

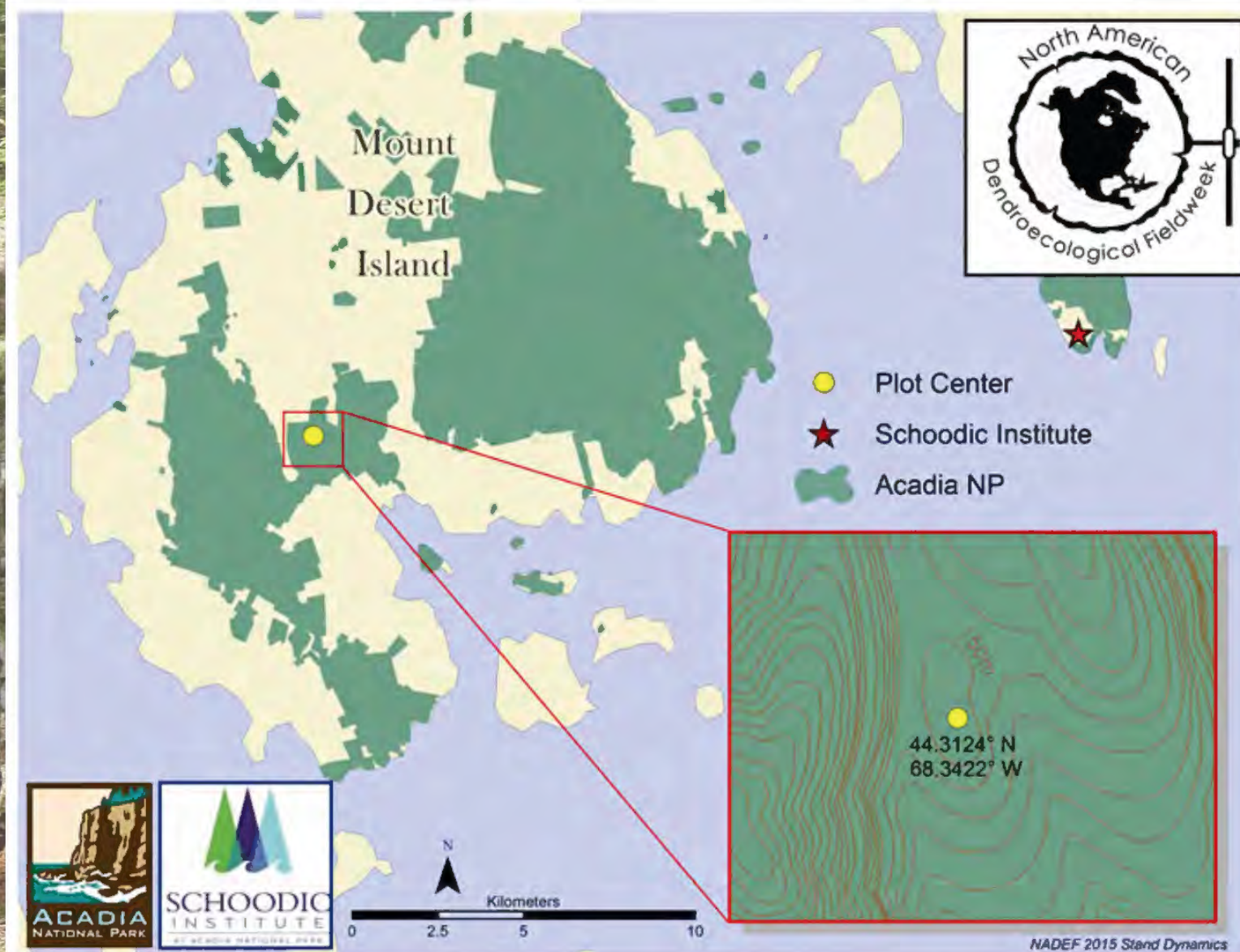
STAND DYNAMICS OF BEECH MOUNTAIN

NORTH AMERICAN DENDROECOLOGICAL FIELDWEEK 2015
ACADIA NATIONAL PARK

Shawn Fraver, University of Maine
Christopher Gentry, Austin Peay State University

Emma Bialecki, University of Minnesota
John Brown, USFS Northern Research Station
Sabrina Brown, Indiana State University
Samantha Jones, Bemidji State University
Kyleen Kelly, Kansas State University
Elizabeth Pansing, University of Colorado Denver
Alexander (Zan) Stine, San Francisco State University
Michael Thornton, University of Southern Mississippi
Clay Tucker, Louisiana State University

BEECH MOUNTAIN, ACADIA NATIONAL PARK, MAINE



Plot Center: 44.3124° N, 68.3422° W
Elevation: 152m
EPA Ecoregion IV: Downeast Coast

RESEARCH QUESTIONS

1

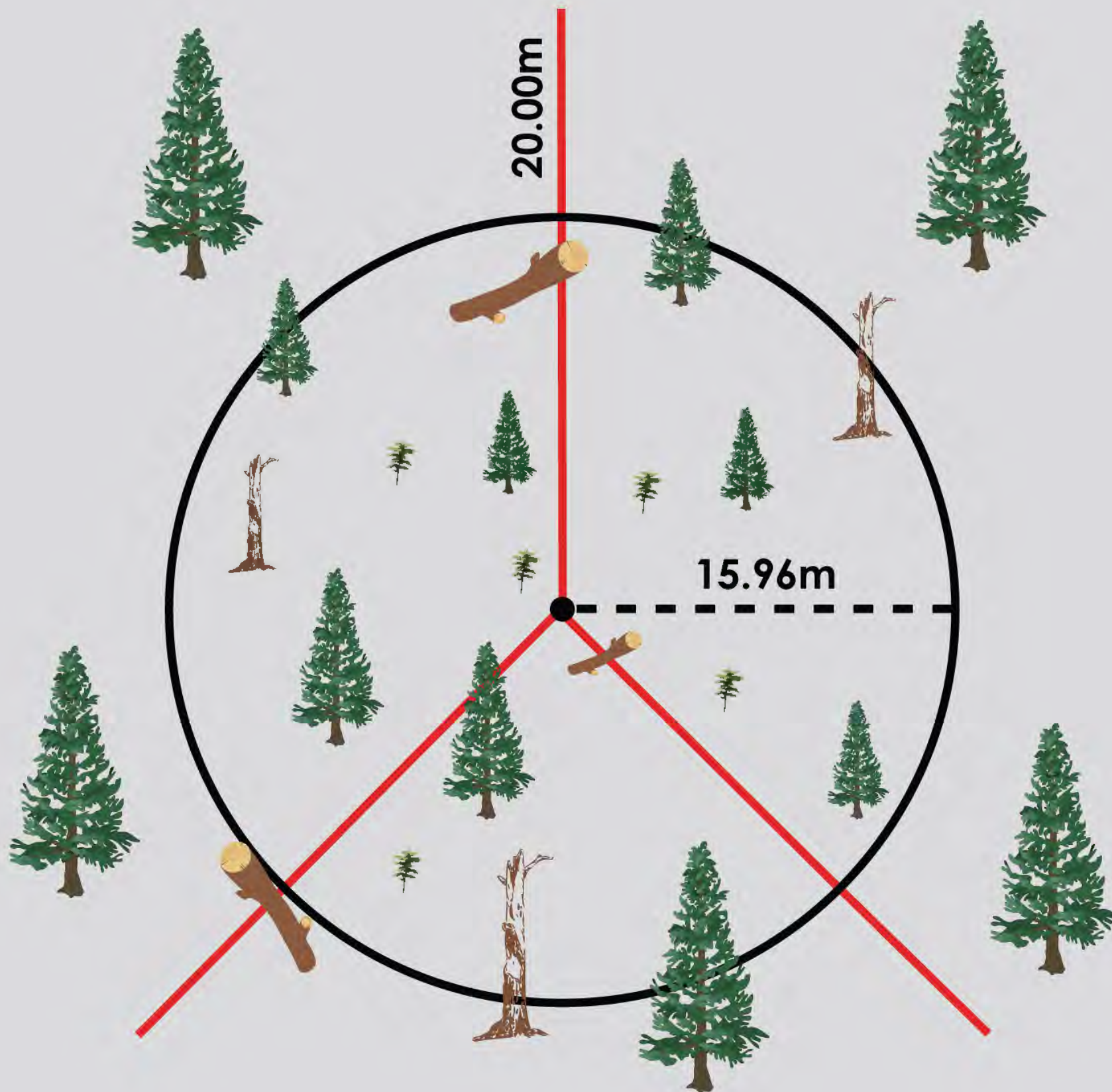
WHAT IS THE DISTURBANCE HISTORY OF THIS SITE?

2 WHAT ARE THE DISTURBANCE AGENTS AFFECTING THIS SITE?

3 WHAT IS THE STAND-AGE STRUCTURE?

4 HOW DOES COMPETITION AFFECT THE GROWTH OF TREES?







Brown 1974, Stokes 1980, Oliver and Larson 1996

Study Site and Background

Research Questions

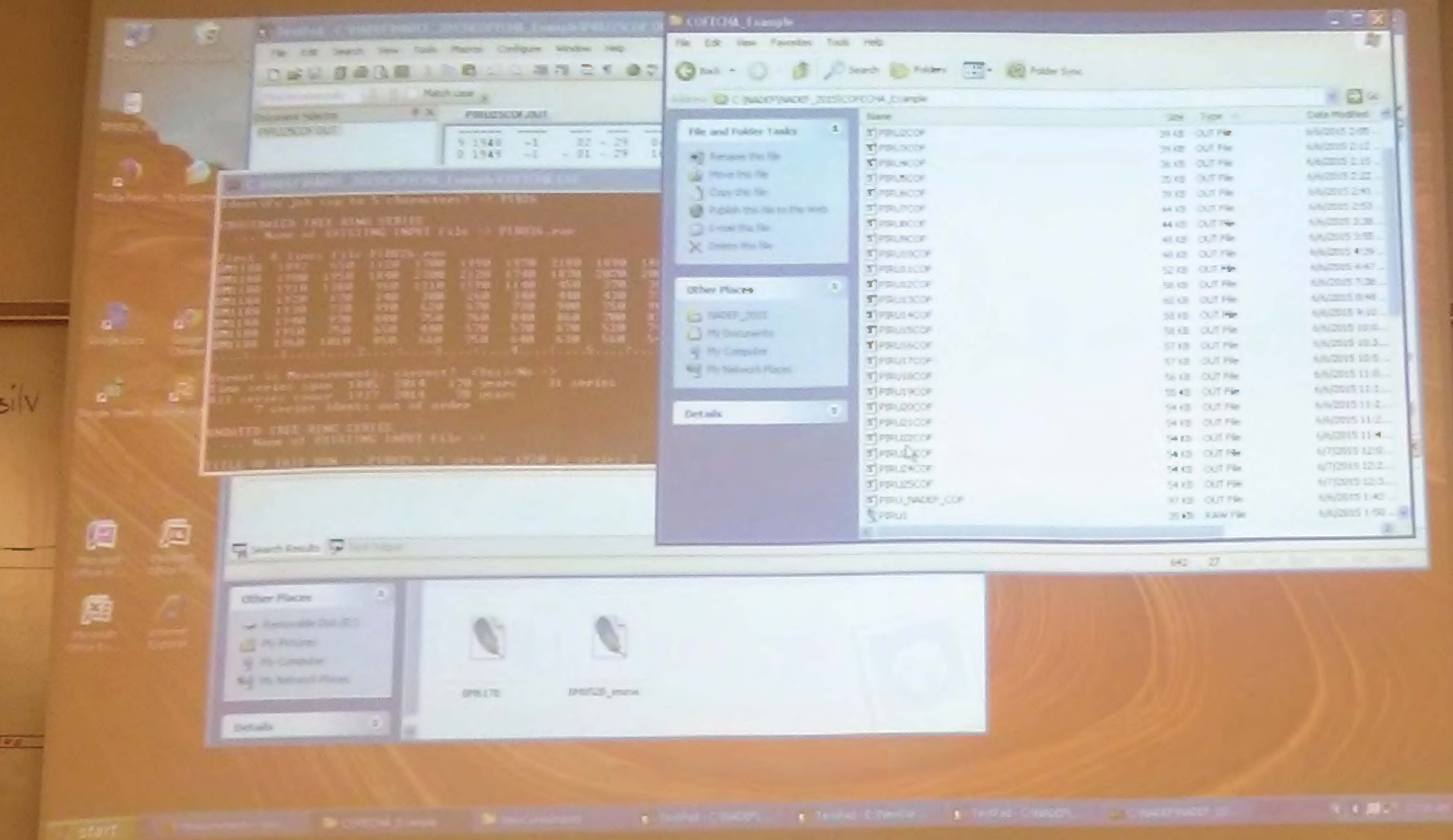
Methods

Results

Discussion

Velmex password: qsilv

29	1.1	0.0
28	1.1	0.0
27	1.1	0.0
26	1.1	0.0
25	1.1	0.0
24	1.1	0.0
23	1.1	0.0
22	1.1	0.0
21	1.1	0.0
19	1.1	0.0
18	1.1	0.0
17	1.1	0.0
16	1.1	0.0
15	1.1	0.0
14	1.1	0.0
13	1.1	0.0
12	1.1	0.0
11	1.1	0.0
10	1.1	0.0
9	1.1	0.0
8	1.1	0.0
7	1.1	0.0
6	1.1	0.0
5	1.1	0.0
4	1.1	0.0
3	1.1	0.0
2	1.1	0.0
1	1.1	0.0
19	1.1	0.0
18	1.1	0.0
17	1.1	0.0
16	1.1	0.0
15	1.1	0.0
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6	1.1	0.0
5	1.1	0.0
4	1.1	0.0
3	1.1	0.0
2	1.1	0.0
1	1.1	0.0



1.) All trees >10cm

- Distance
- Azimuth
- DBH
- Species

Lostyr Gra

10:30am
tomorrow
Stand Dym
Lecture

2.) CWD

- DAI
- Species
- D.C.

- Obvious WT → Bearing (in/out)
- Possibly core solid CWD

3.) Target large diameter PIRU

4.) <10 small diameter saplings

5.) Tally small diameter



Study Site and Background

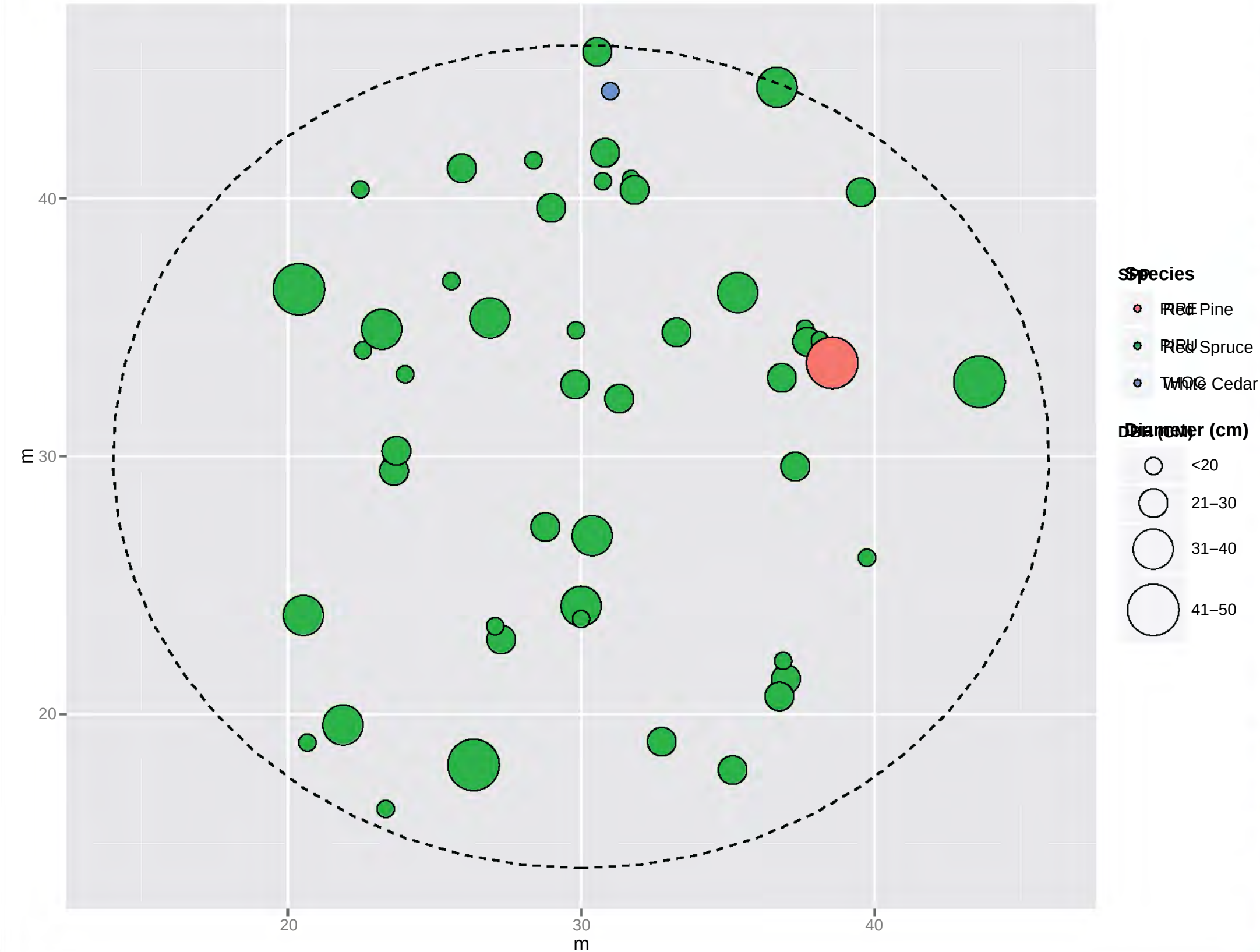
Research Questions

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STEM MAP BY DIAMETER



Study Site and Background

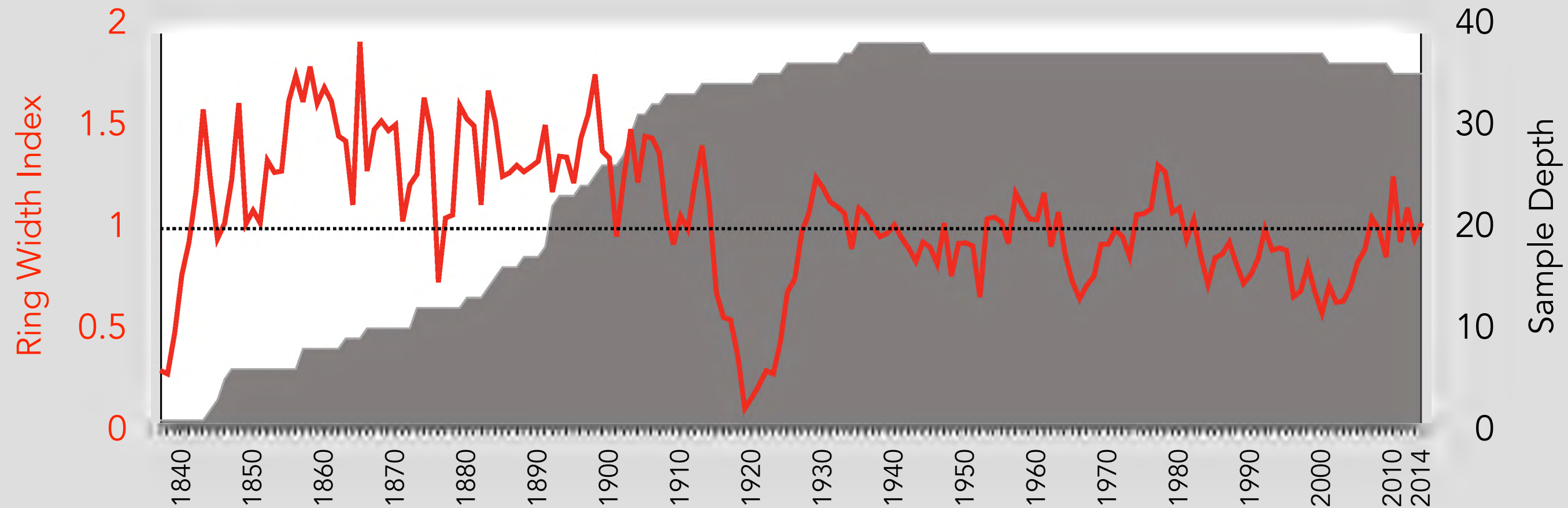
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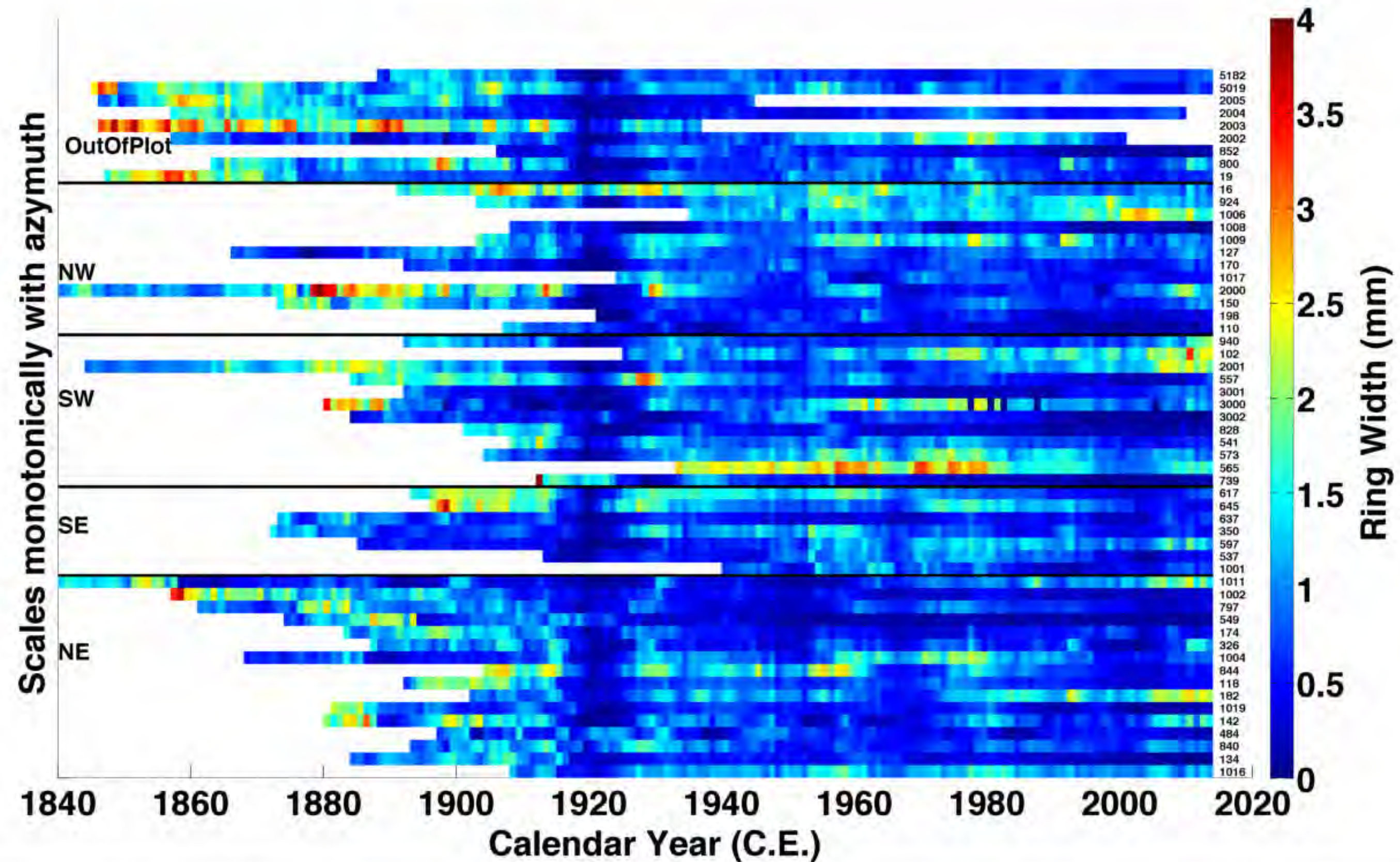
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BEECH MOUNTAIN CHRONOLOGY

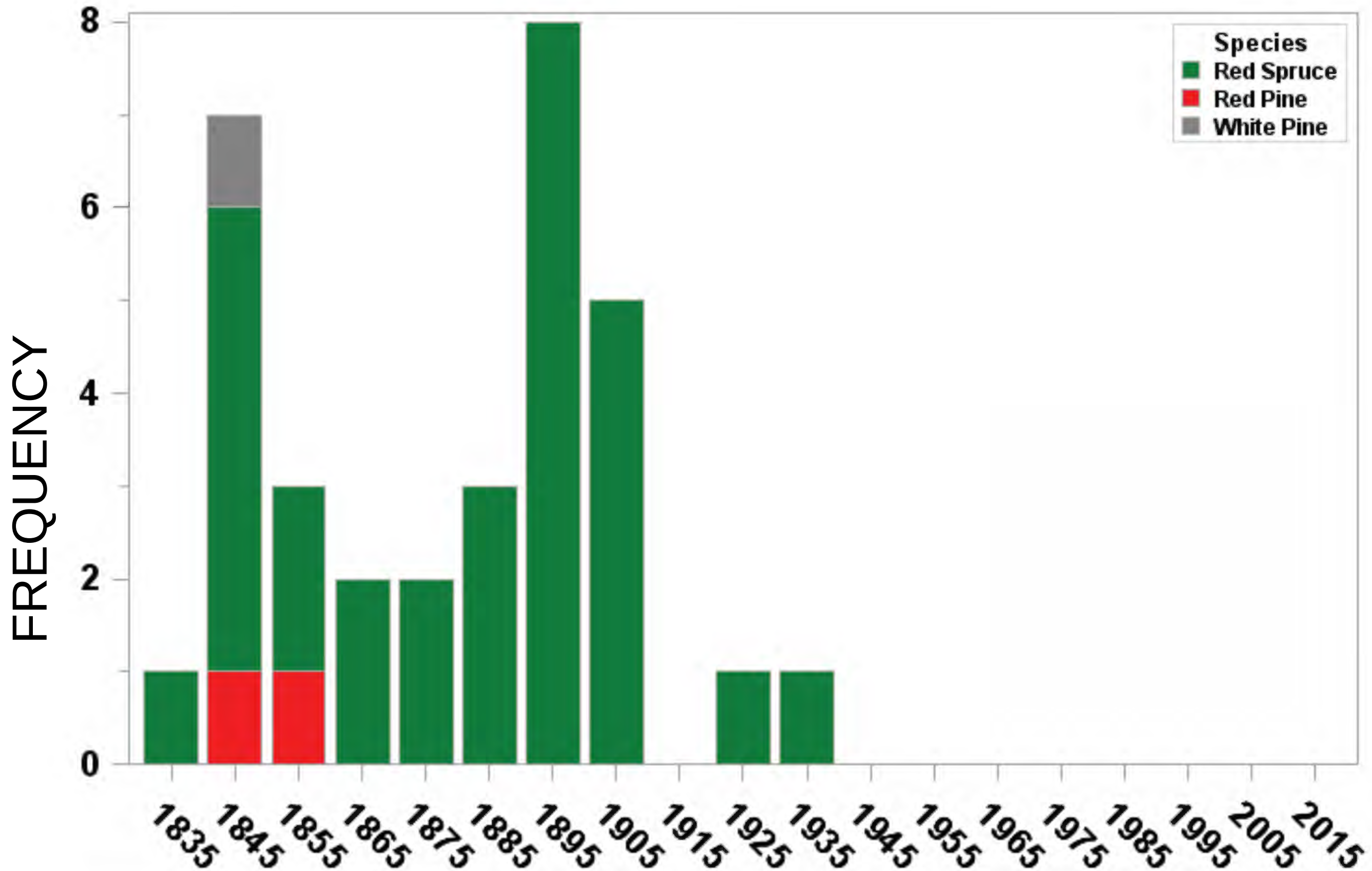


GROWTH HISTORY DOMINATED BY 1919-1925 EVENT

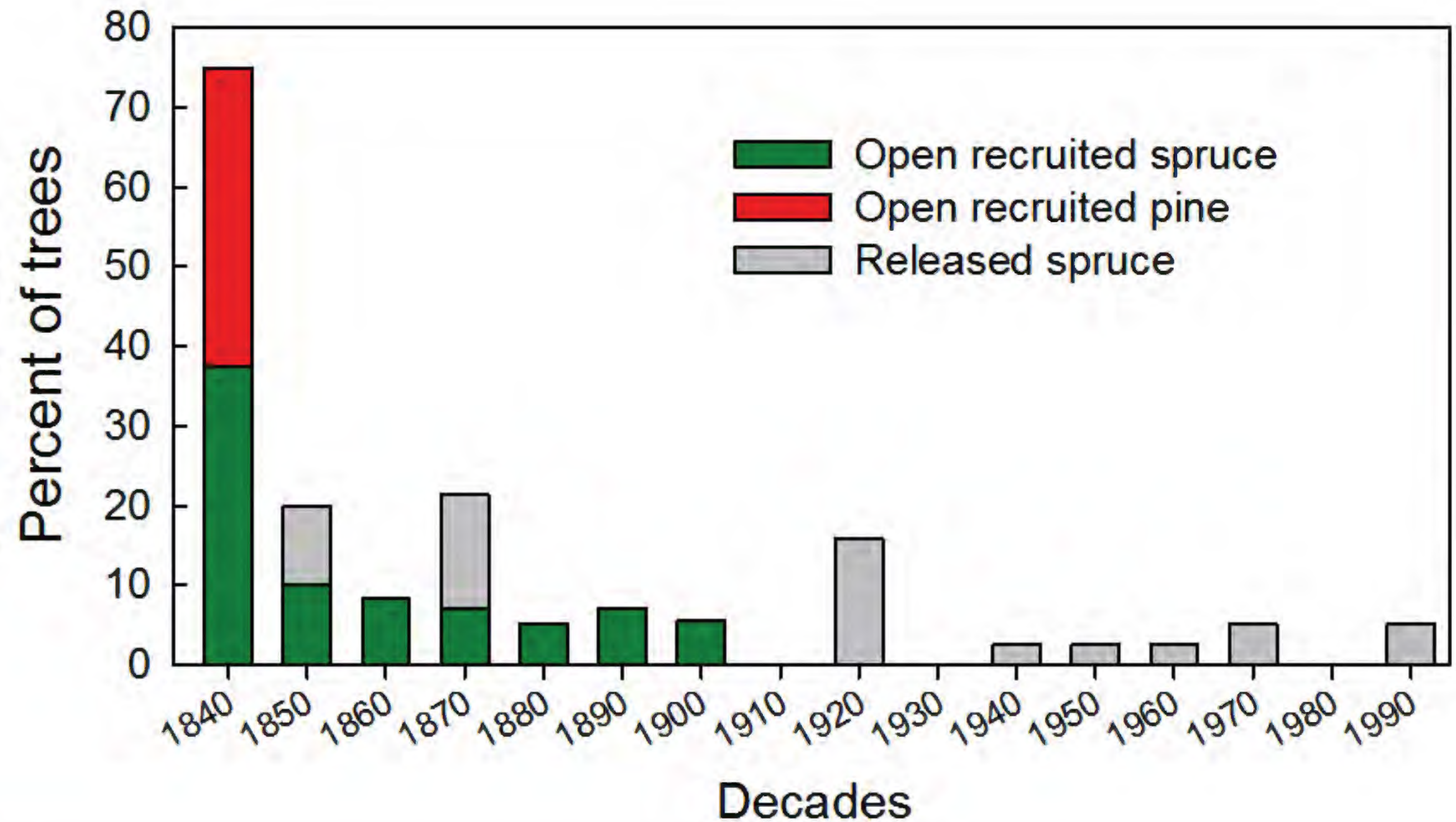




RECRUITMENT TO BREAST HEIGHT



DISTURBANCE CHRONOLOGY







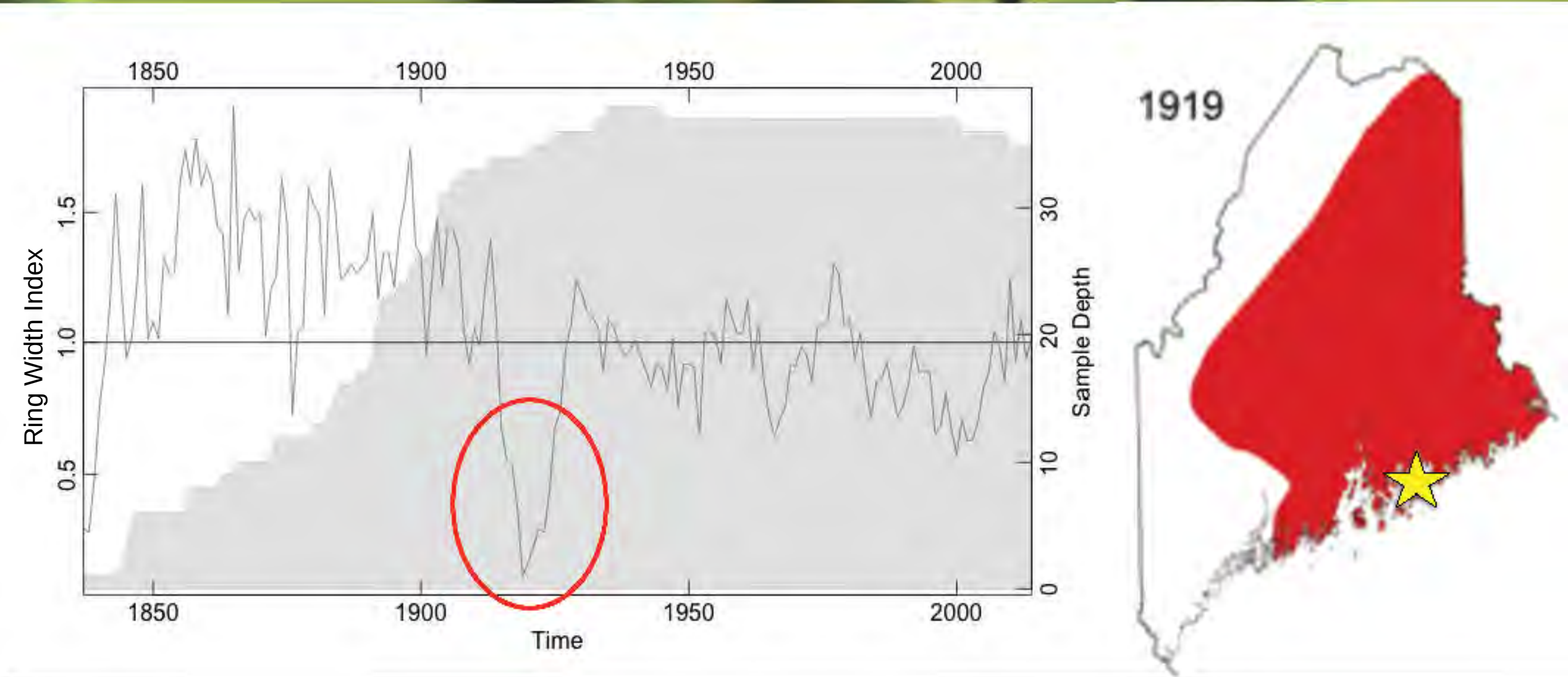
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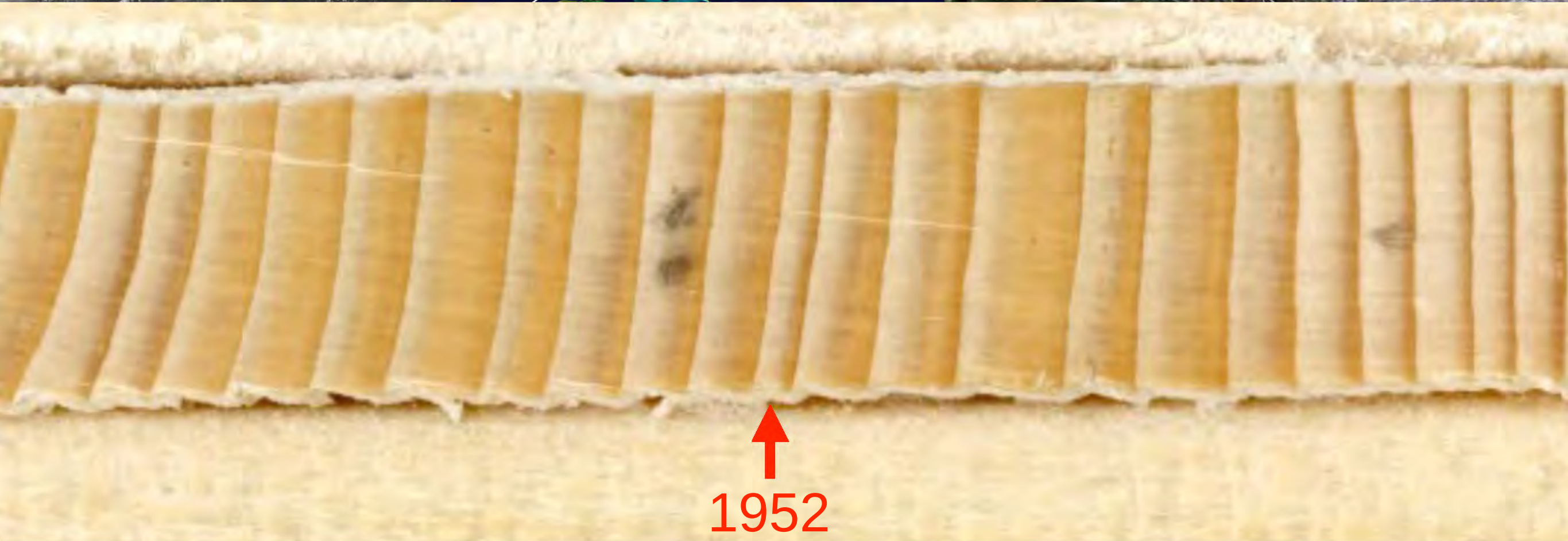
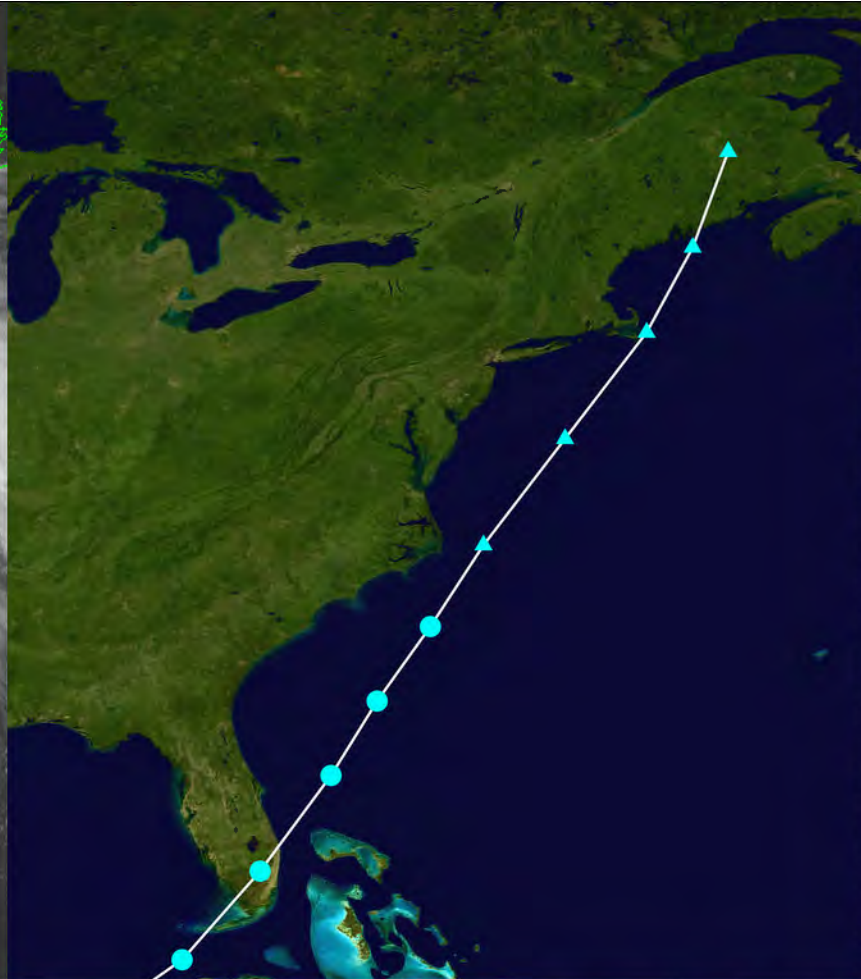
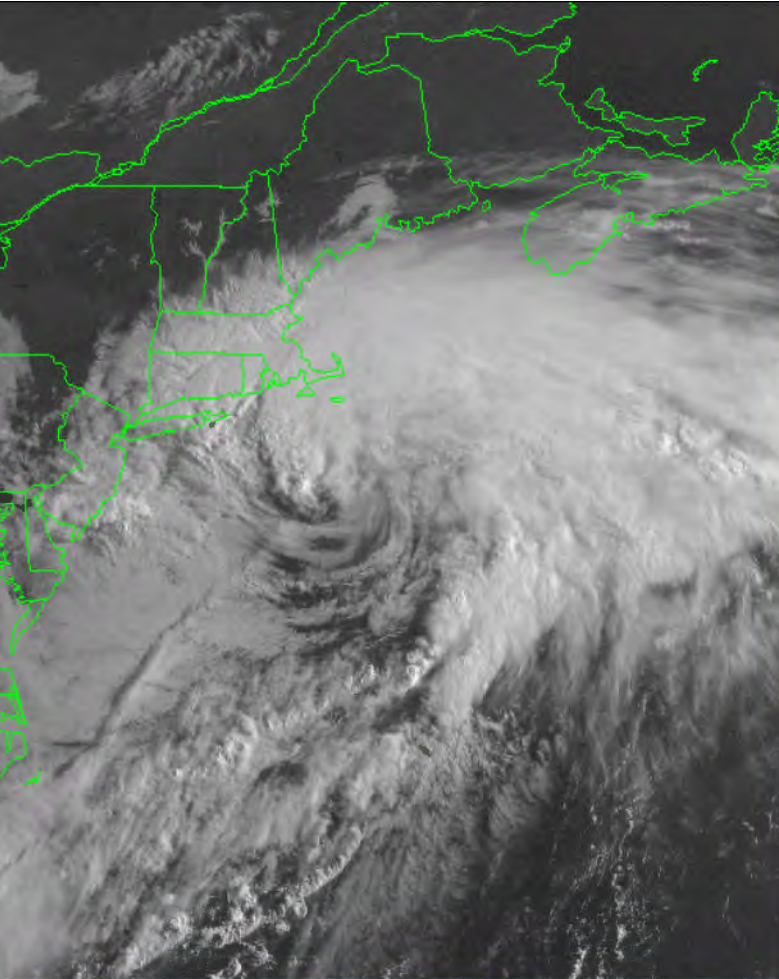
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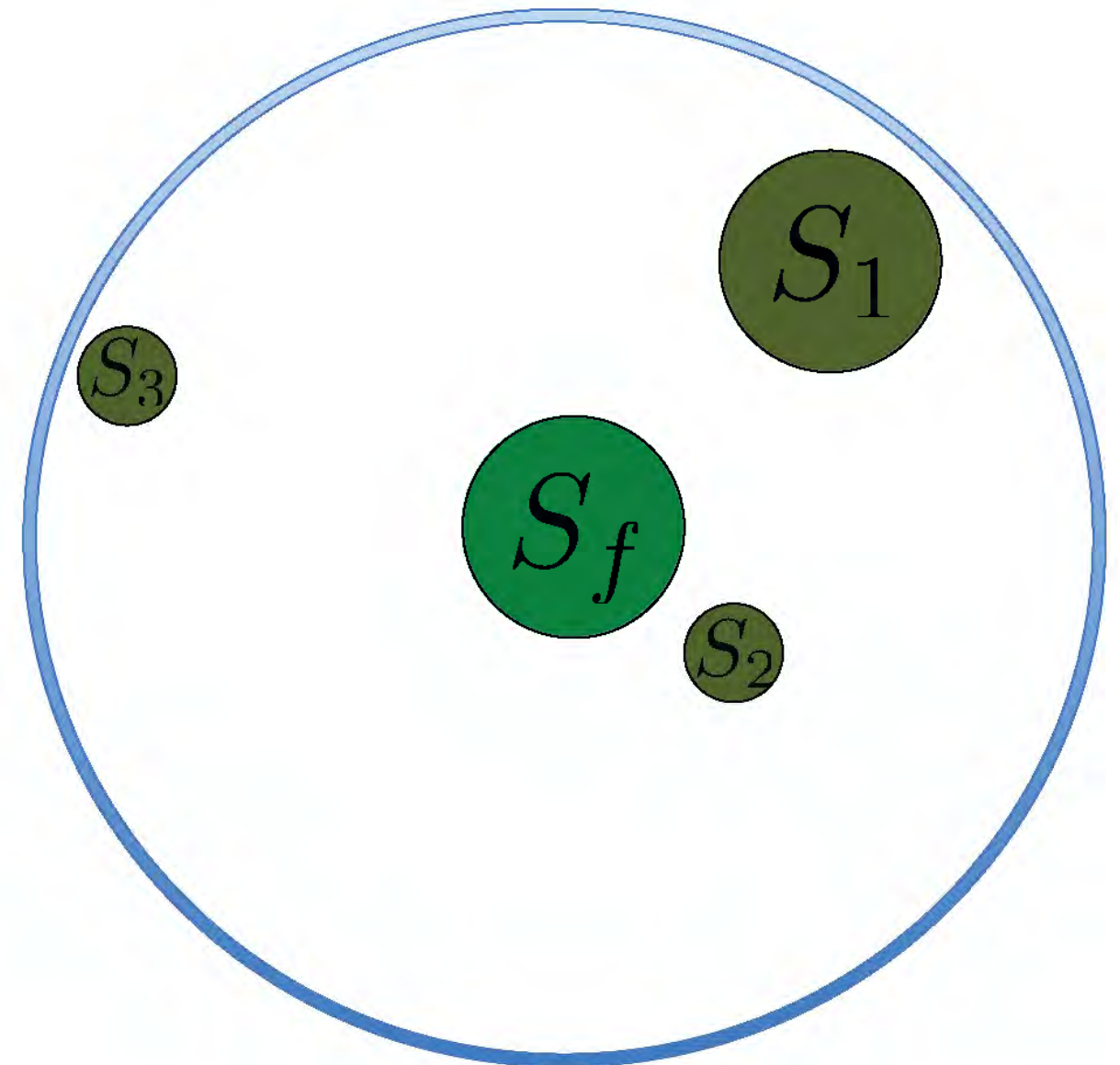
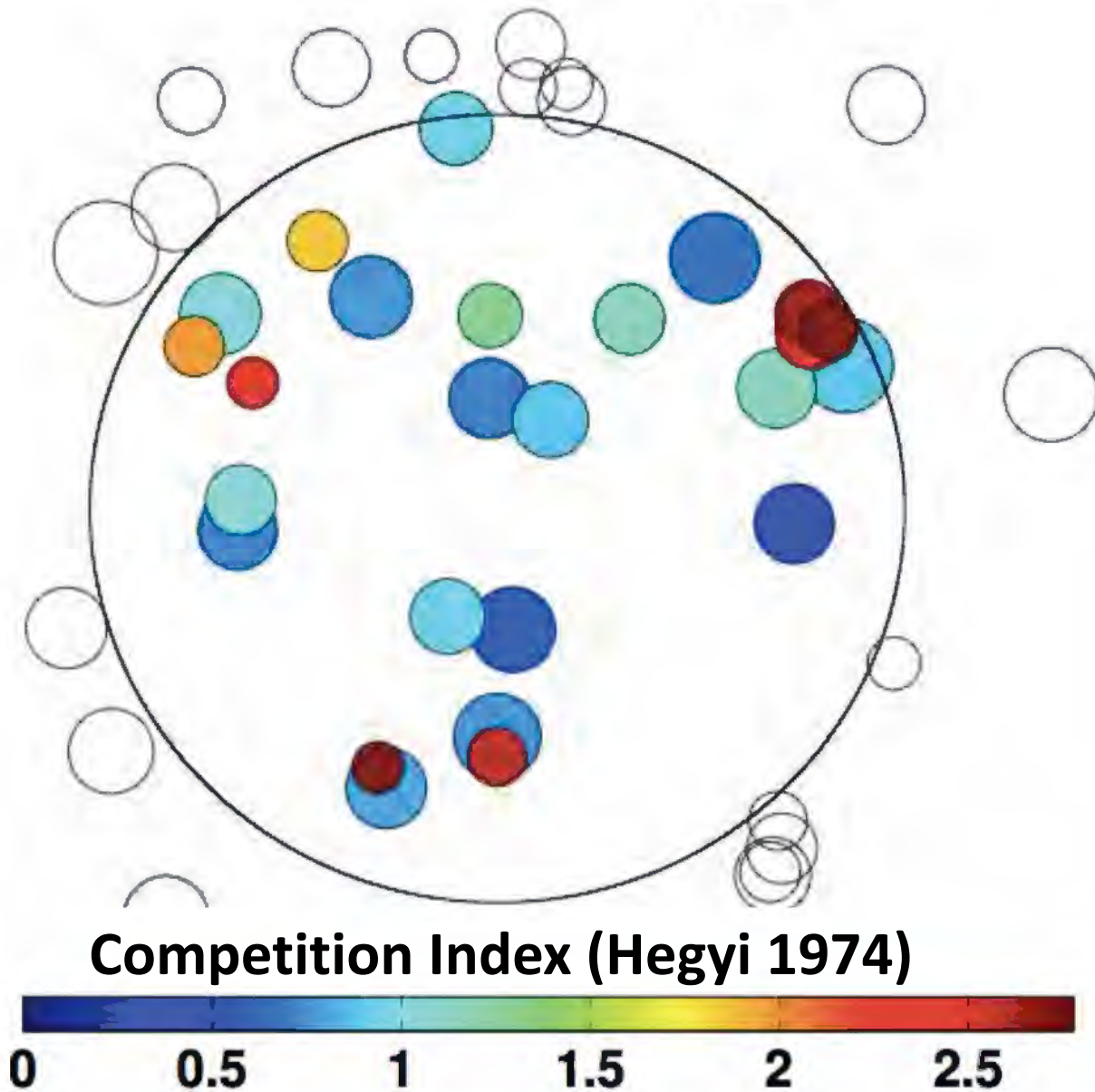




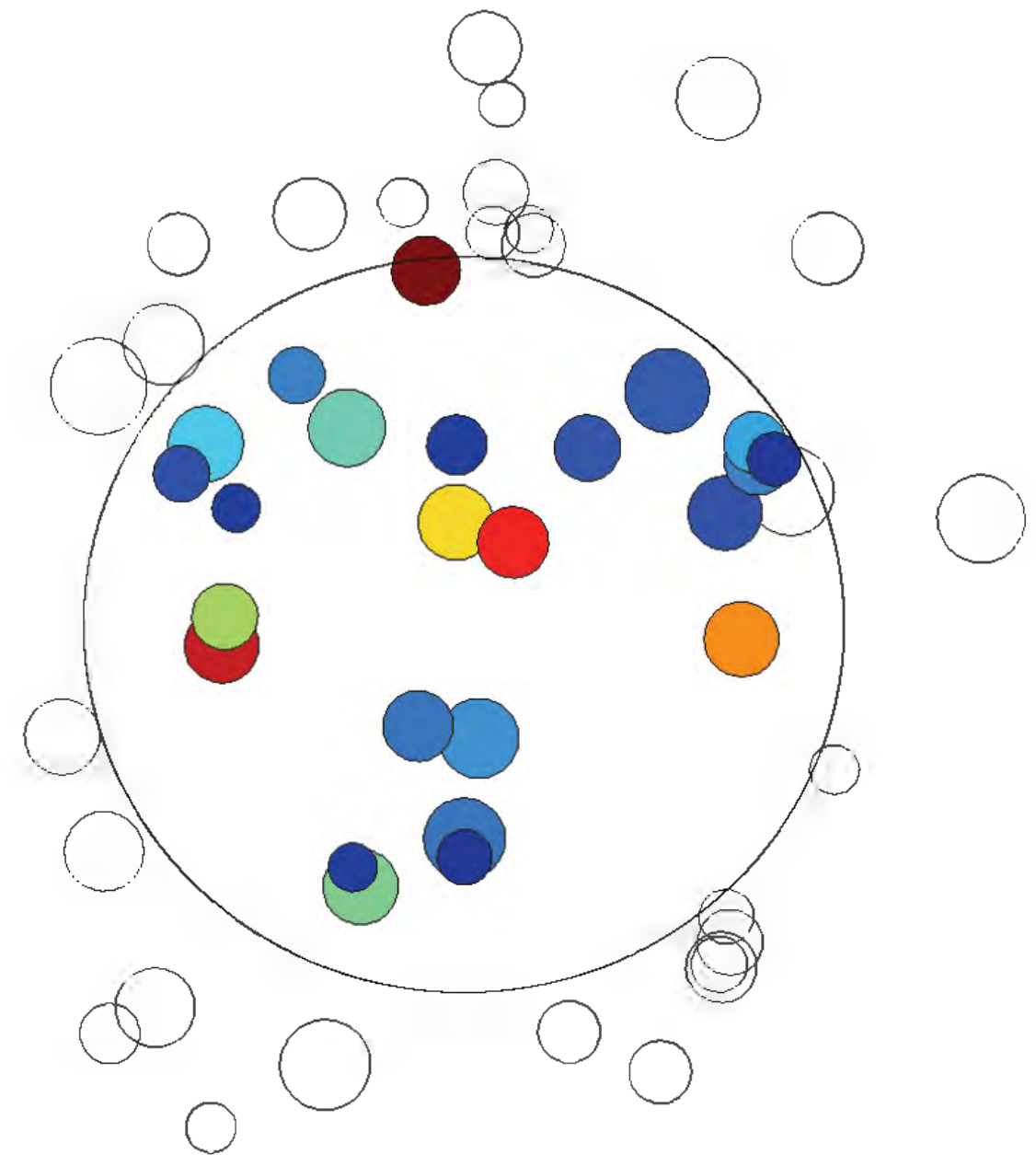
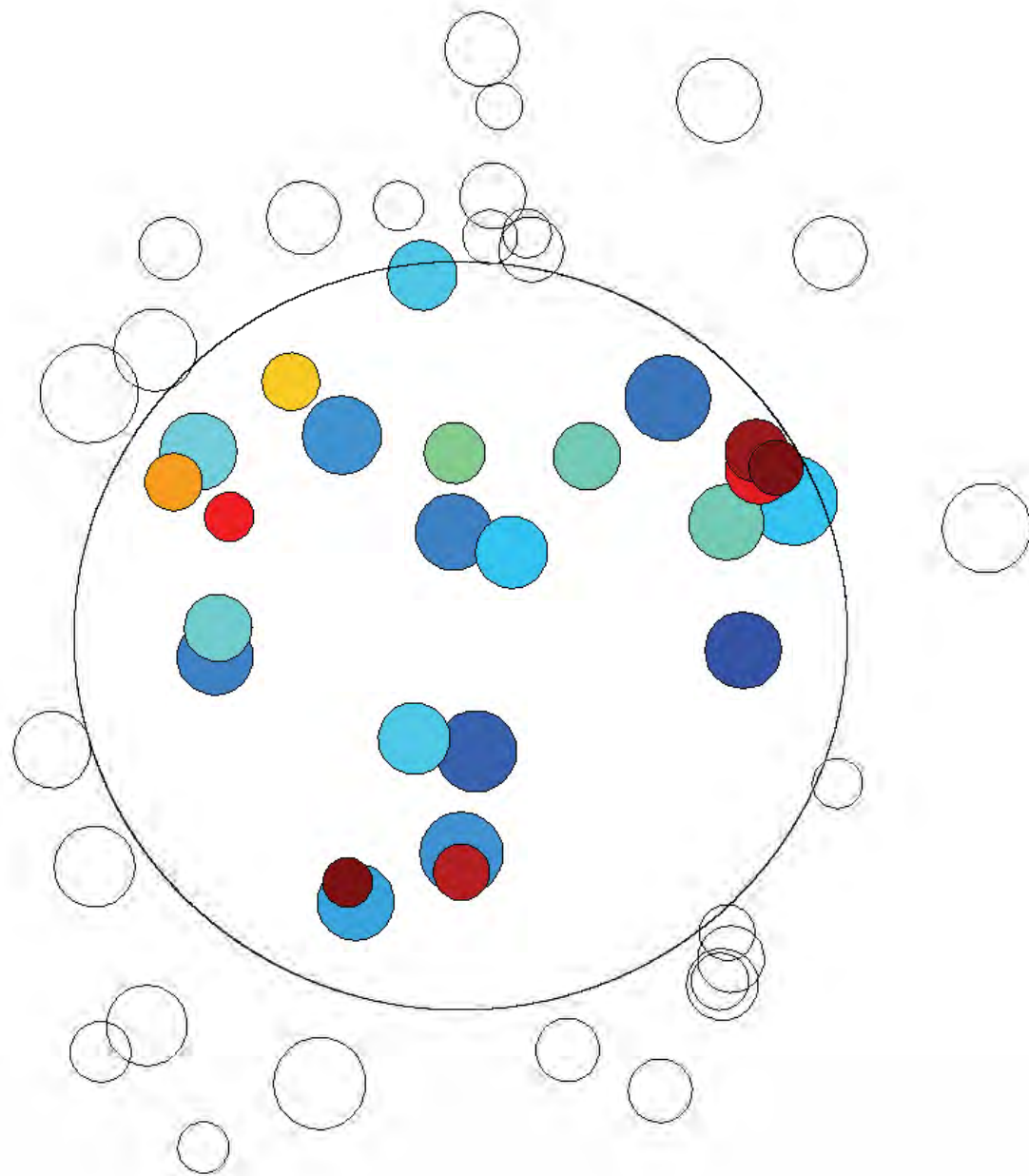


COMPETITION INDEX (CI)

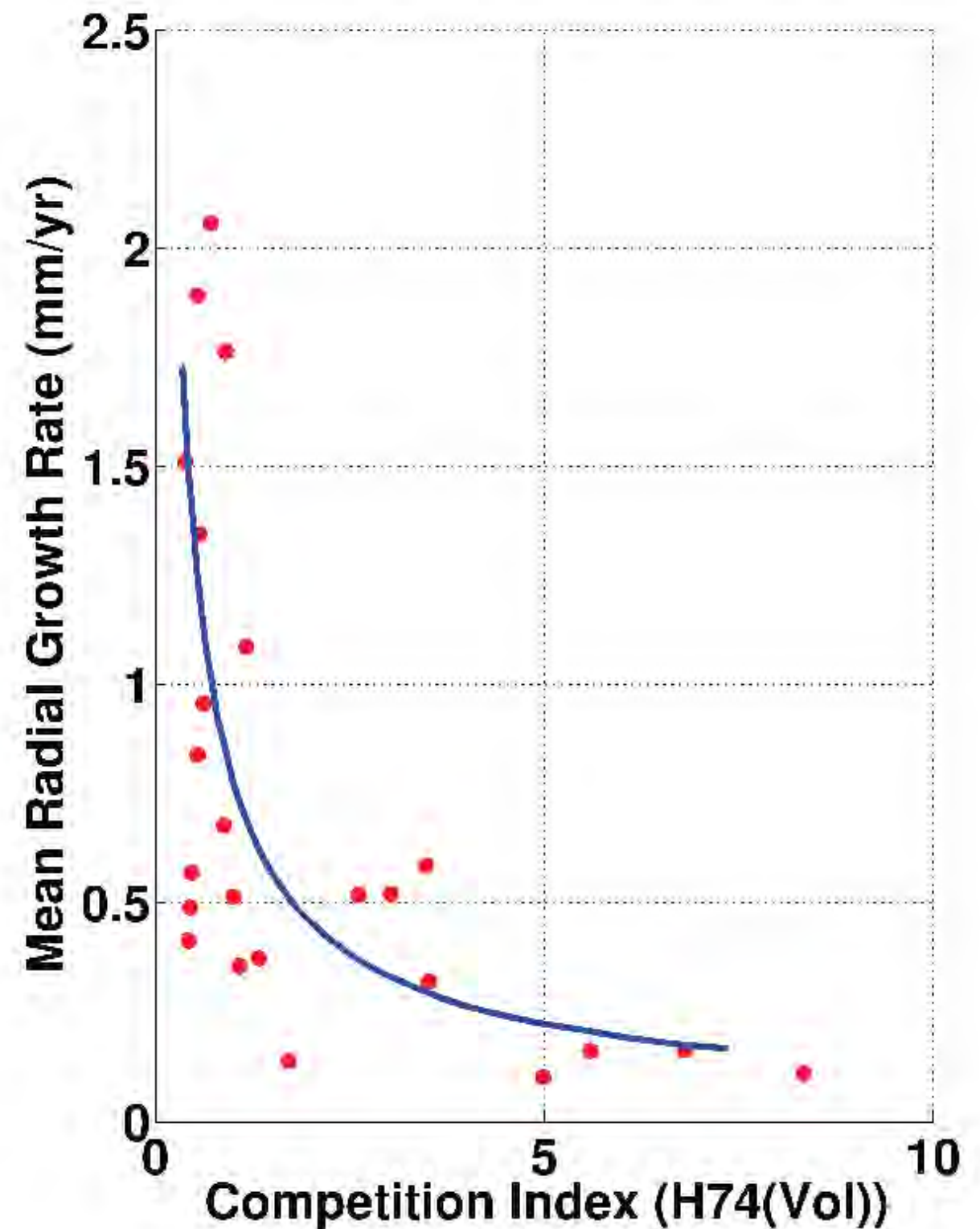
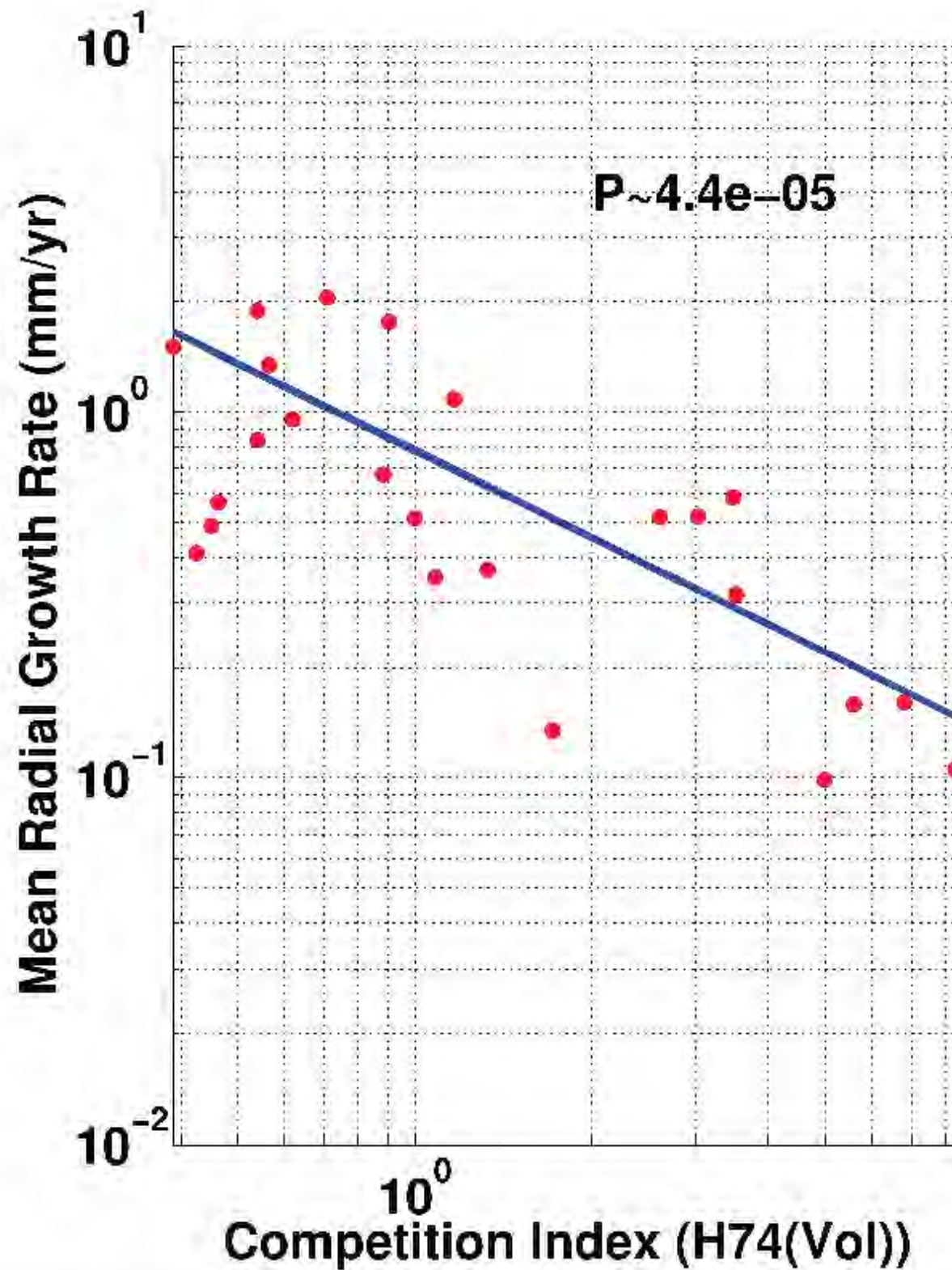
$$CI_f = \sum_{n=1}^N \frac{\text{Size}_n}{\text{Size}_f} \cdot \frac{1}{\text{Distance}_{nf}}$$



COMPETITION DECREASES GROWTH RATE



COMPETITION DECREASES GROWTH RATE



TAKE HOME MESSAGES

1. The red spruce stand experienced a growth release following a defoliation event caused by a 1919 outbreak of spruce budworm.
2. Open recruitment observed in 1840 -1900 was likely in response to reduced timber harvest.
3. Increased competition is associated with decreased growth rates in red spruce.
4. Trees record disturbance and provide insight into historical stand structure, composition, and demographics.



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INSTITUTE
AT ACADIA NATIONAL PARK

