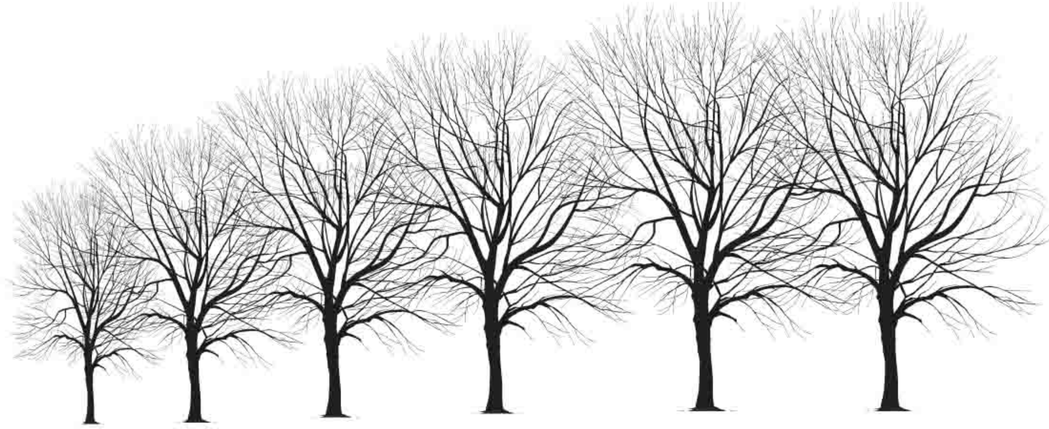


Phase 2



Phase 4





Thinning Treatment Charts
(Data Source: Erie Canal Stands - Parcel 6 Plot 4)

Scenario 1
Stands with no thinning treatments

Thinning Rate: 0
Thinning Threshold: 0.2

Scenario 2
Stands with low frequency thinning treatments

Thinning Rate: 0.1
Thinnind Threshold: 0.05

Scenario 3
Stands with medium frequency thinning treatments

Thinning Rate: 0.4
Thinnind Threshold: 0.1

Scenario 4
Stands with high frequency thinning treatments

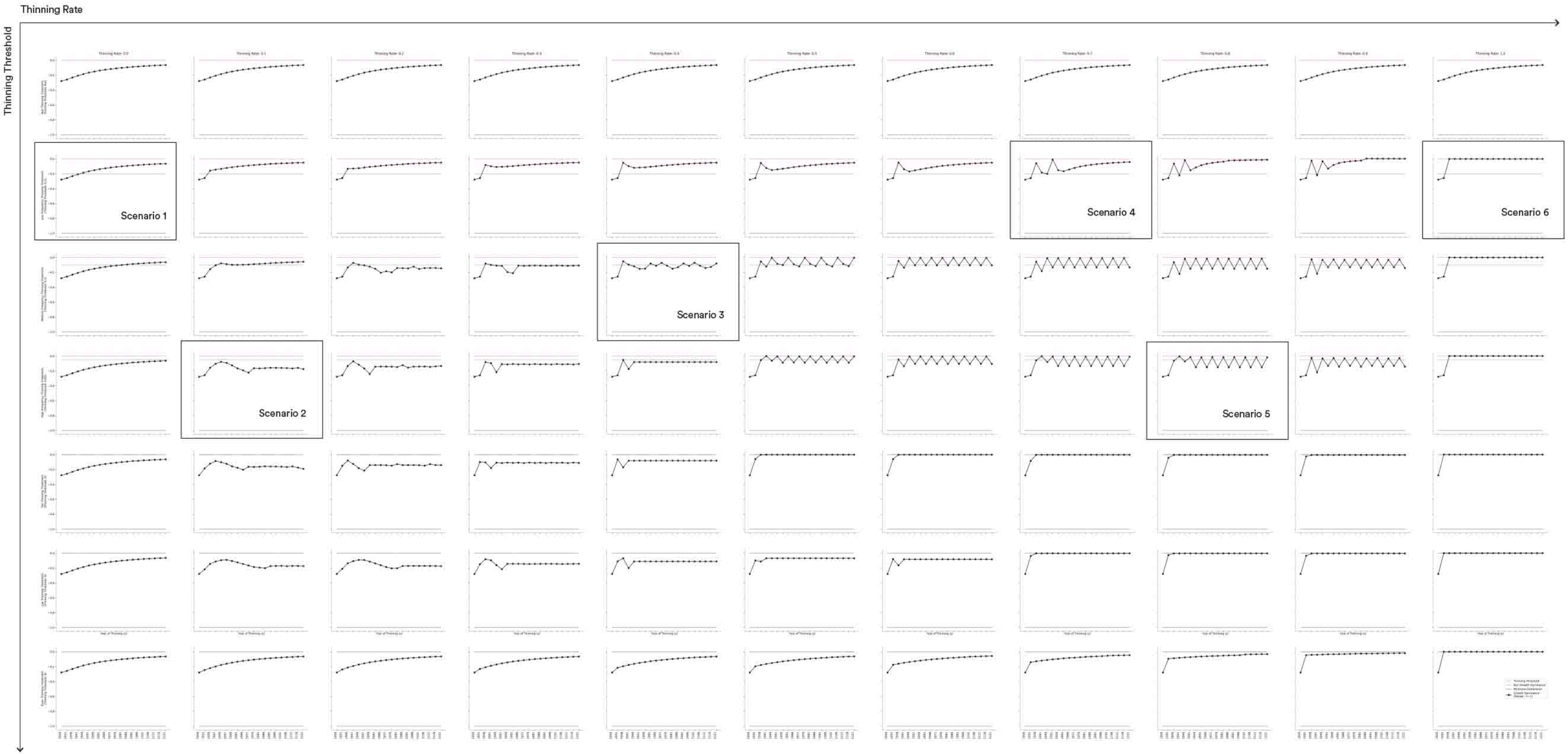
Thinning Rate: 0.7
Thinnind Threshold: 0.2

Scenario 5
Stands with harsh thinning treatments

Thinning Rate: 0.8
Thinnind Threshold: 0.05

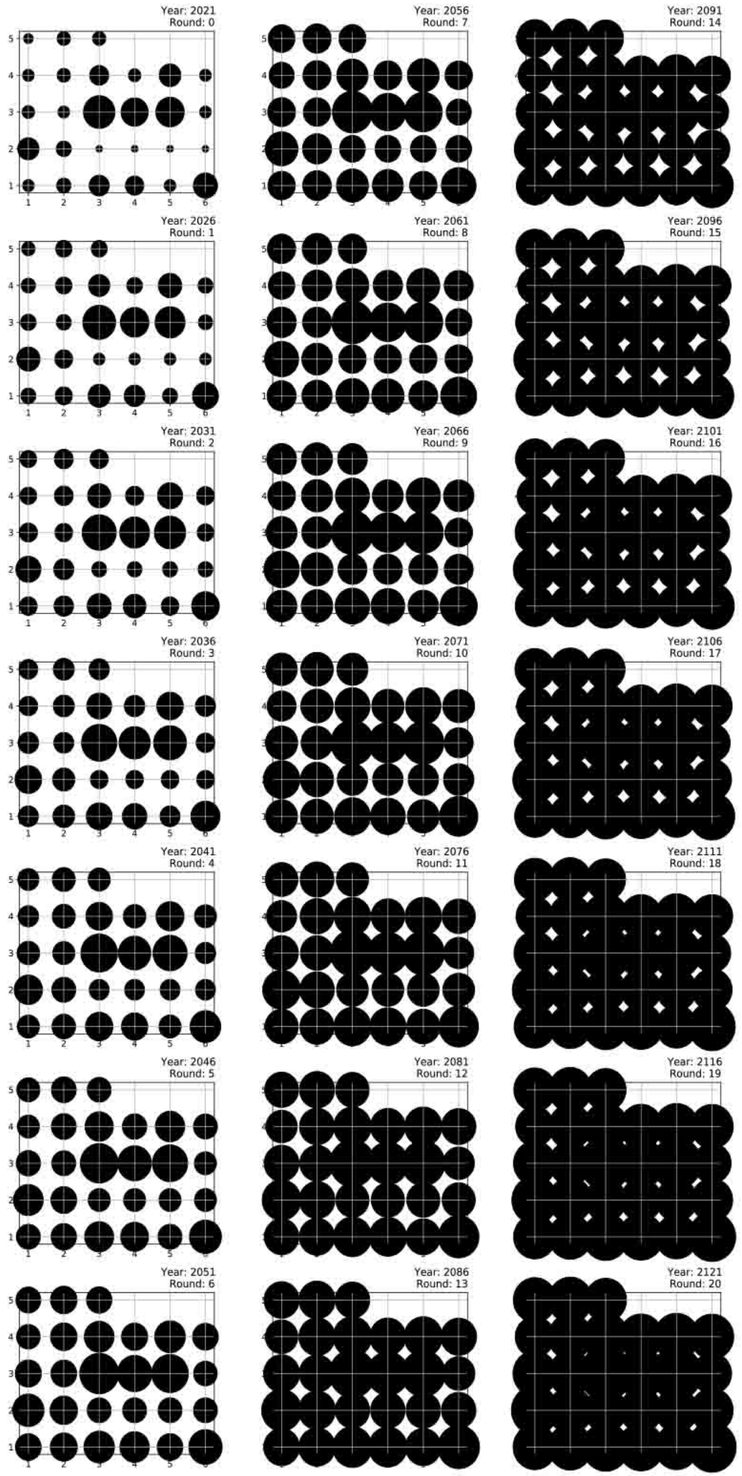
Scenario 6
Stands with clear-cut thinning treatments

Thinning Rate: 1
Thinnind Threshold: 0.2



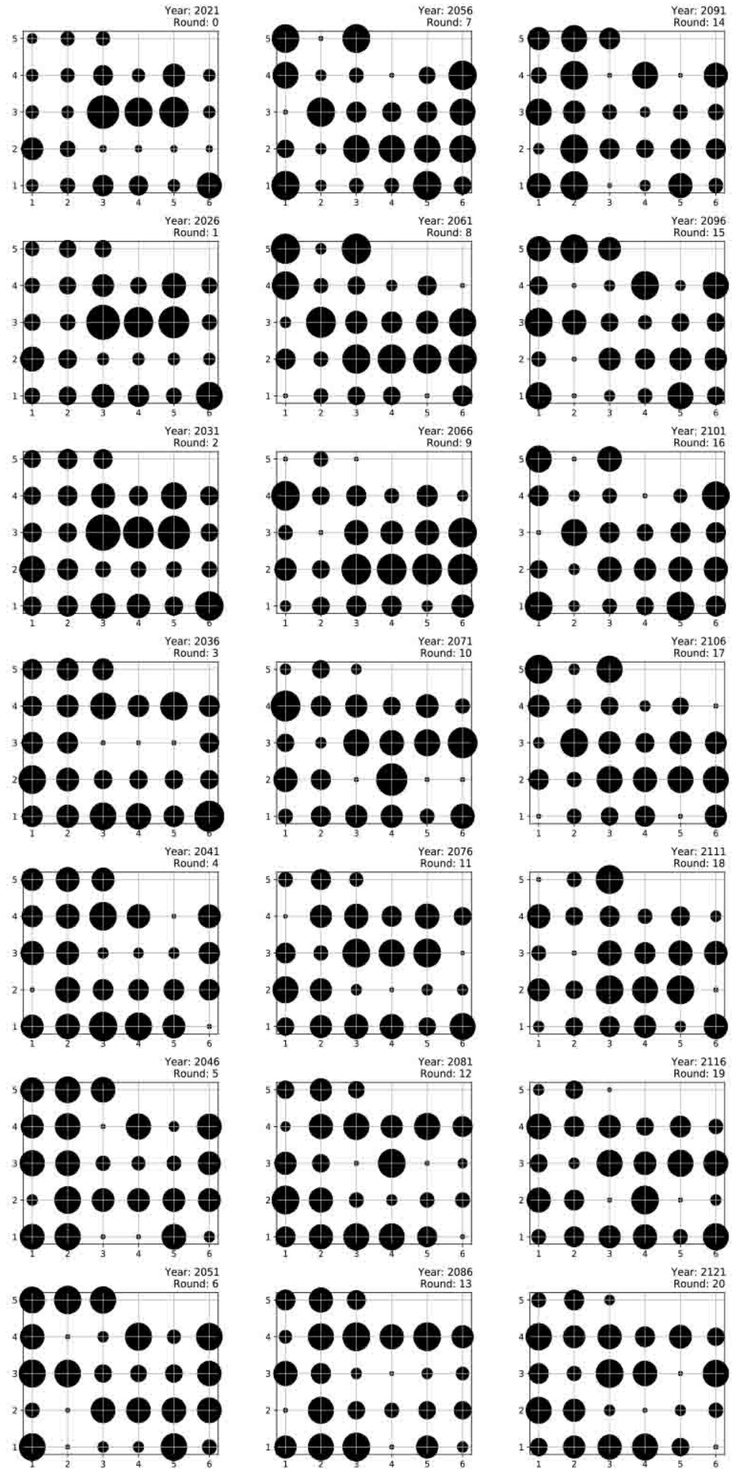
Tree Matrix from 2021 to 2121
(Thinning Rate: 0, Thinning Threshold: 0.2)

Scenario 1
No Human Intervention



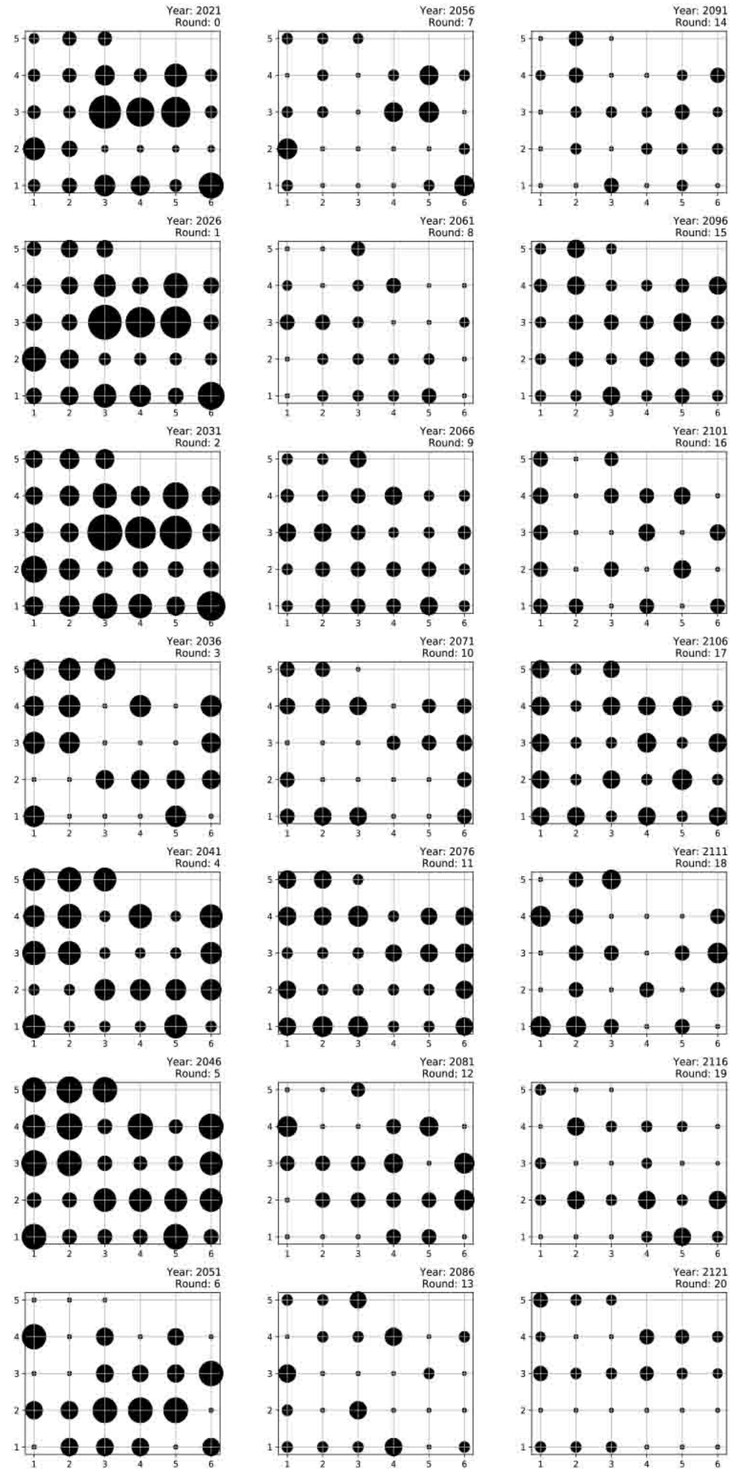
Tree Matrix from 2021 to 2121
(Thinning Rate: 0.1, Thinning Threshold: 0.05)

Scenario 2
Low Thinning Rate, High Thinning Frequency



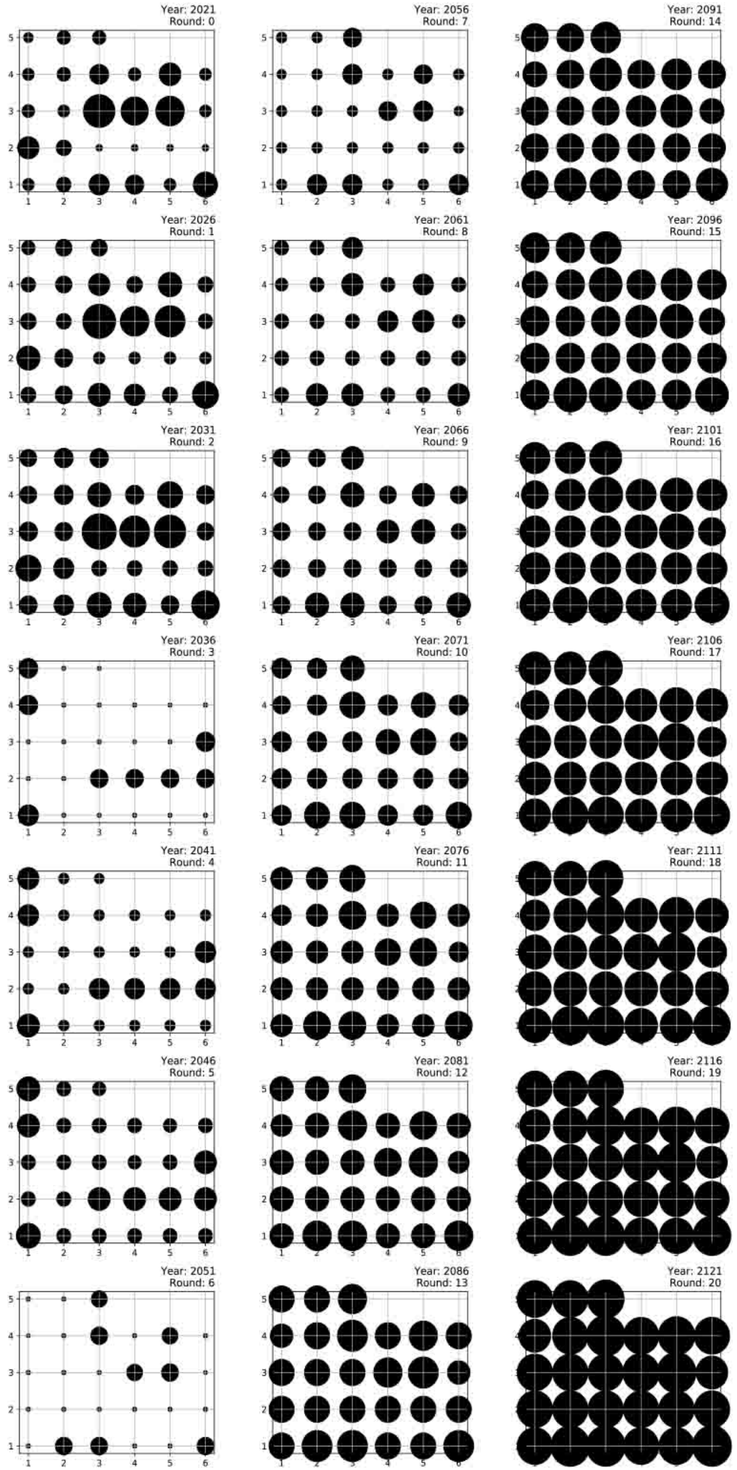
Tree Matrix from 2021 to 2121
(Thinning Rate: 0.4, Thinning Threshold: 0.1)

Scenario 3
Medium Thinning Rate, Medium Thinning Frequency



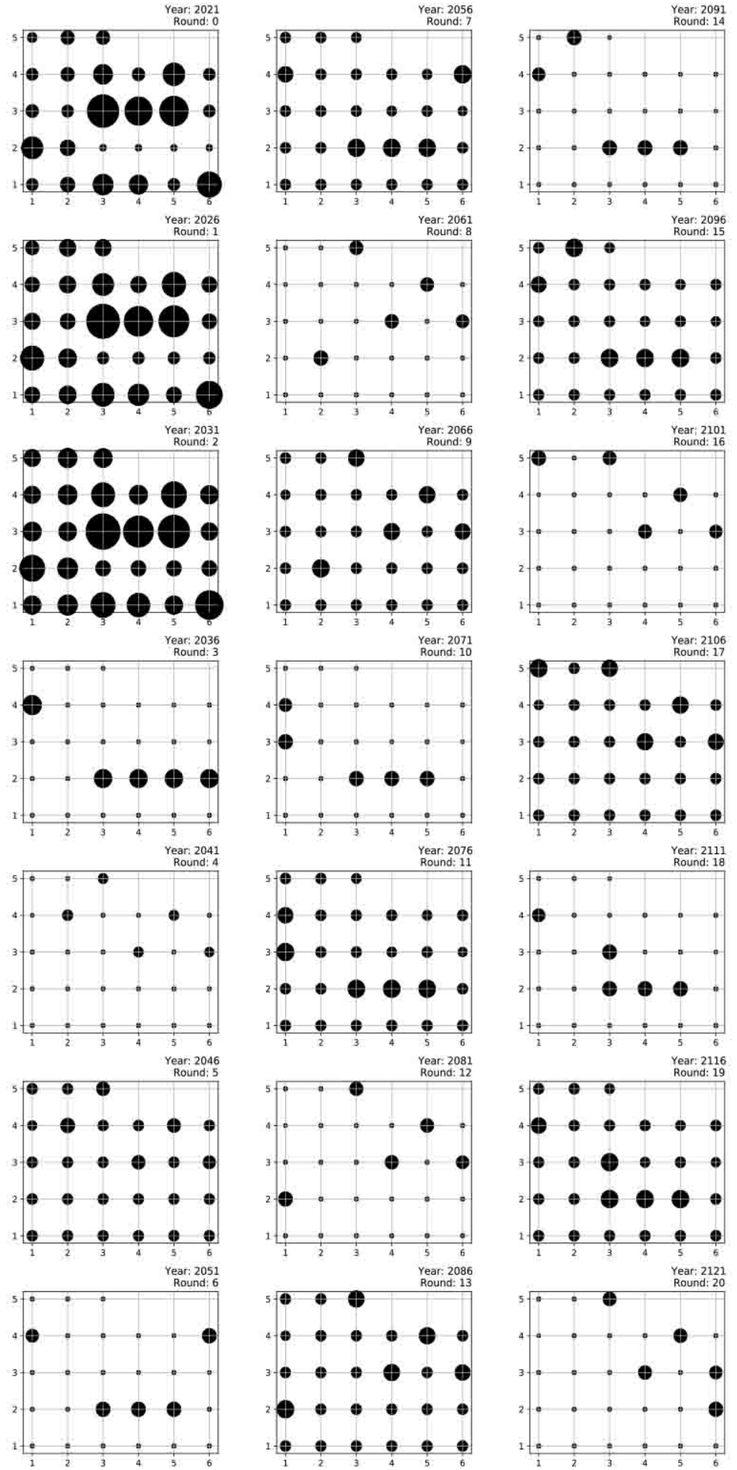
Tree Matrix from 2021 to 2121
(Thinning Rate: 0.7, Thinning Threshold: 0.2)

Scenario 4
High Thinning Rate, Low Thinning Frequency



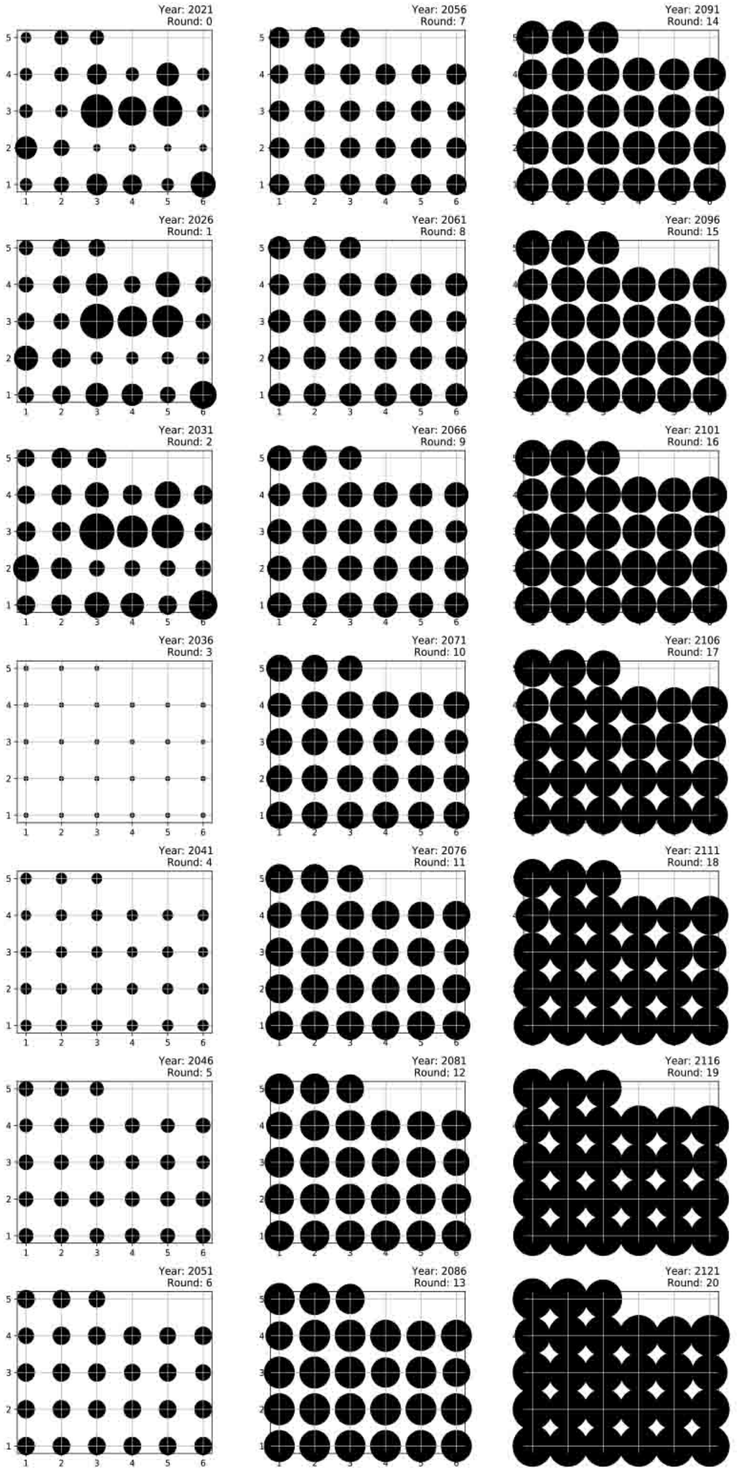
Tree Matrix from 2021 to 2121
(Thinning Rate: 0.8, Thinning Threshold: 0.05)

Scenario 5
High Thinning Rate, High Thinning Frequency



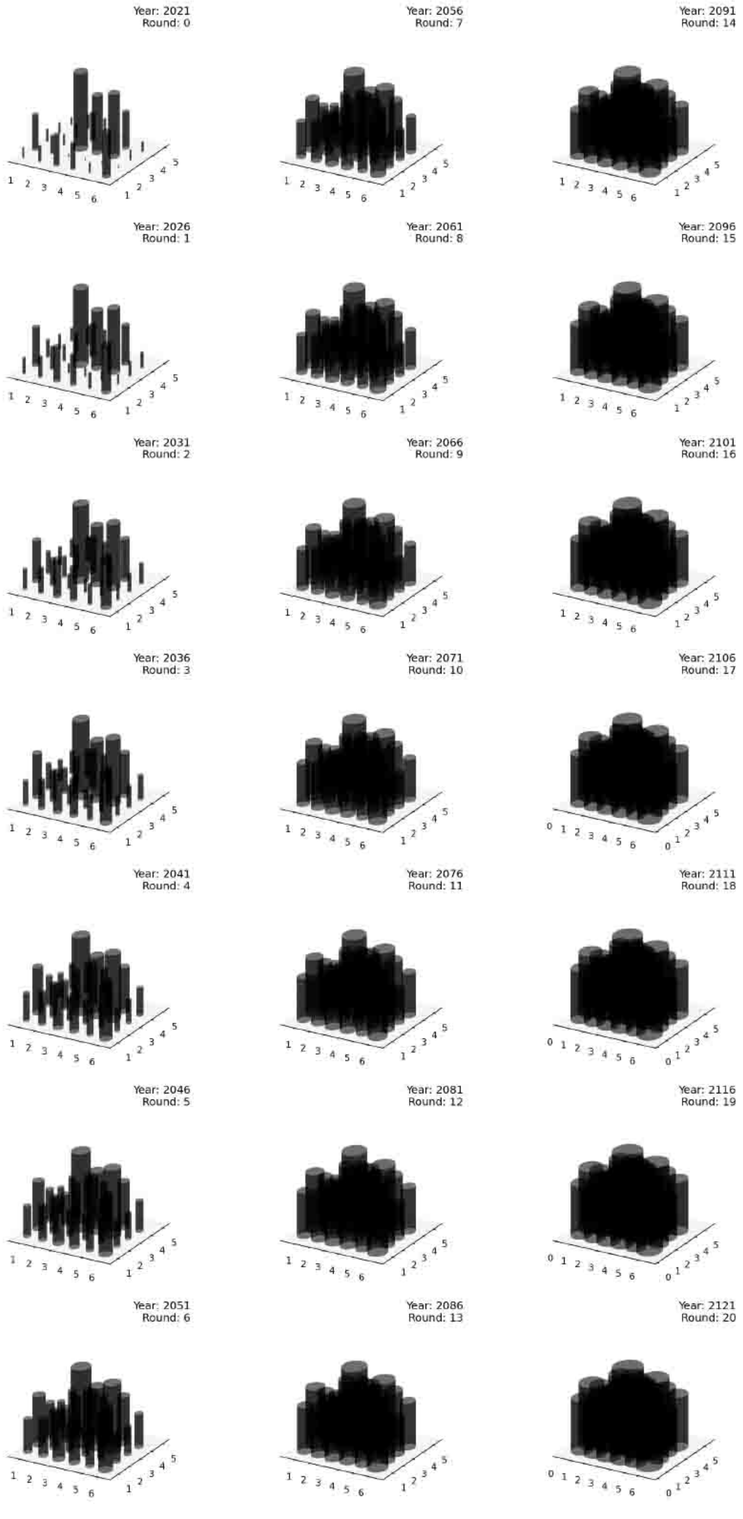
Tree Matrix from 2021 to 2121
(Thinning Rate: 1, Thinning Threshold: 0.2)

Scenario 6
Clear Cut



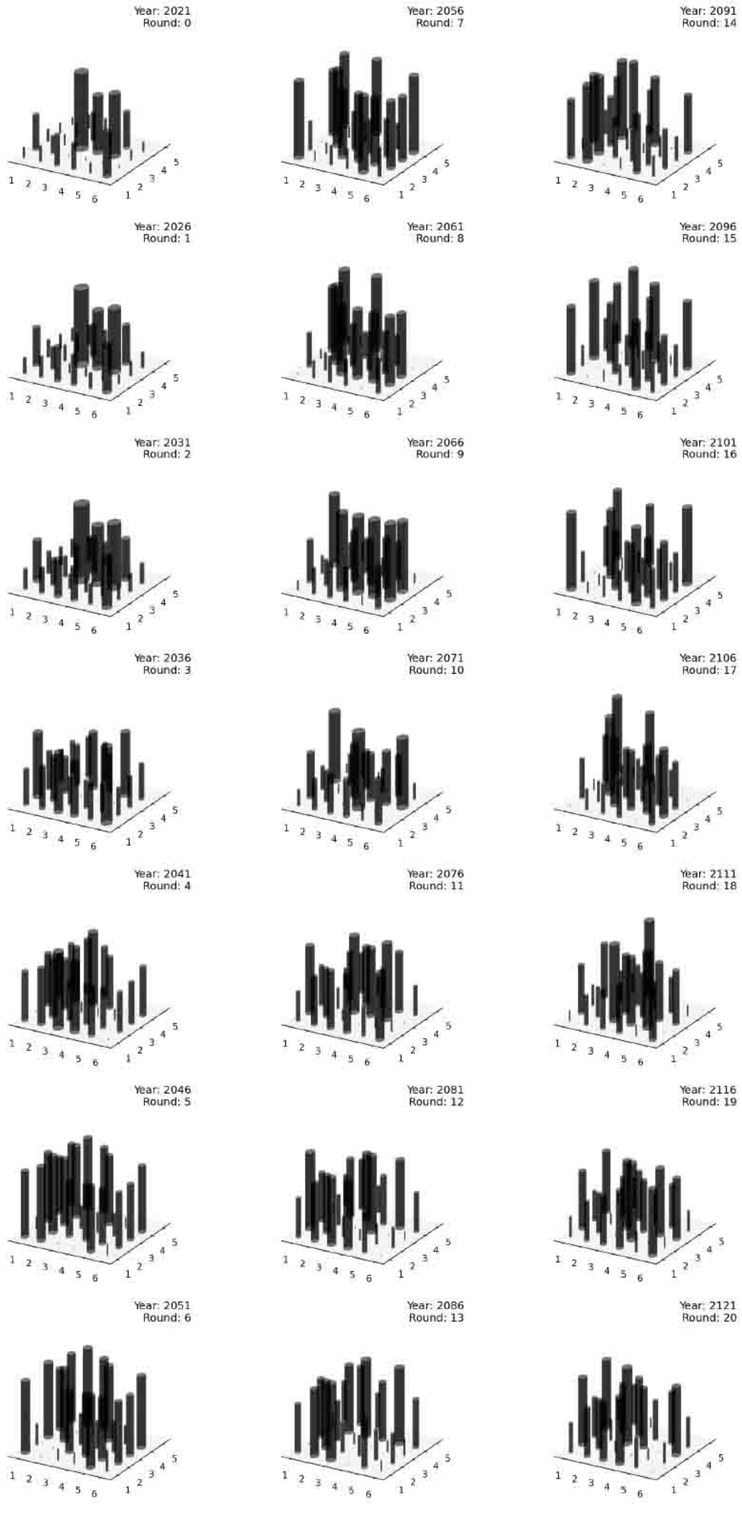
Tree Trunks from 2021 to 2121
(Thinning Rate: 0, Thinning Threshold: 0.2)

Scenario 1
No Human Intervention



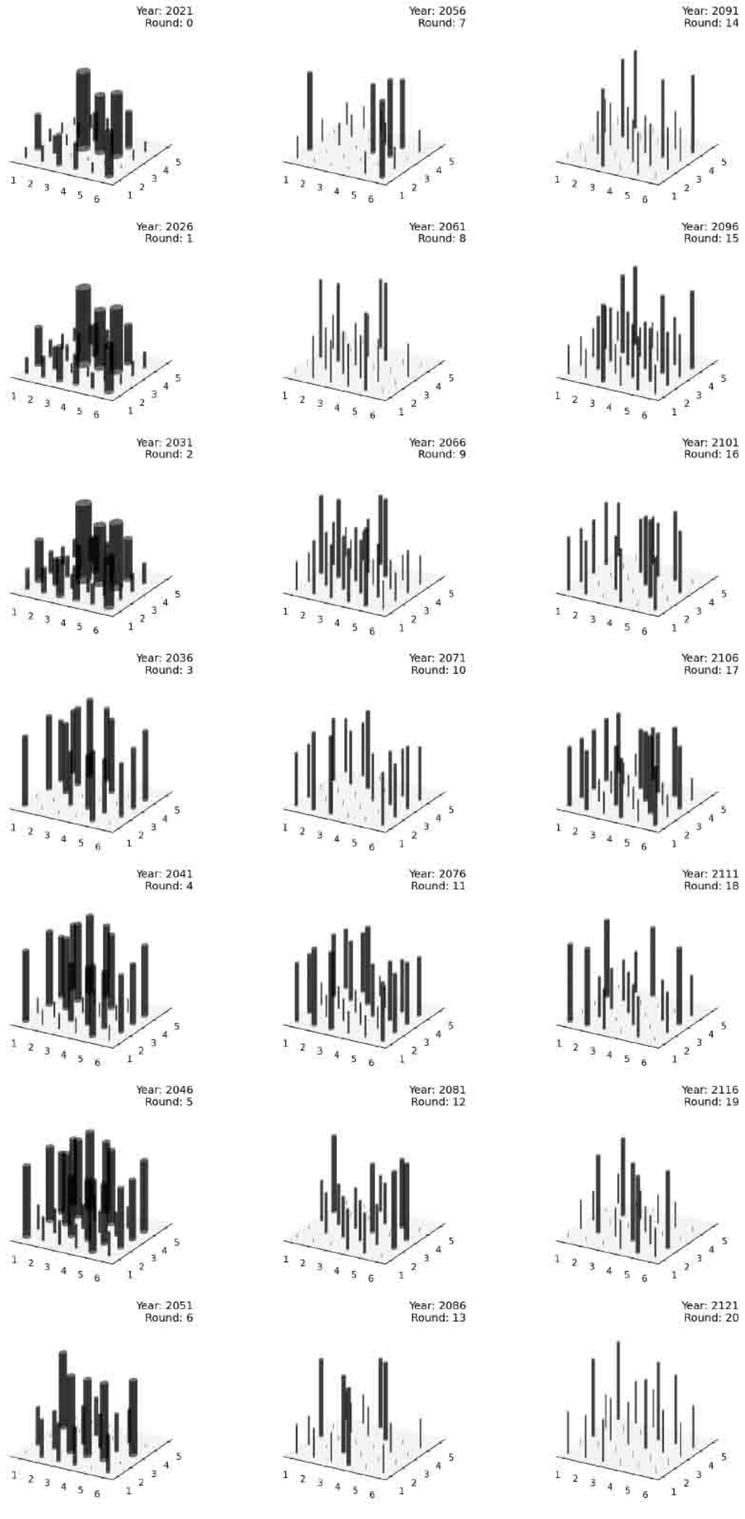
Tree Trunks from 2021 to 2121
(Thinning Rate: 0.1, Thinning Threshold: 0.05)

Scenario 2
Low Thinning Rate, High Thinning Frequency



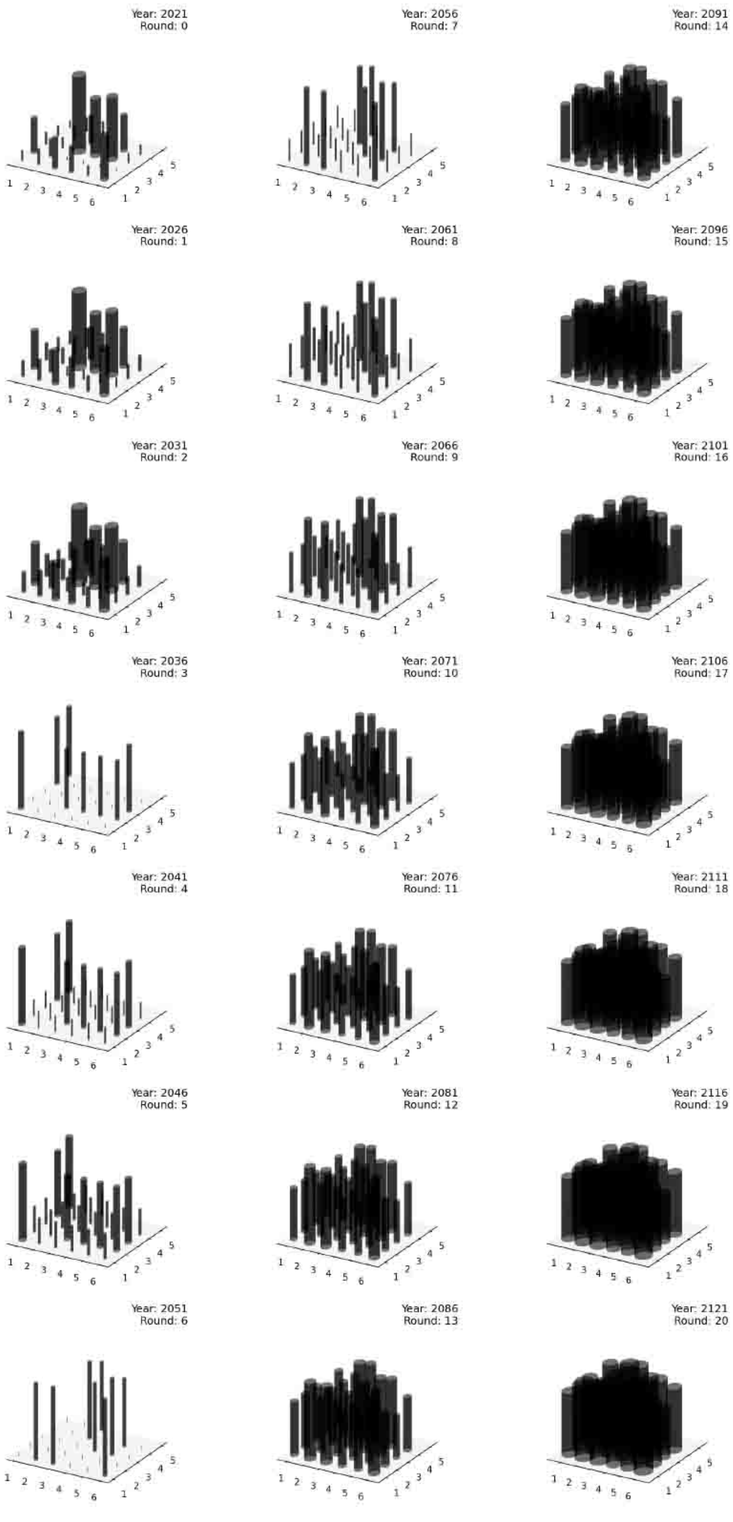
Tree Trunks from 2021 to 2121
(Thinning Rate: 0.4, Thinning Threshold: 0.1)

Scenario 3
Medium Thinning Rate, Medium Thinning Frequency



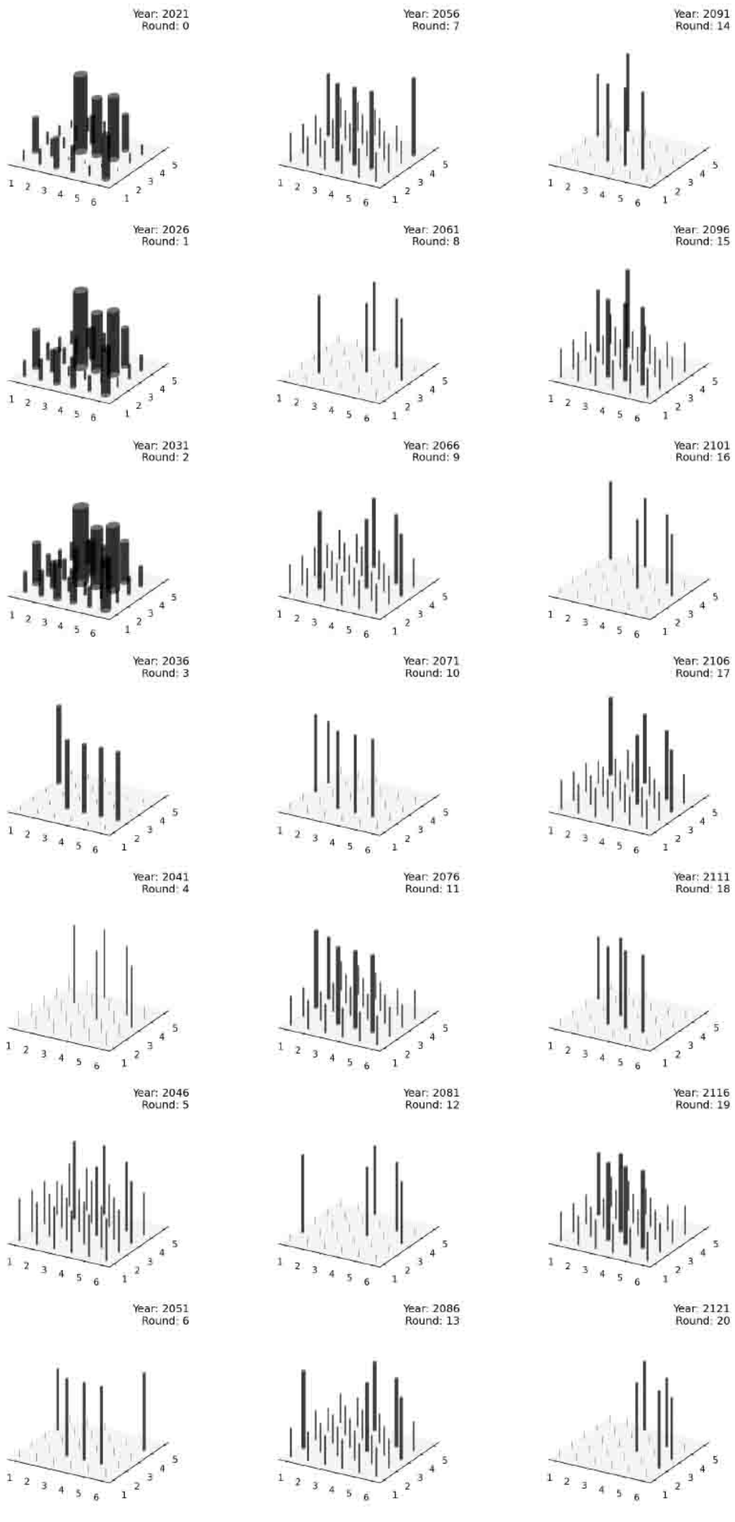
Tree Trunks from 2021 to 2121
(Thinning Rate: 0.7, Thinning Threshold: 0.2)

Scenario 4
High Thinning Rate, Low Thinning Frequency



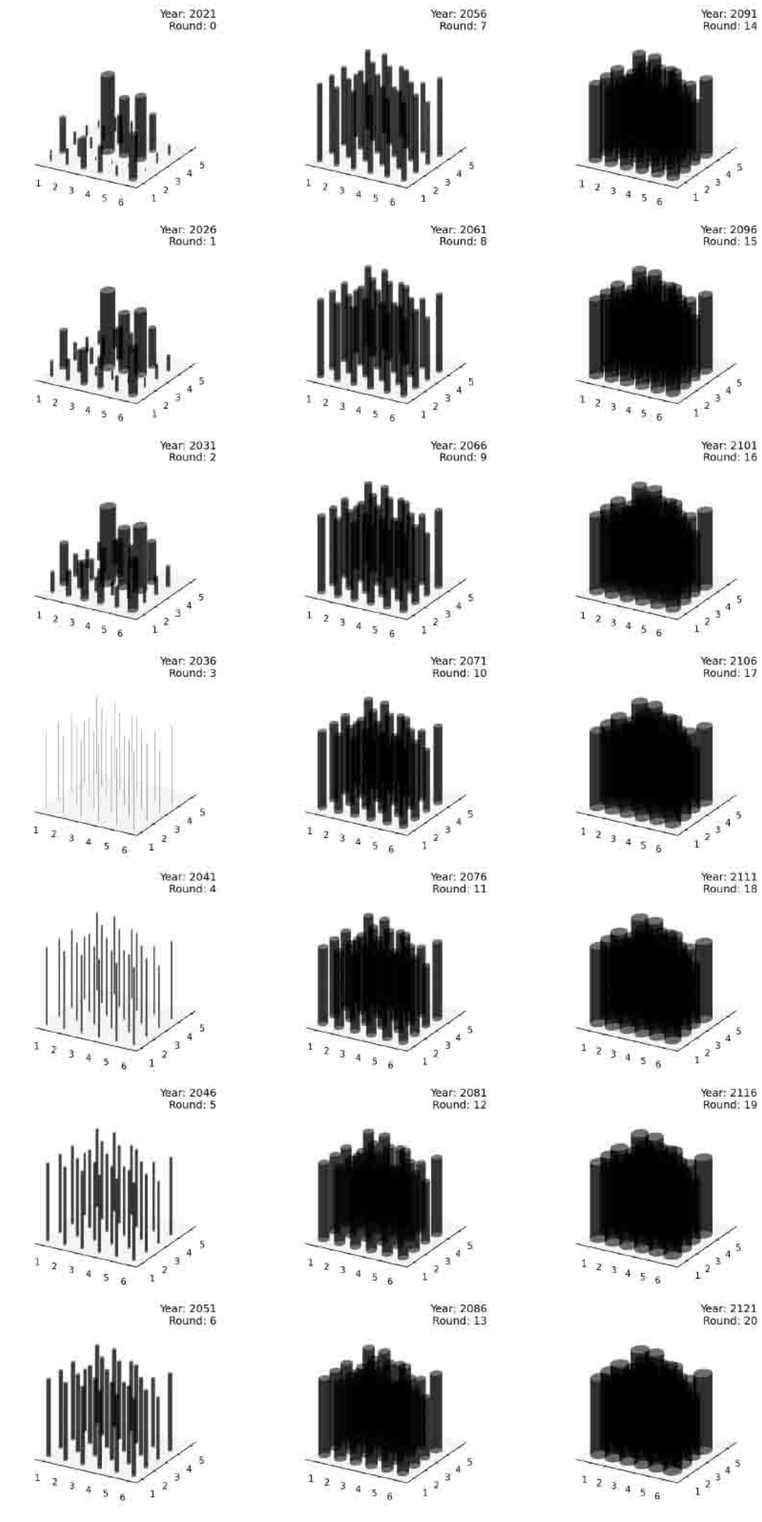
Tree Trunks from 2021 to 2121
(Thinning Rate: 0.8, Thinning Threshold: 0.05)

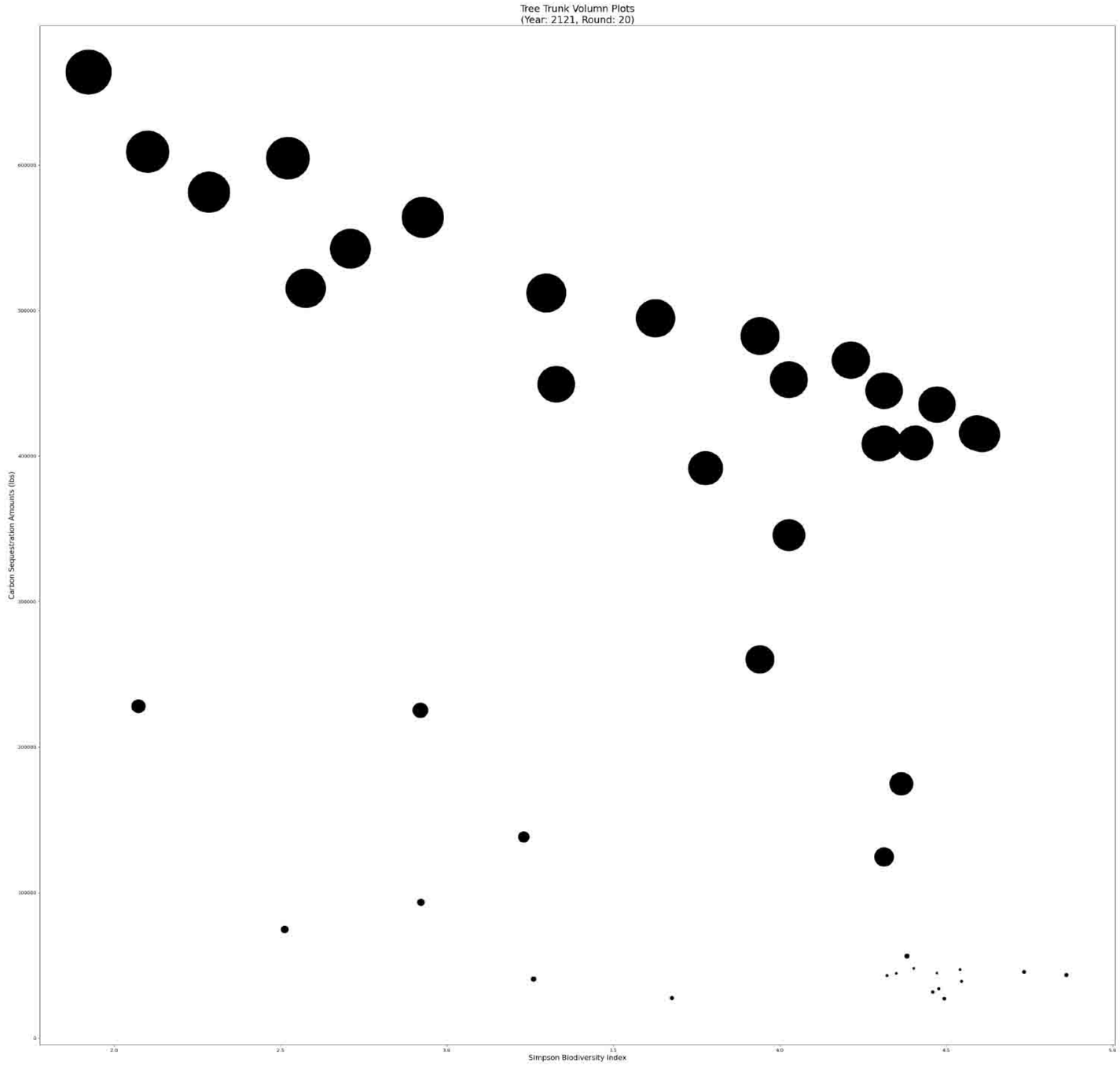
Scenario 5
High Thinning Rate, High Thinning Frequency

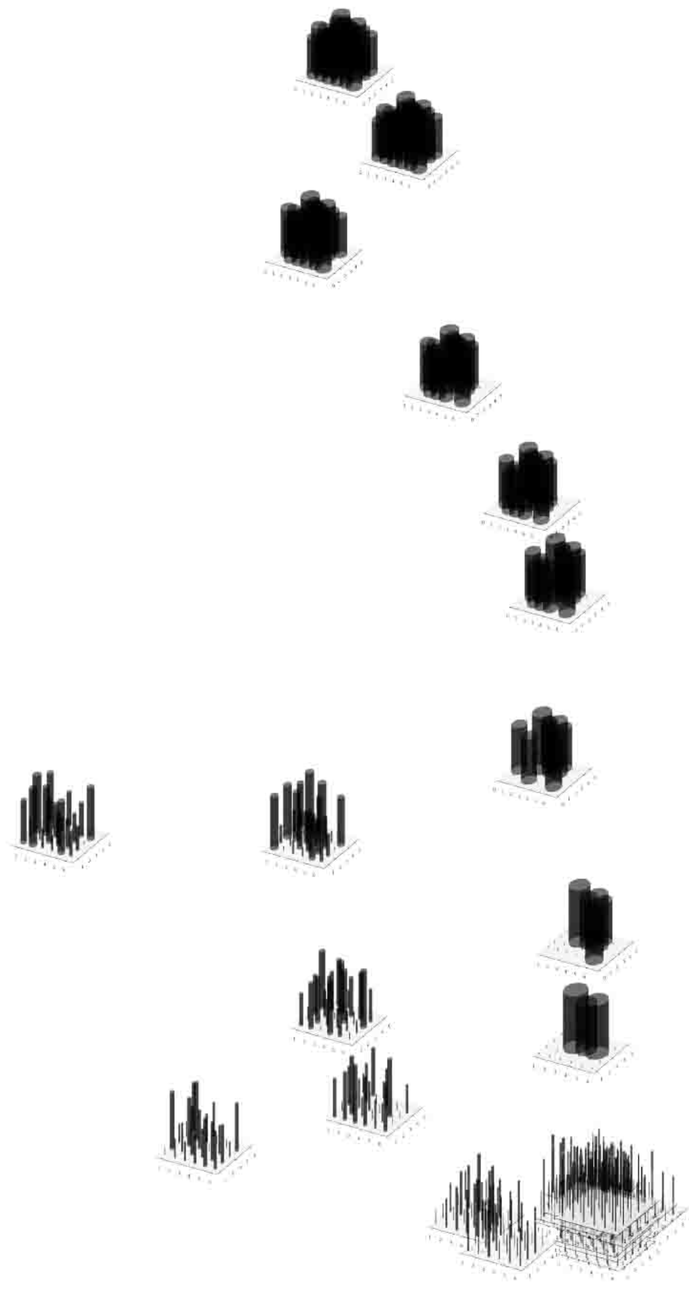


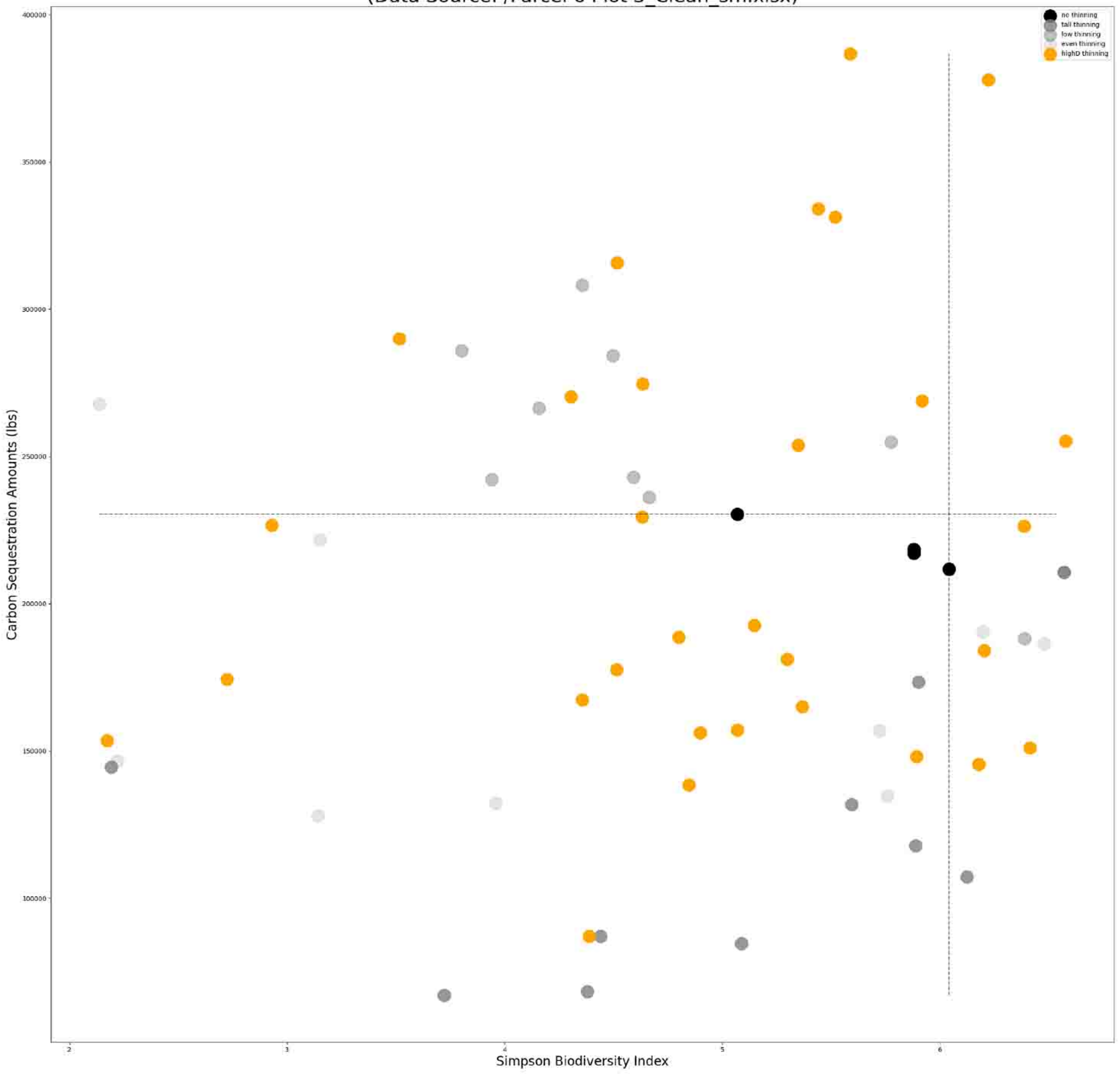
Tree Trunks from 2021 to 2121
(Thinning Rate: 1, Thinning Threshold: 0.2)

Scenario 6
Clear Cut

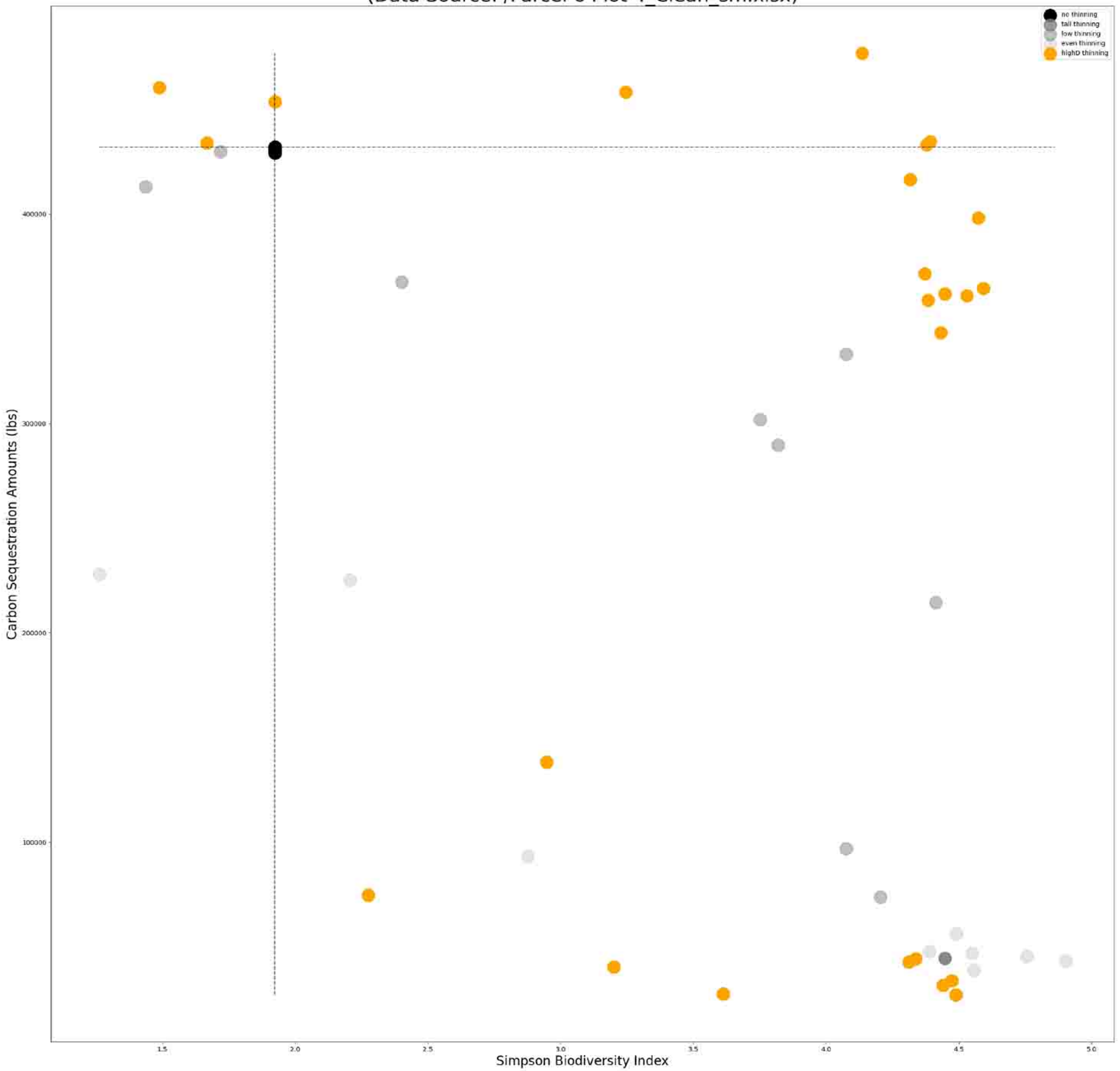


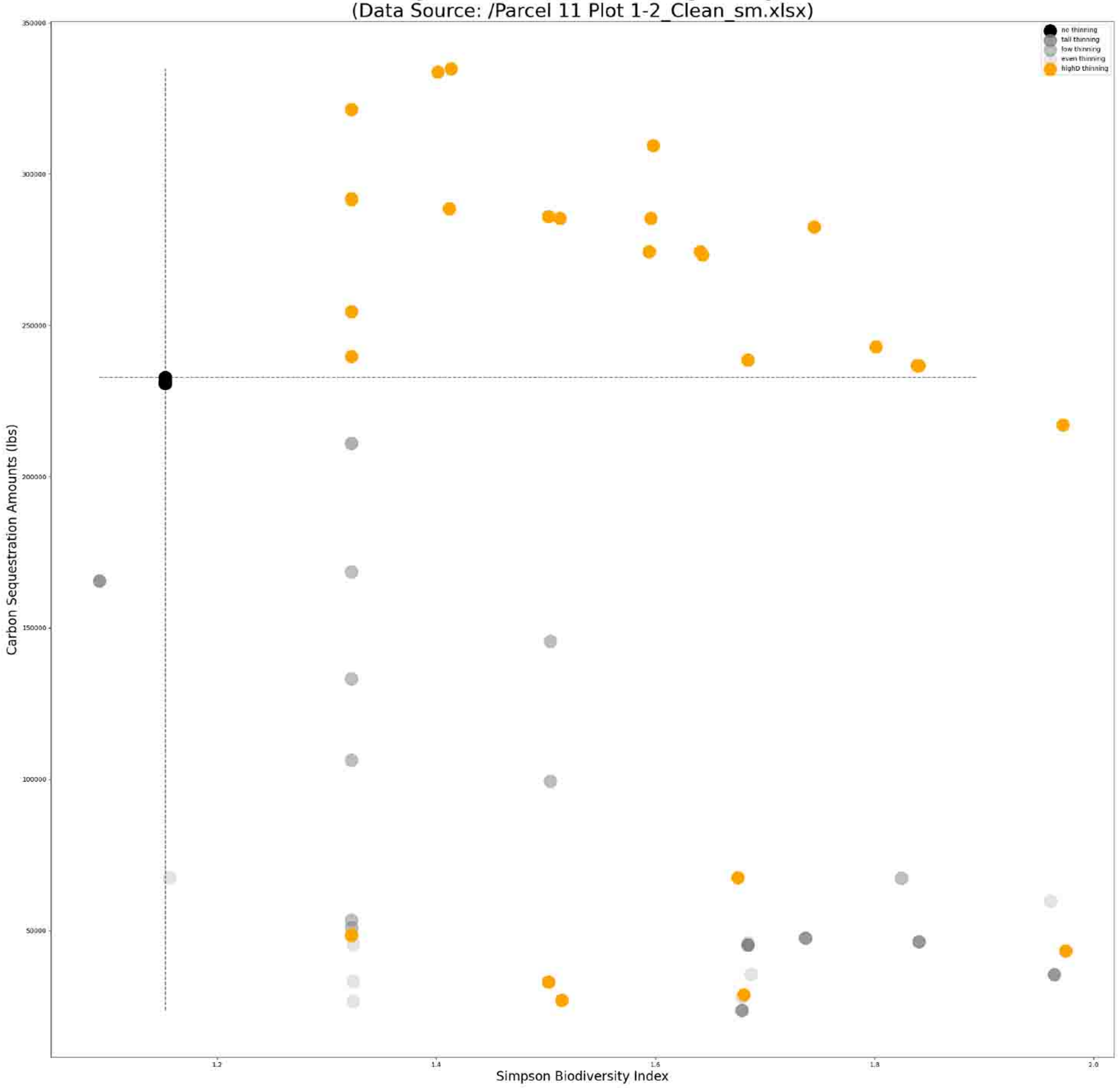

Tree Trunk Volumn Plots
(Year: 2121, Round: 20)
Carbon Sequestration Amounts (lbs)
600000
500000
400000
300000
200000
100000
0
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Simpson Biodiversity Index



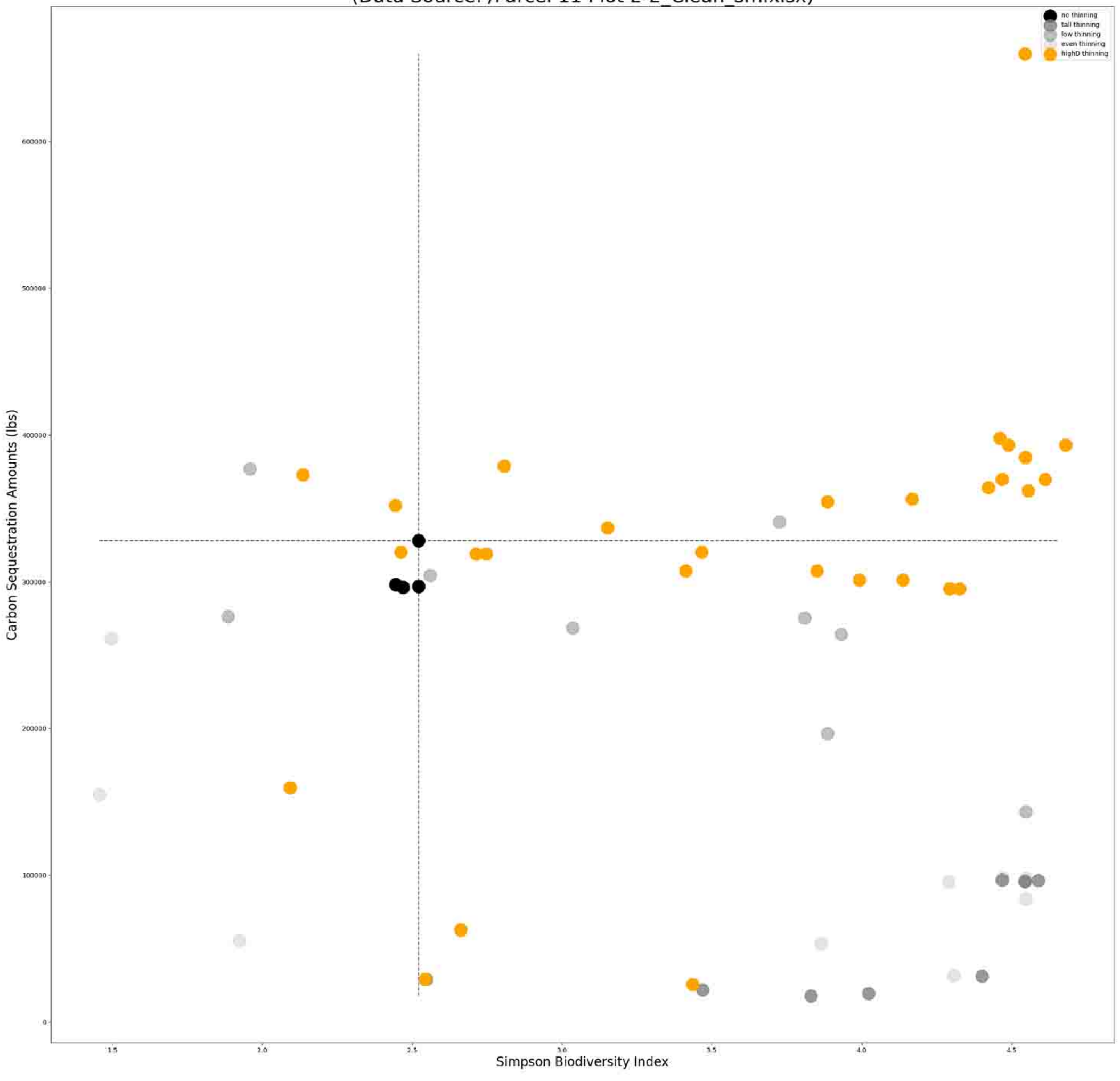

Ecological Performance of Thinning Strategies
(Data Source: /Parcel 6 Plot 5_Clean_sm.xlsx)
no thinning
tall thinning
low thinning
even thinning
highD thinning
Carbon Sequestration Amounts (lbs)
400000
350000
300000
250000
200000
150000
100000
2
3
4
5
6
Simpson Biodiversity Index

Ecological Performance of Thinning Strategies
(Data Source: /Parcel 6 Plot 4_Clean_sm.xlsx)

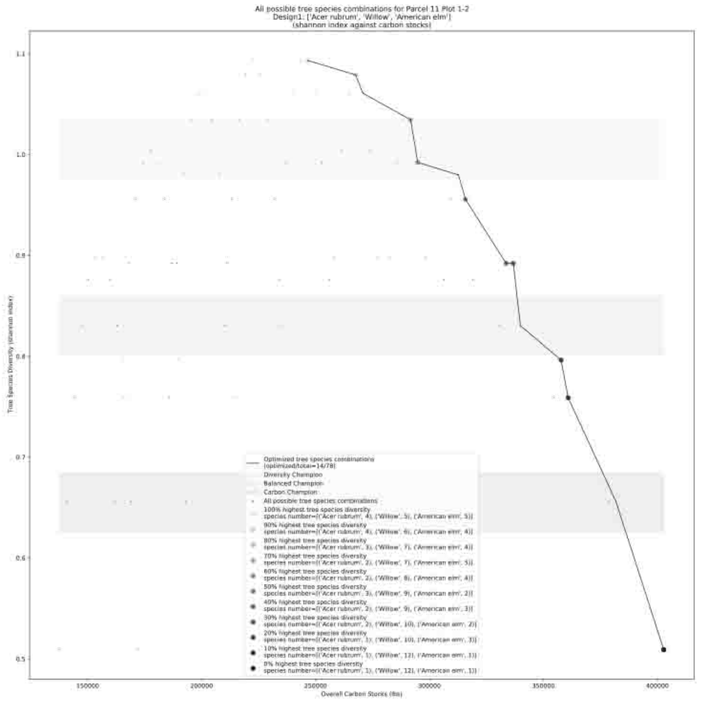


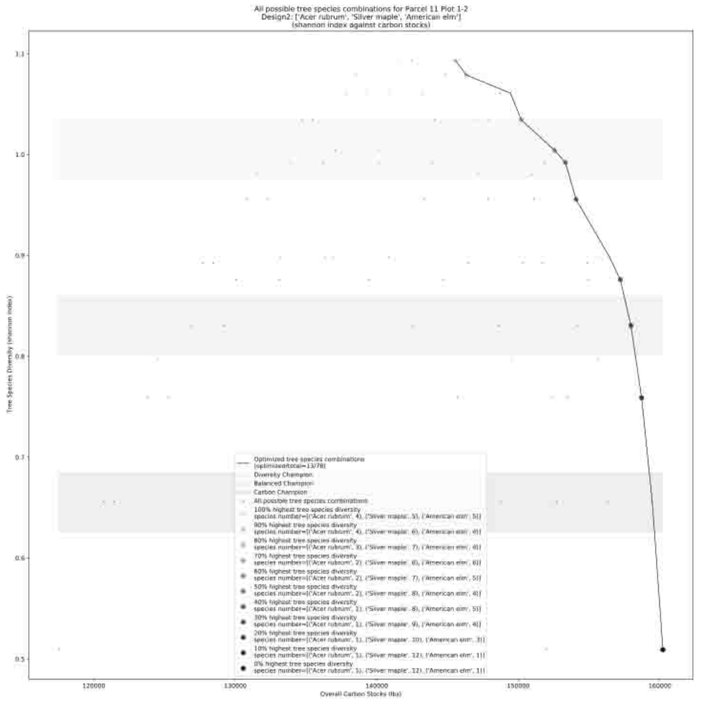

Ecological Performance of Thinning Strategies
(Data Source: /Parcel 11 Plot 1-2_Clean_sm.xlsx)
no thinning
tall thinning
low thinning
even thinning
highD thinning
Carbon Sequestration Amounts (lbs)
350000
300000
250000
200000
150000
100000
50000
1.2
1.4
1.6
1.8
2.0
Simpson Biodiversity Index

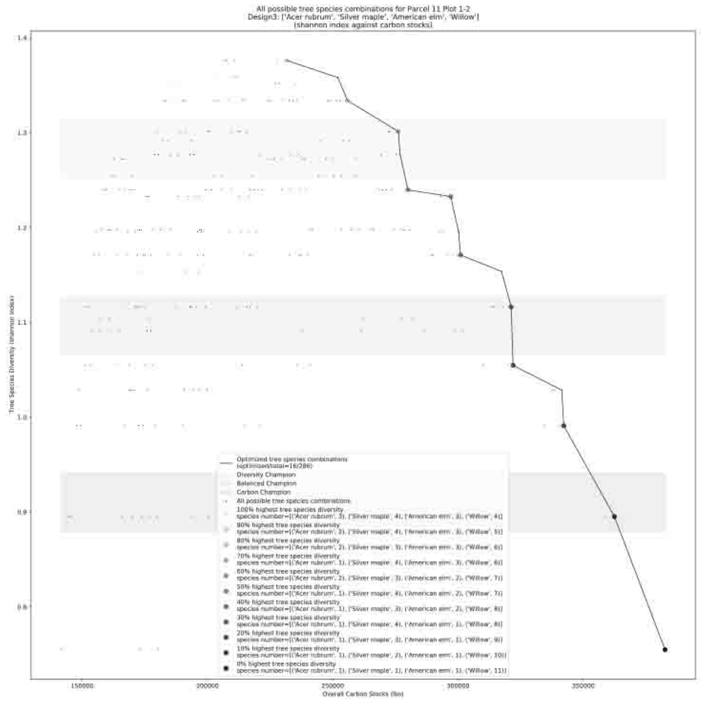
Ecological Performance of Thinning Strategies
(Data Source: /Parcel 11 Plot 2-2_Clean_sm.xlsx)

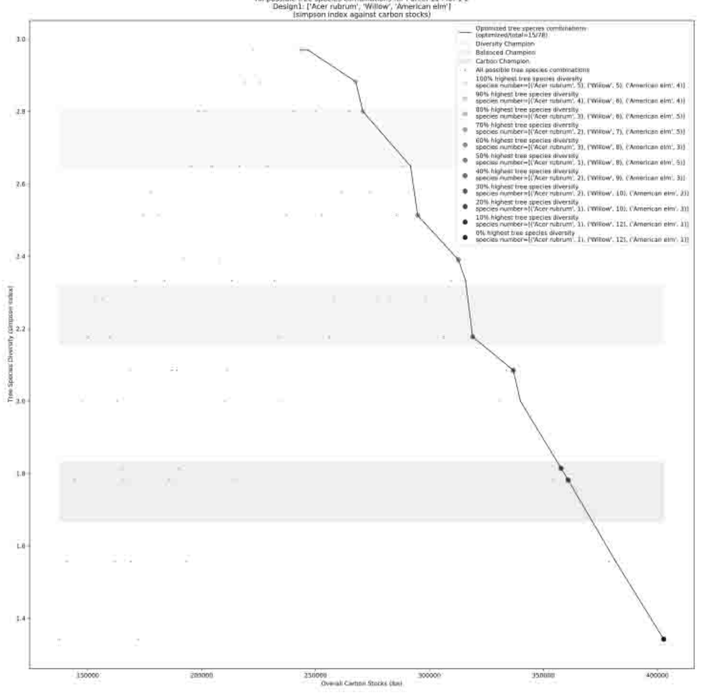


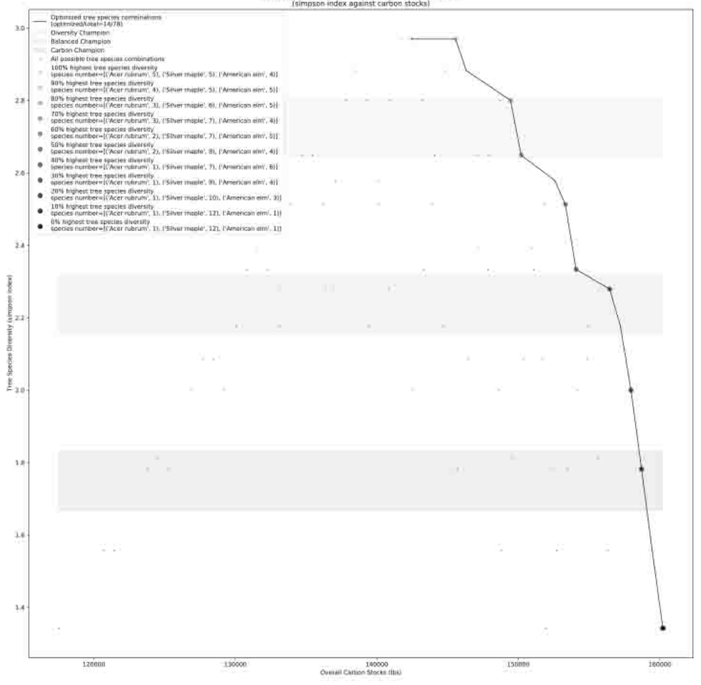
Stands: Parcel 11 Plot 1-2

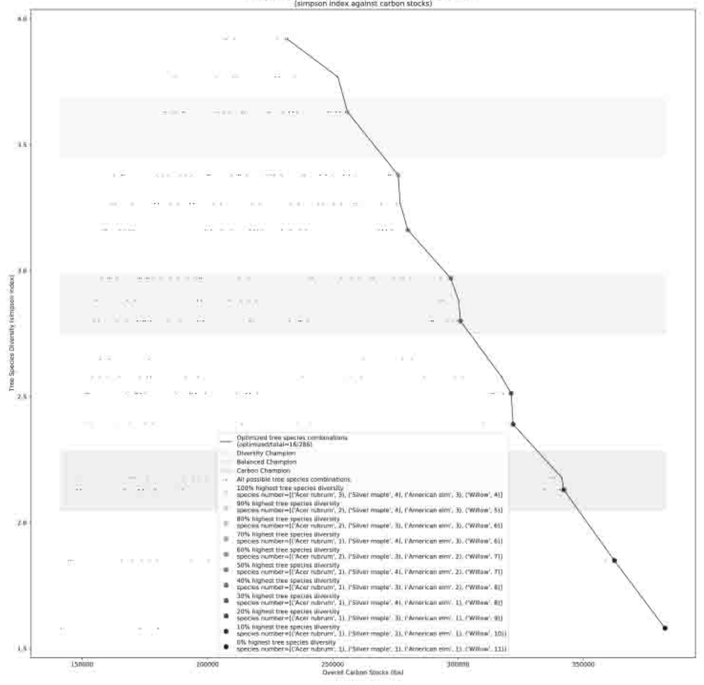




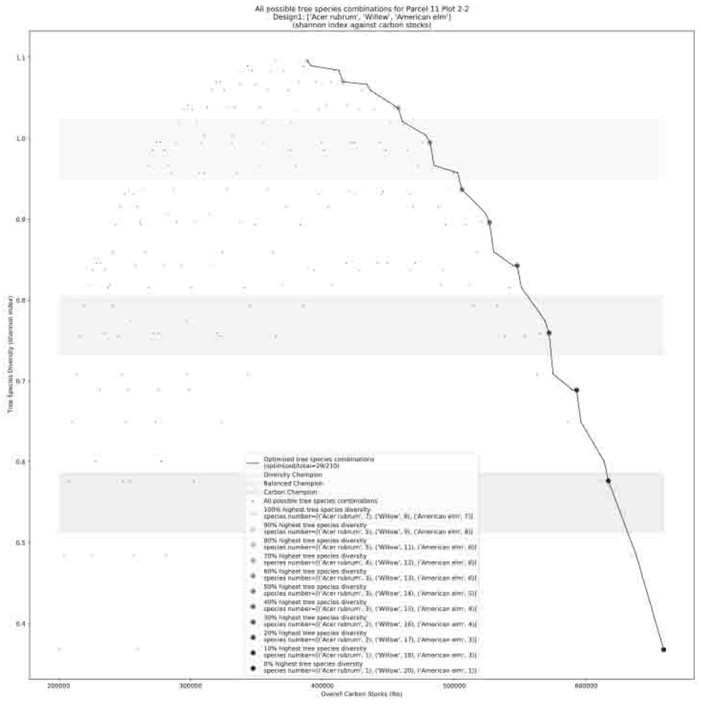


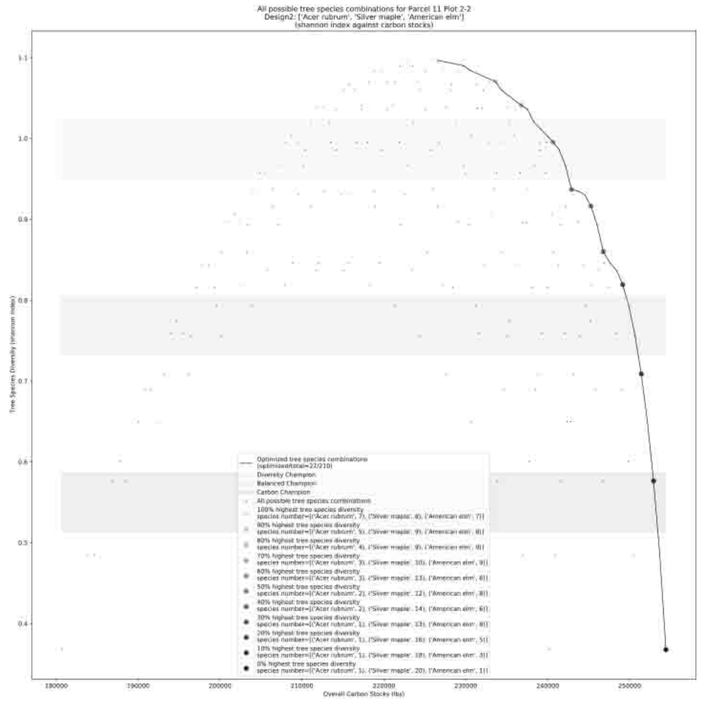


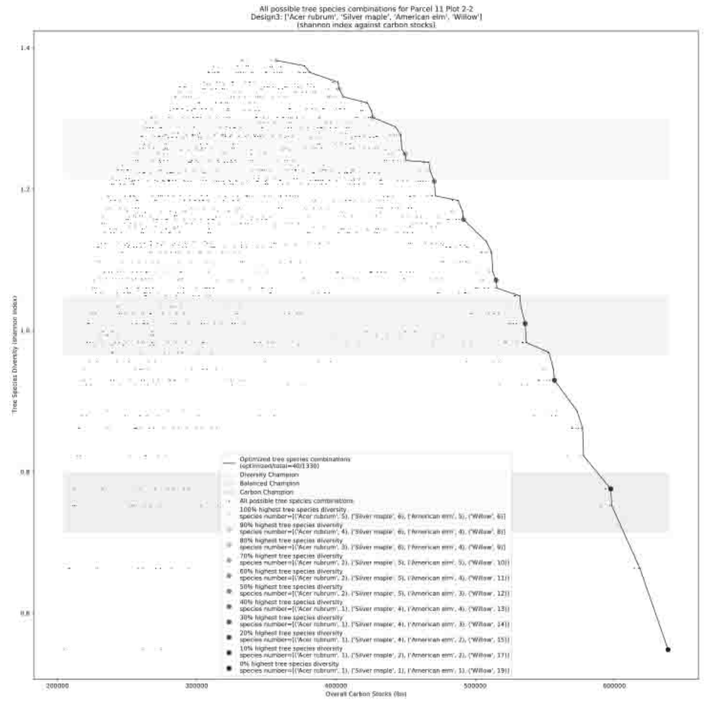


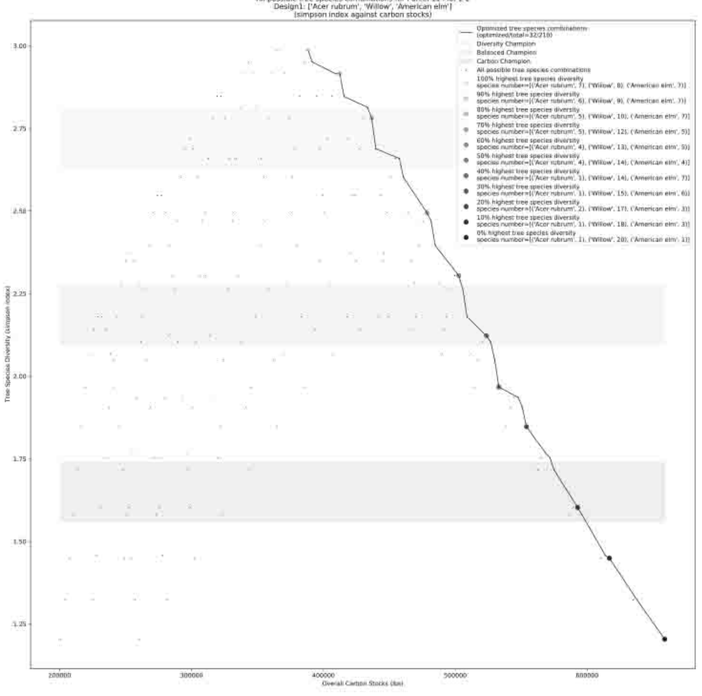


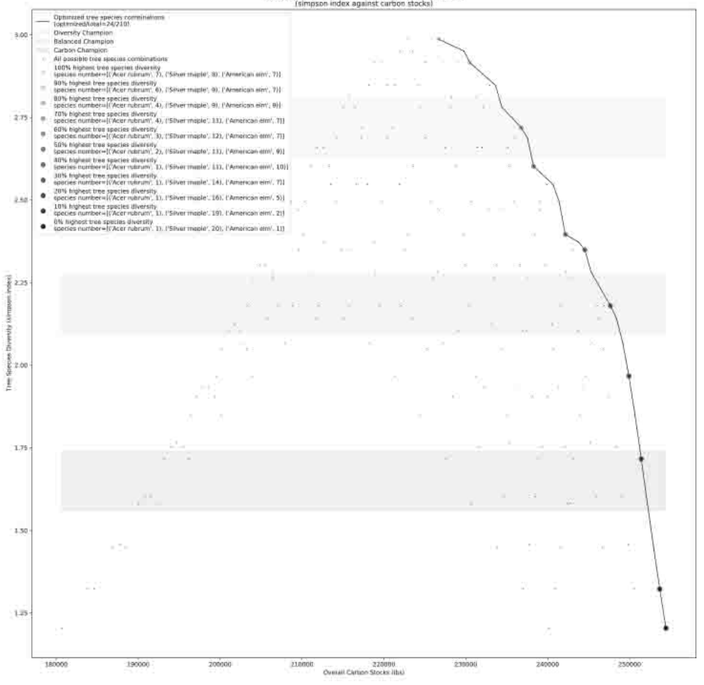
Stands: Parcel 11 Plot 2-2

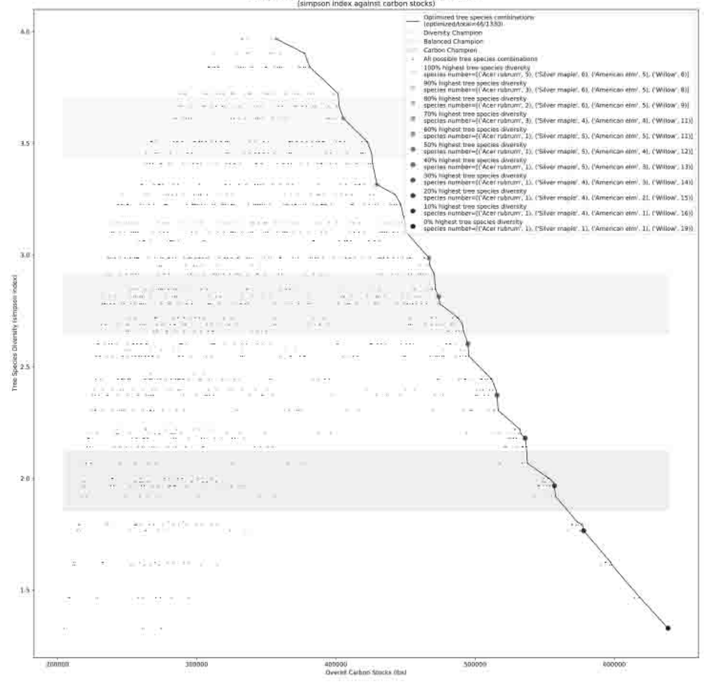


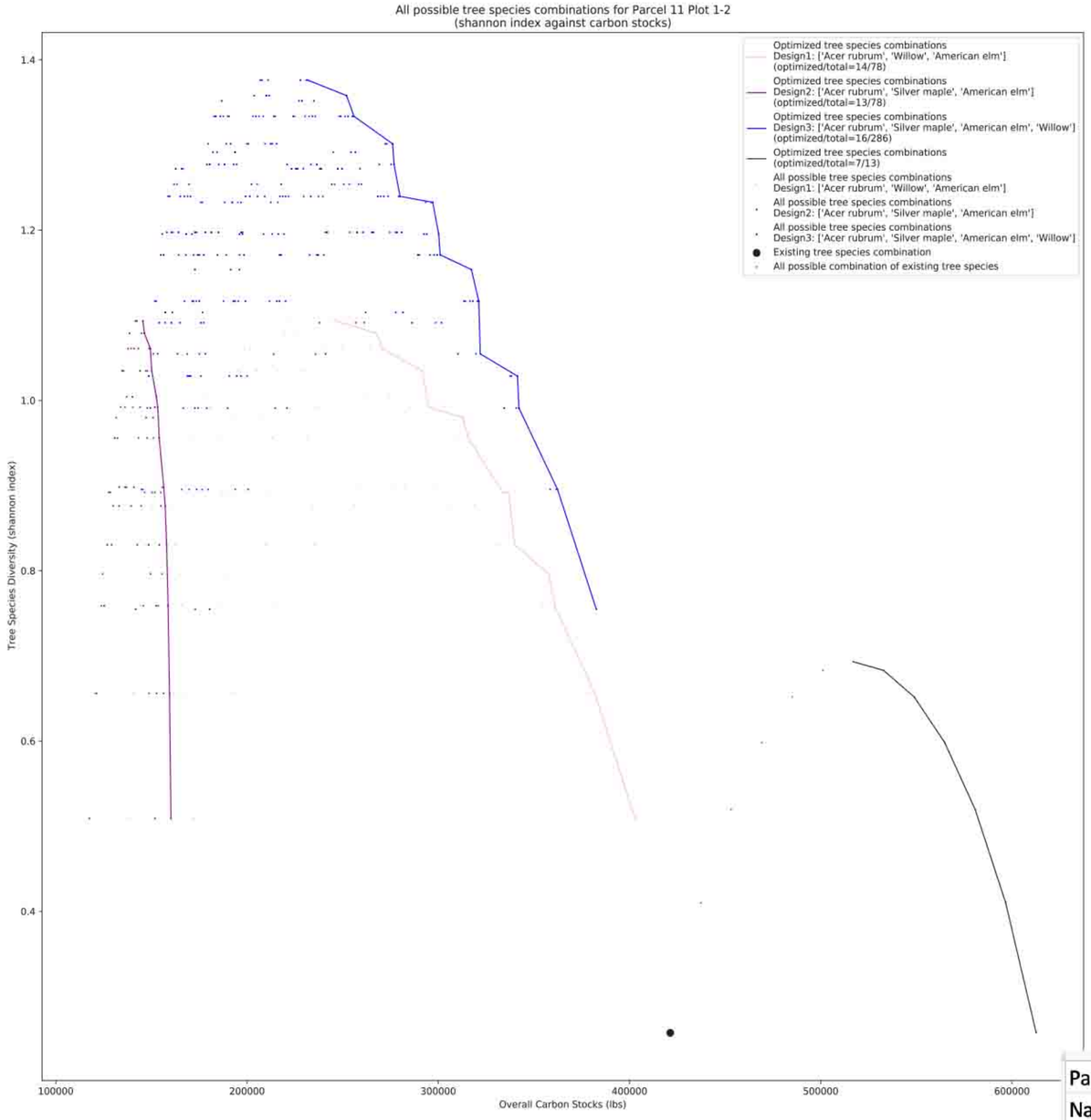


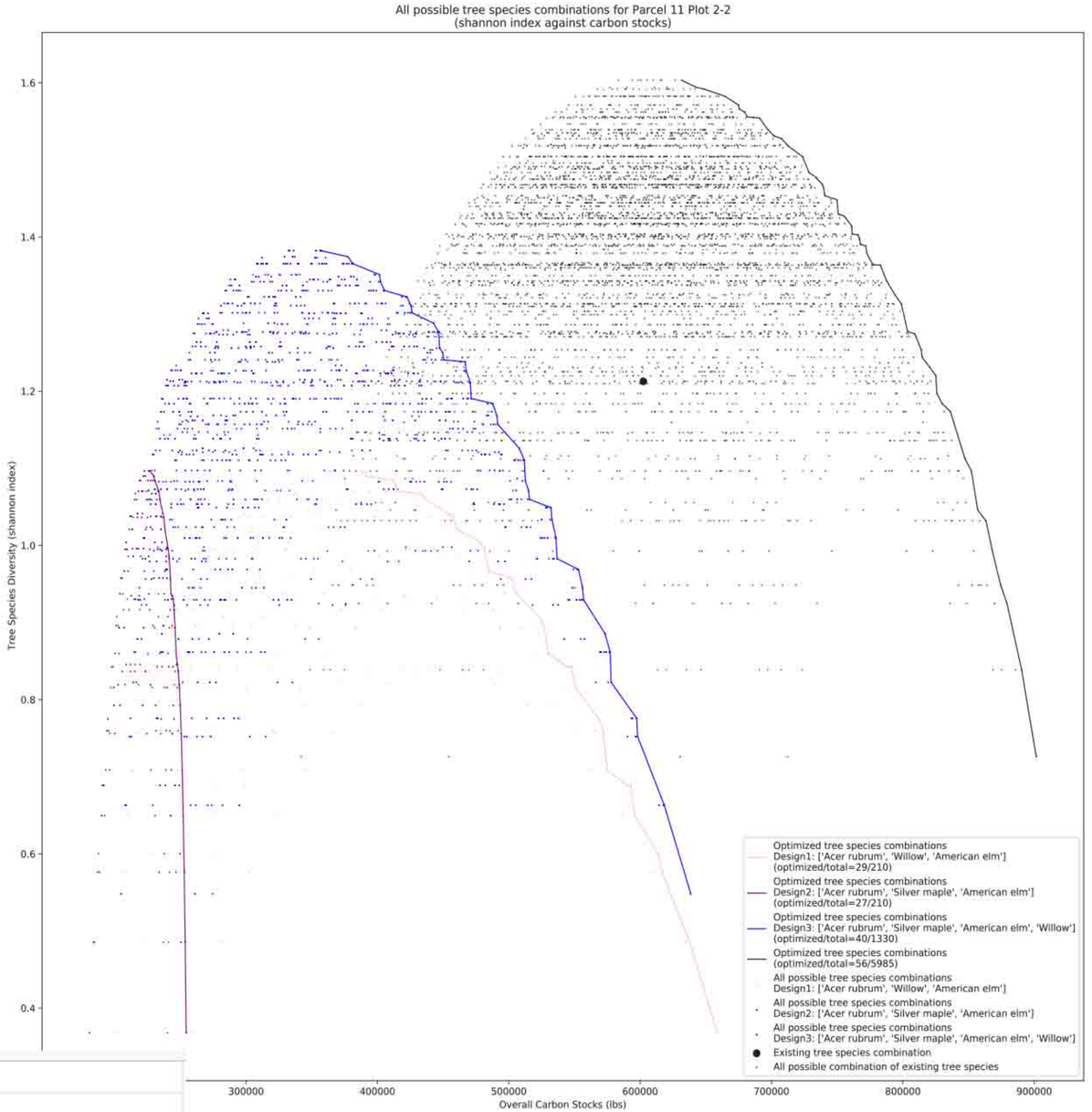












Parcel11
Name
Red maple
Willow
American Elm
Red maple
silver maple
American Elm
Red maple
silver maple
American Elm
willow