

Dendroarchaeology

3 types of Information

Chronological: dating

Behavioral:
wood use practices

Environmental:
species, reconstructions



The Single Most Important Factor:

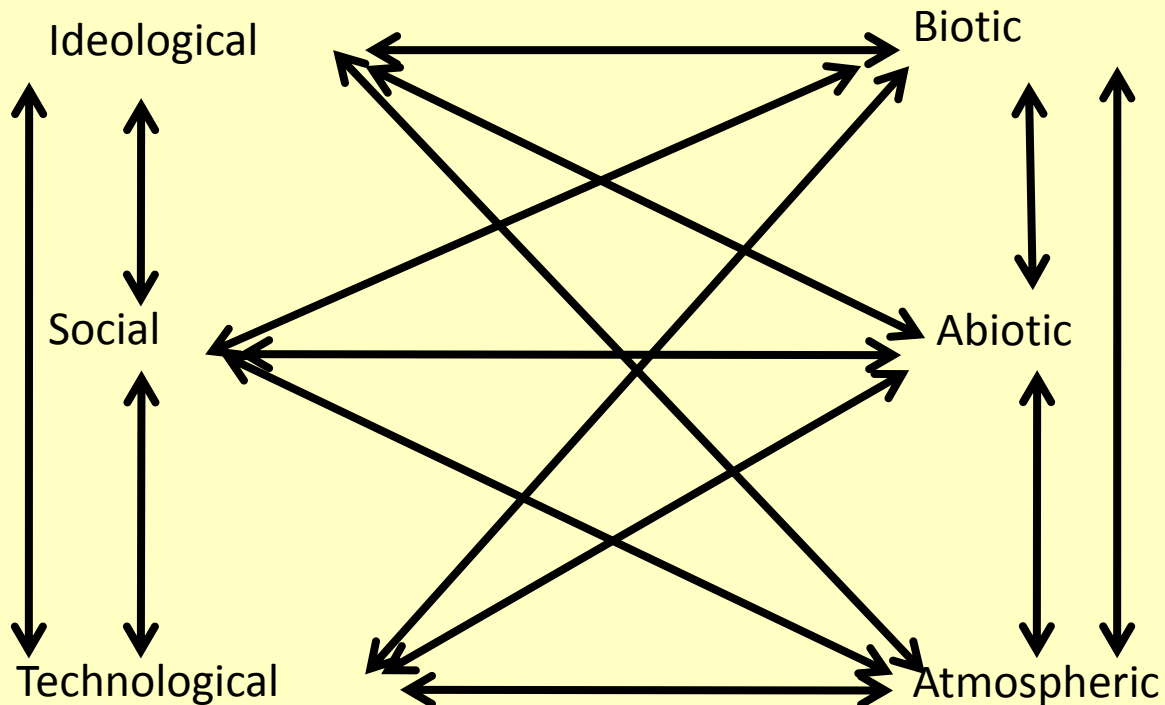
PAST HUMAN BEHAVIOR



Human-Environment Interaction: A Complex Matrix

Human Systems

Environmental Systems



A photograph of a pine forest with a dirt path and overlaid text. The scene is a sunlit forest of tall, thin pine trees. A dirt path winds through the trees from the right side towards the center. The ground is covered in dry grass and pine needles. The text "Remember: Wood as a Resource" is overlaid in white at the bottom center of the image.

Remember:
Wood as a Resource

Dendroarchaeology: Sampling

- Architecture
- Arboreal
- Artifactual
- Where on the Beam?
- Charcoal
- Excavated



Dendroarchaeology: Dating



- Types of Dates
- Cutting Dates
 - B, G, L, r, c, v
- Near Cutting Dates
 - +B, +G, +L, +r, etc.
- Noncutting Dates
 - ++ dates
 - vv dates

Interpreting Dates

- Most important Factors
 - 1. Behavior of Prehistoric People
 - Species selection, wood use & modification
 - 2. Behavior of Archaeologists
 - Site selection & Sampling
 - Behavior of Dendrochronologists
 - Proper surfacing, dating



Interpreting Dates

- Date Clustering
- Identifying Anomalous Dates
- Beam Reuse/Recycling
- Repair/Remodeling
- Deadwood use

***** It is CONTEXT*****

All Dates Stem & Leaf

(n=30)

158	7
•***	*
•174	336
•175	48
•176	<u>7</u> 8999
•177	1157
•178	<u>000</u> <u>1</u> 112355
•179	<u>0</u> <u>2</u> <u>2</u> 7
•180	5

Presenting Tree-Ring Dates:
Stem-and-leaf Plots

Savage Homestead Tree-Ring Dates
(Underline indicates cutting date)

Decade	Year
182	3
190	789
191	016
192	55888 <u>999</u>
193	0111112233333333333333 <u>344444444444445555</u> 6666666666666666666666 <u>6</u>
	<u>77788888888888999999999999999999999999</u>
194	<u>000</u>

The Enciero Box Site, NM



Marker Rings

Structure Contemporaneity

Terminal Rings:

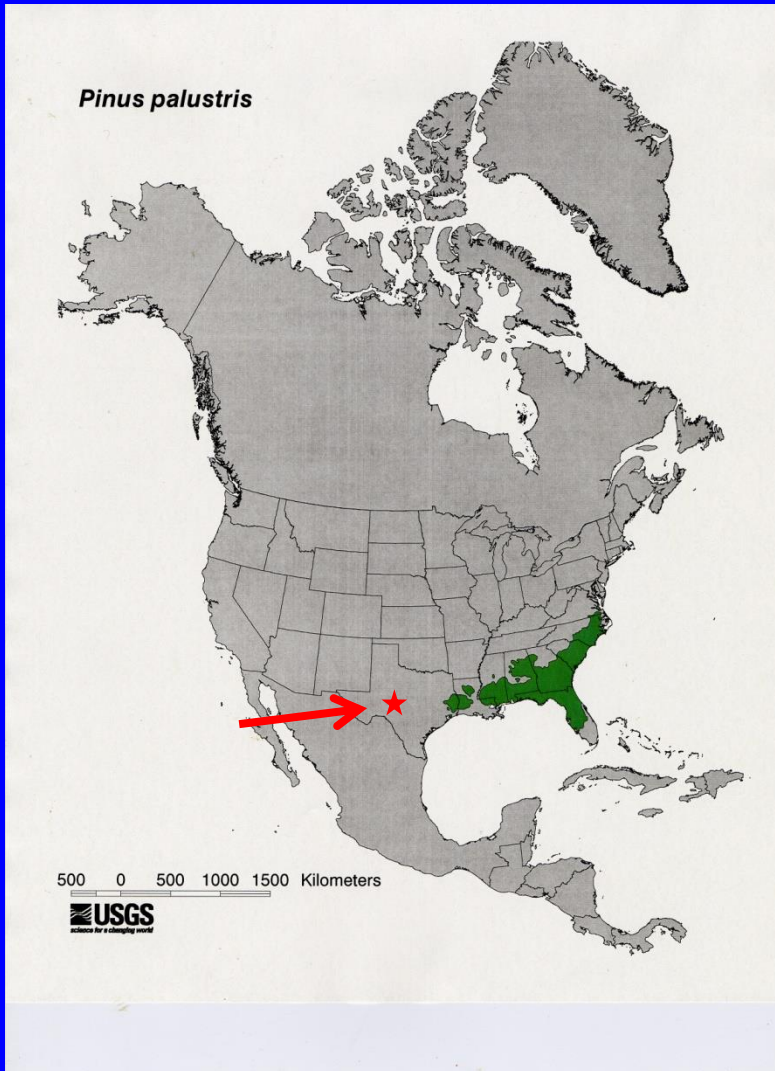
Structure Seasonality

Dendroarchaeology: Behavior



- Species Selection
 - Availability
 - Procurement Logistics
- Tree selection
 - Size
 - Shape/growth form
- Structure type/function
 - Habitation
 - Animals, etc.

Beam Procurement: LBJ NP, Texas



- *Pinus palustris*

Calusa Timber Co.



Shipping and Rail: ca. 600 miles

Dendroarchaeology: Behavior

- Beam Procurement
 - Ax type, burn, etc.
- Beam Modification
 - Length, limb trim etc
- Beam Stockpiling
- Beam Reuse
- Remodeling/Repair
- Deadwood Use



Dendroarchaeology: Environment

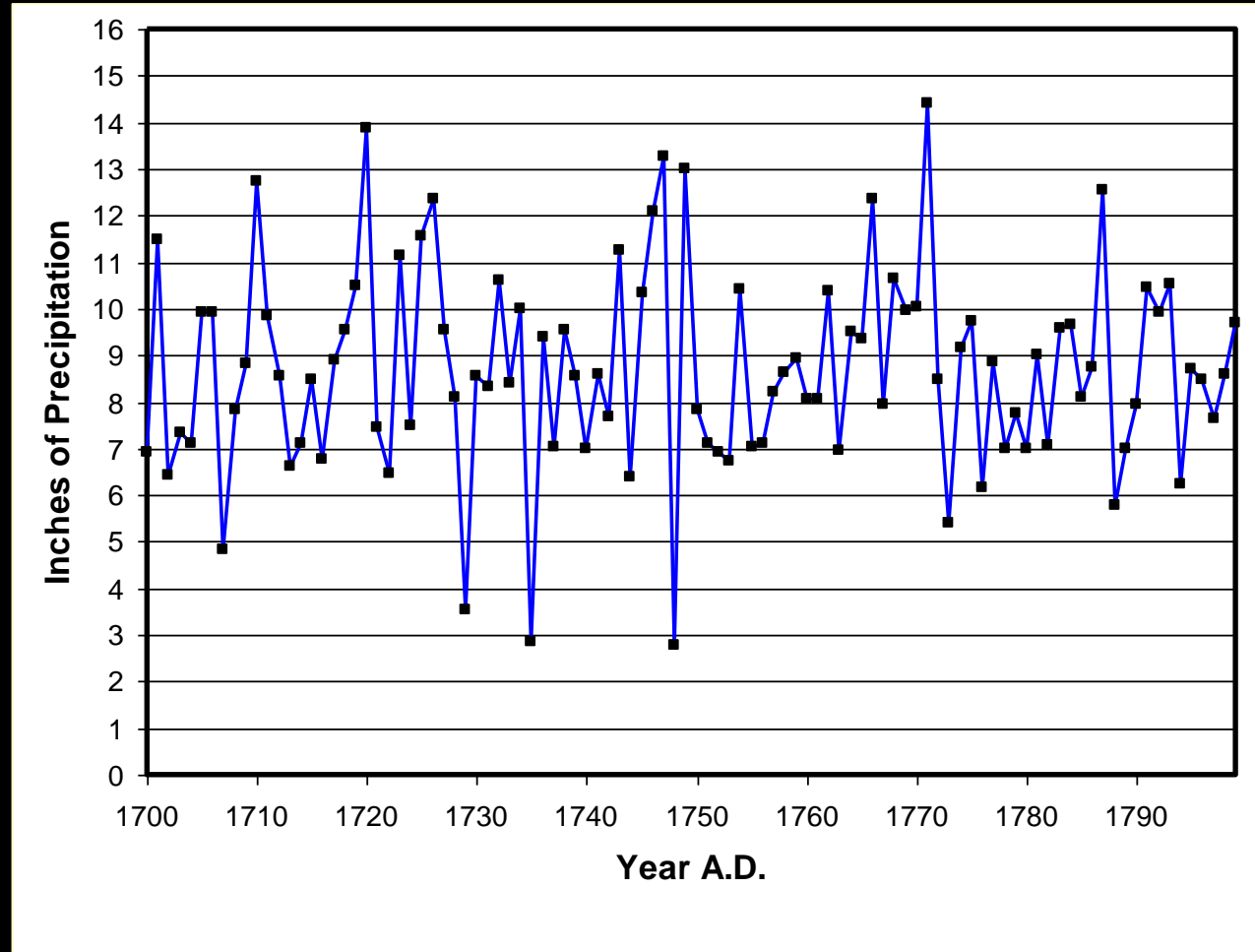
Climatic

Reconstruction

- Signal Type?
 - (Precip or Temp)

Archaeological
Wood?

Living & dead
trees?



Dateless Environmental Information: Cueva Bringas, Sonora, Mexico



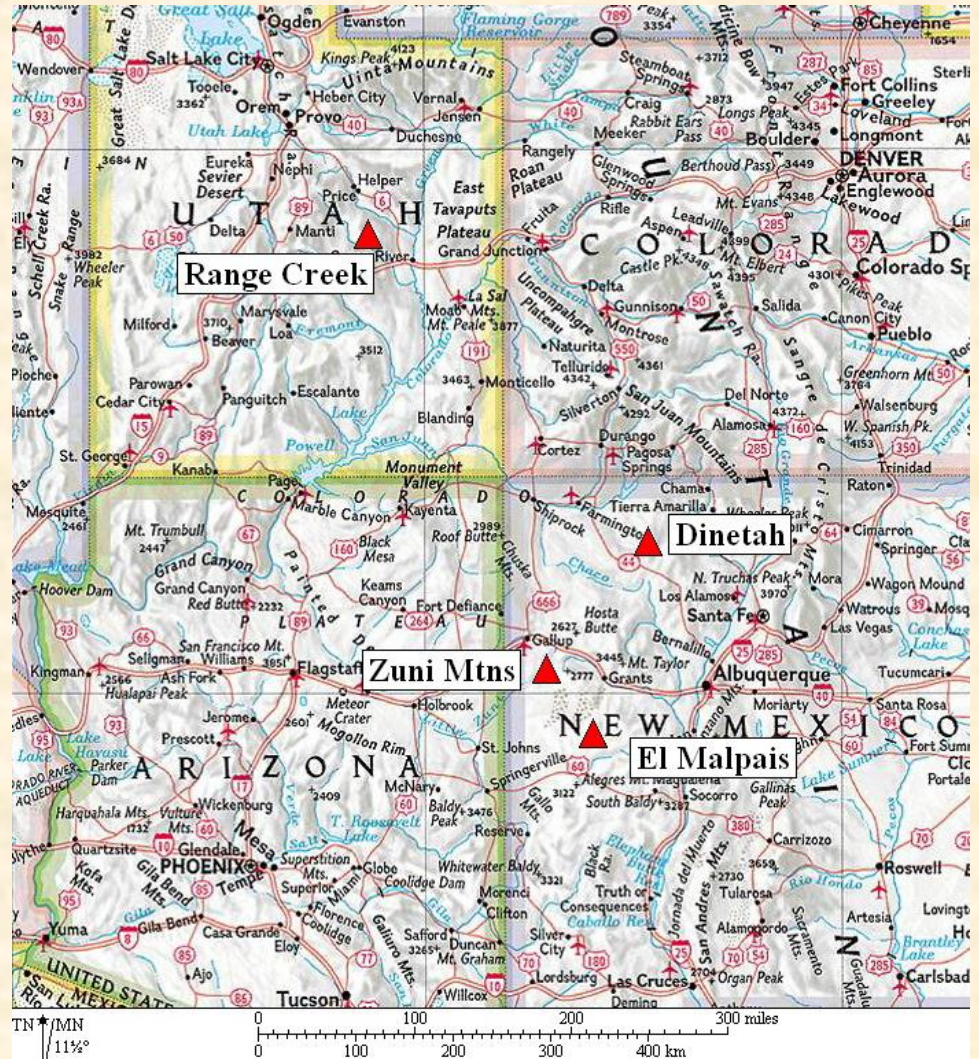
False Rings-- monsoons?

Today's Case Studies

Range Creek Fremont & Anglo

Zuni Mtn Peeled Trees

Dinetah Pueblitos



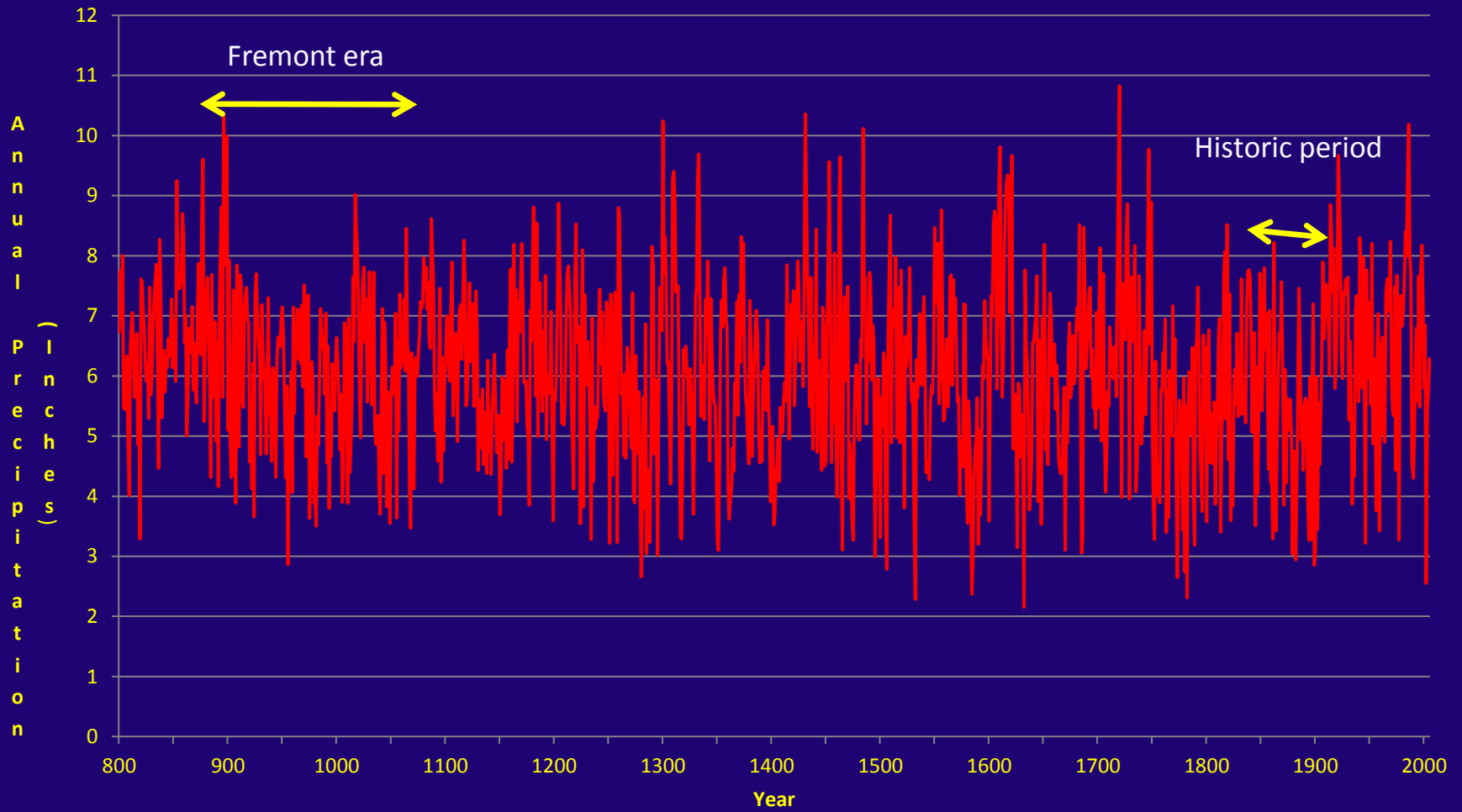
Dendroarchaeology in Range Creek, Utah



Chronology building



Archaeological Sampling



Range Creek Reconstructed Precipitation
AD 800-2005

Range Creek Dendroarchaeology



Fremont Granaries



Anglo Homesteads

Range Creek Dating

Fremont Granaries (n=44)

Samples N=197

Dates (n=16--- **8%**)

Cutting Dates (n=4)



Anglo Homesteads (n=4)

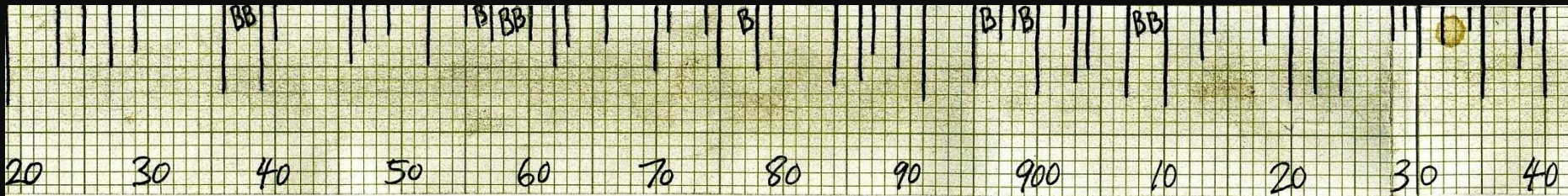
Samples (N=69)

Dates (N=53-- **77%**)

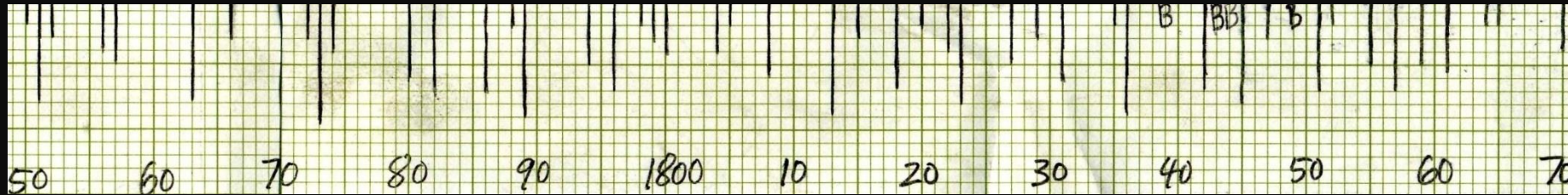
Cutting Dates (N=33)



Dating Differences: The Chronology?

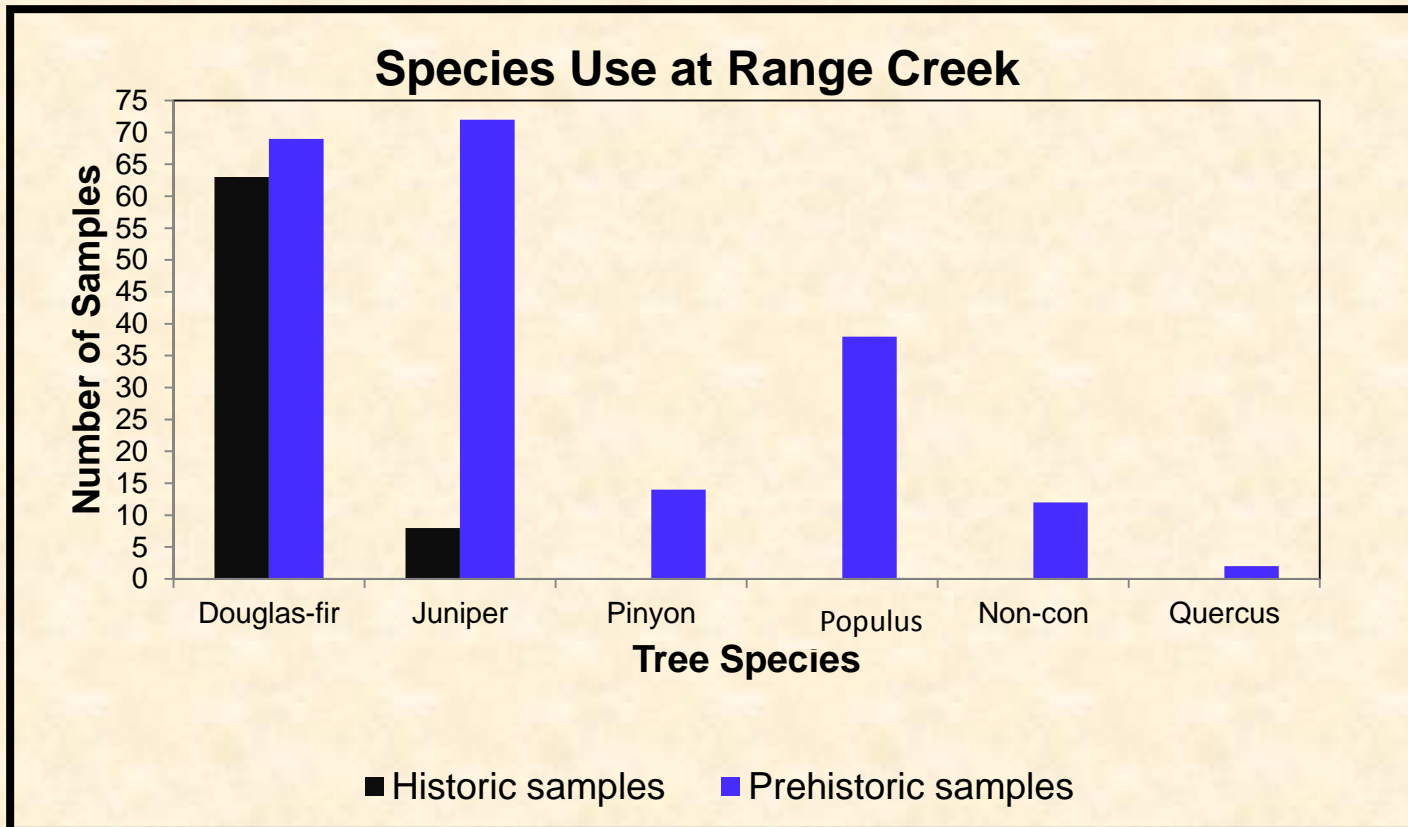


AD 820-940: 52 rings with value, 10 "B" rings, 16 rings value >5



AD 1750-1870: 47 rings with value, 4 "B" rings, 18 rings value >5

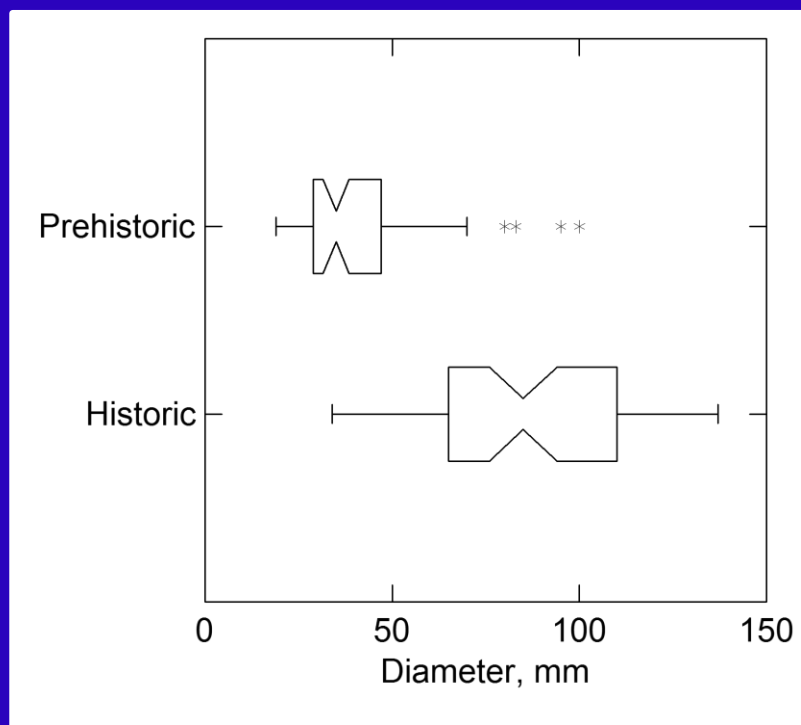
Range Creek Behavior: Species Selection



Implications for Dating Success?

Dates derived from Douglas-fir (n= 67) and pinyon (n=2) only

Range Creek Behavior: DF Beam Size



Prehistoric DF samples:

Radius Ave. = 43.28mm

Radius S.D. = 20.46mm

Radius Min = 20mm

Radius Max = 100mm

Historical DF Samples:

Radius Ave. = 85.6mm

Radius S.D. = 28.27

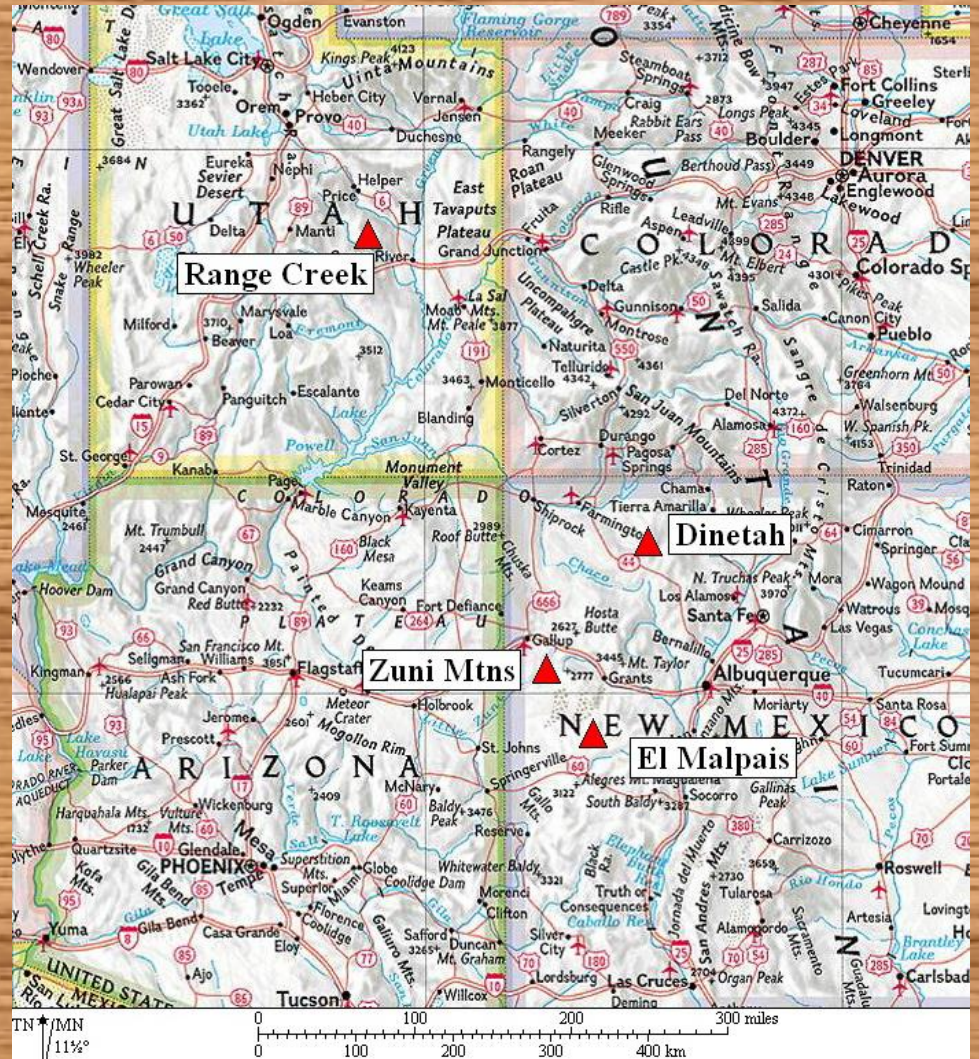
Radius Min = 34mm

Radius Max = 137mm

Difference significant at .001 level

Today's Case Studies

Zuni Mtn Peeled Trees



Zuni Mtn Peeled Trees

Possible
uses:

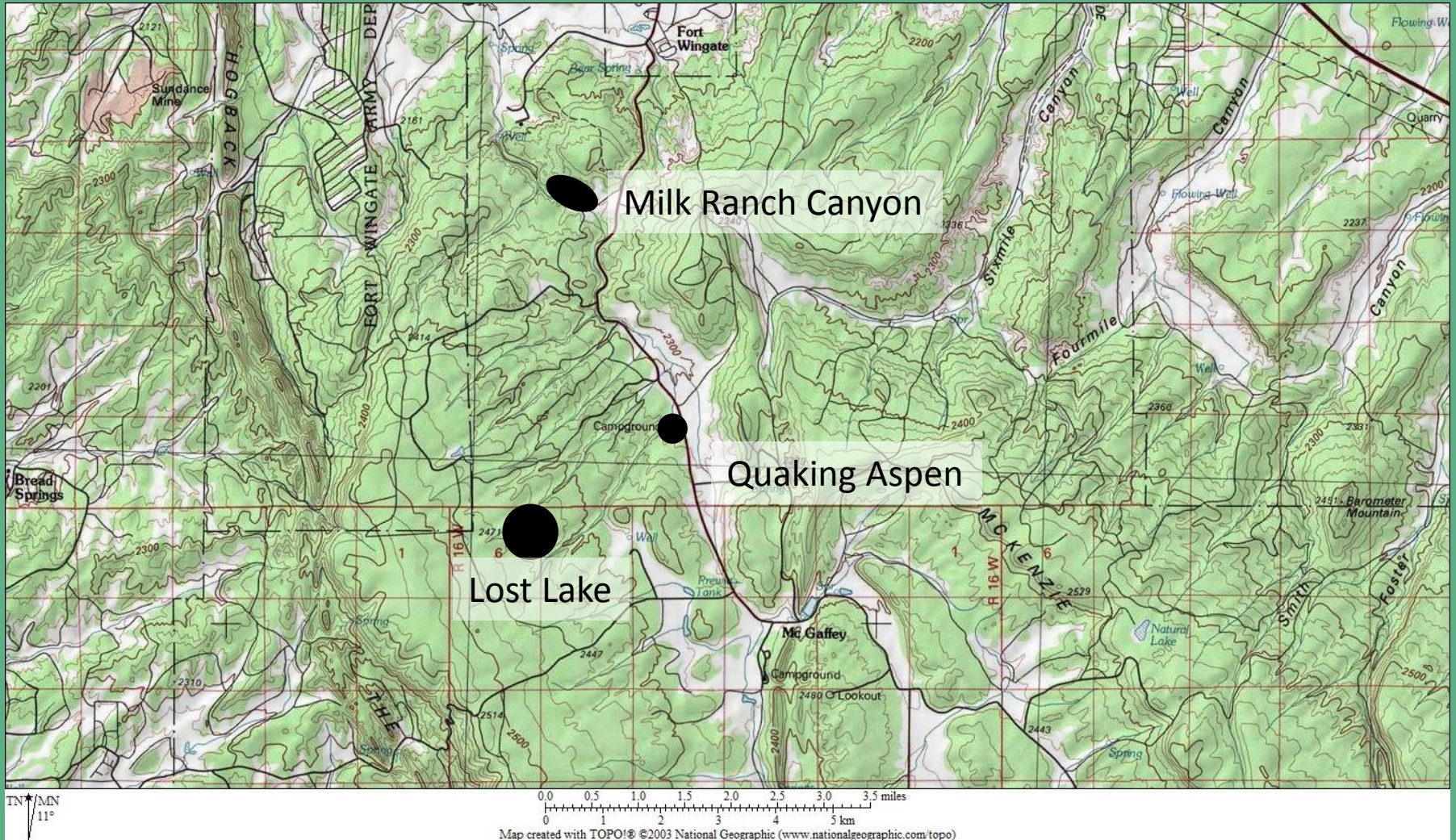
Starvation food

Medicine

Sweets



Three Cambium Peeled Tree Sites



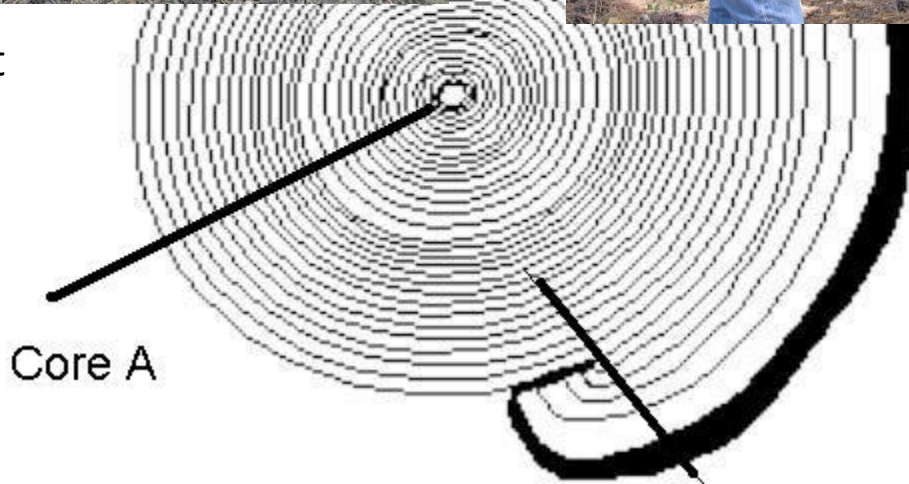
Zuni Mtn Peeled Trees: Sampling



Archaeological bit
for scar face

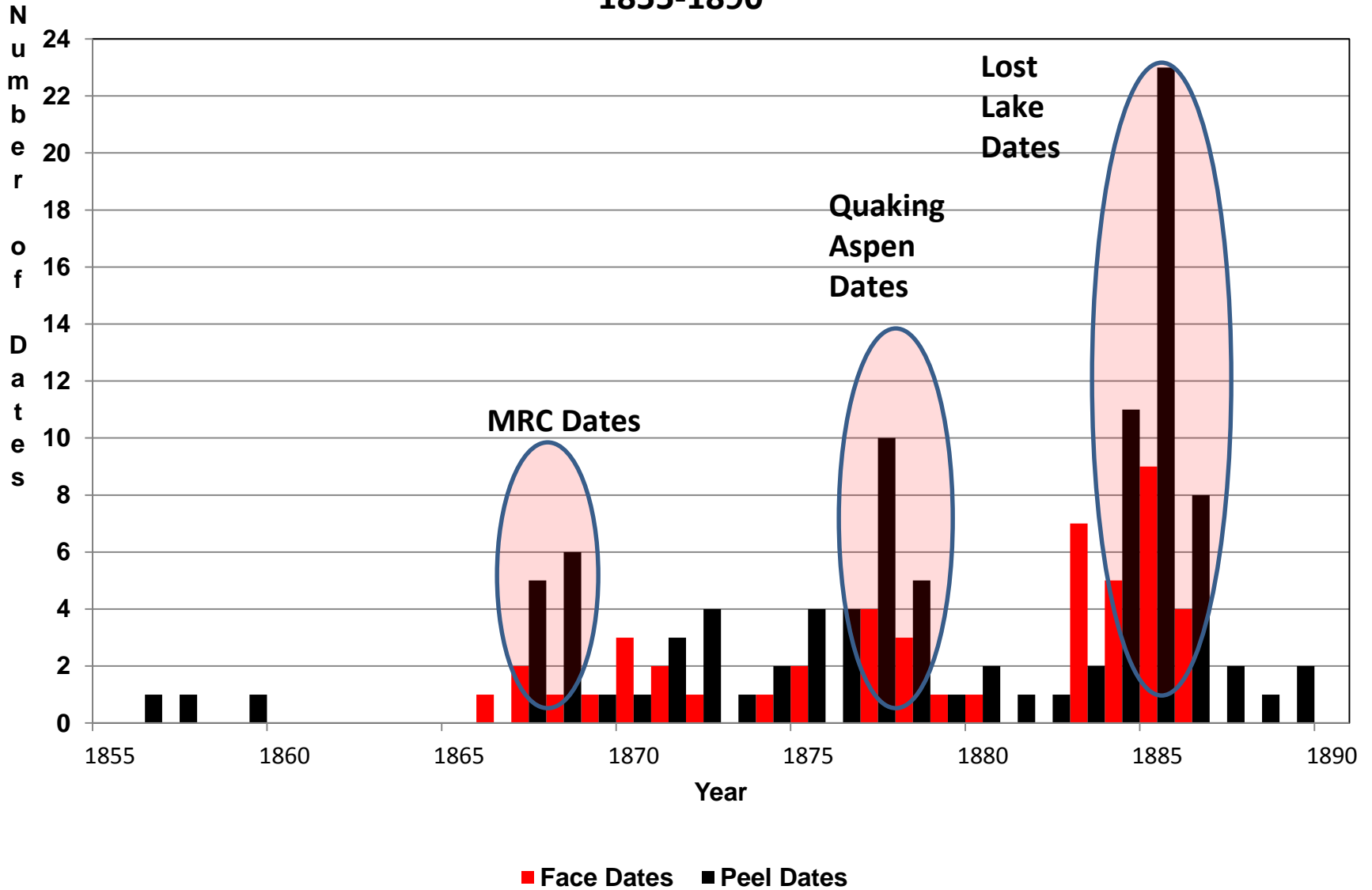


Increment borer for
sides & opposite face

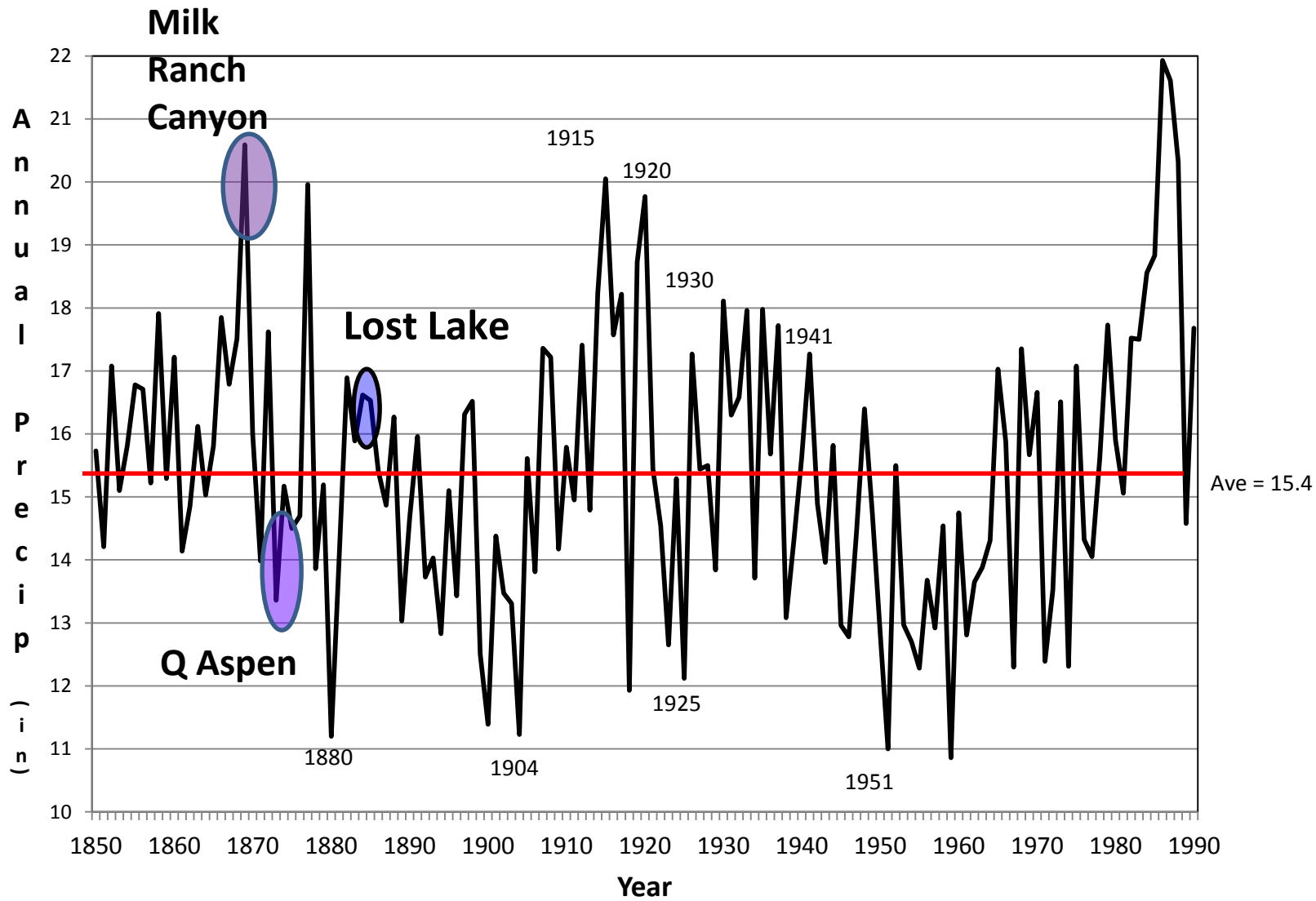


Core A

All Zuni Mountain Peeled Tree Dates 1855-1890

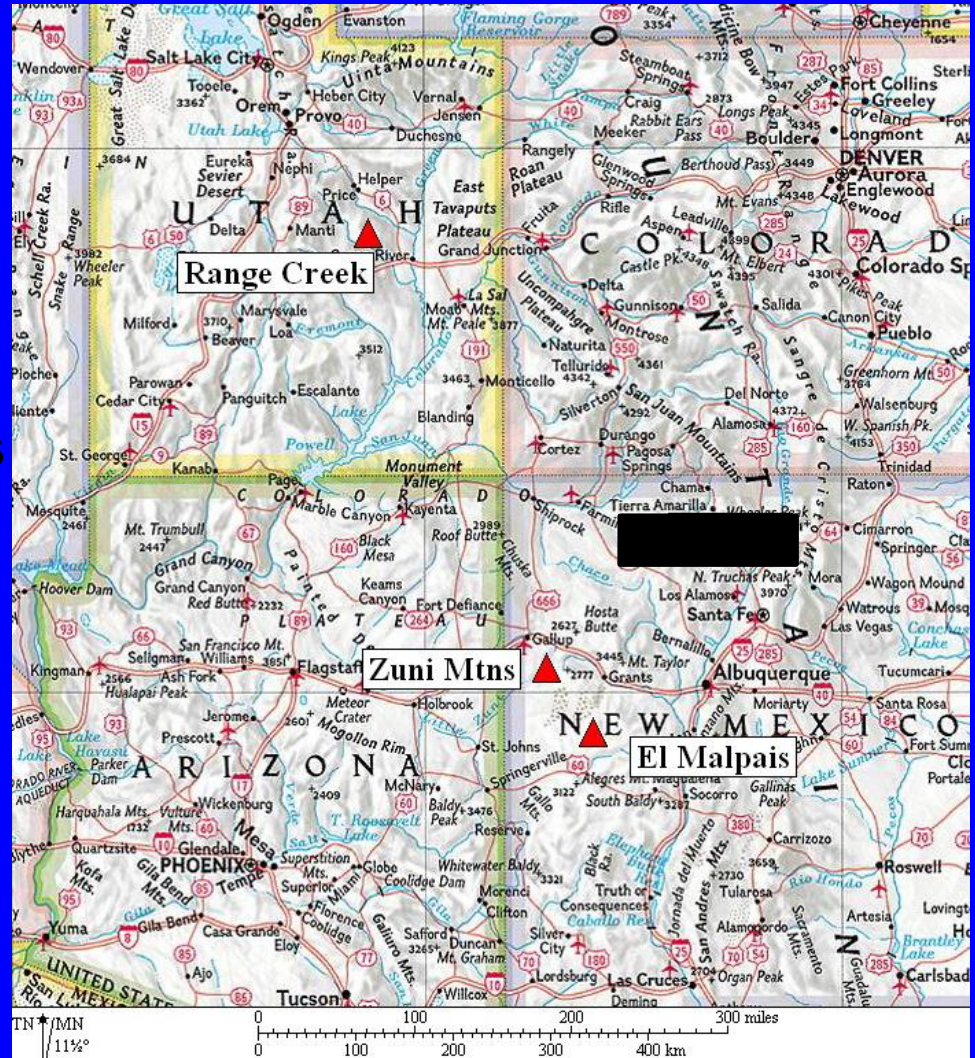


El Malpais Reconstructed Annual Precipitation 1850-1990



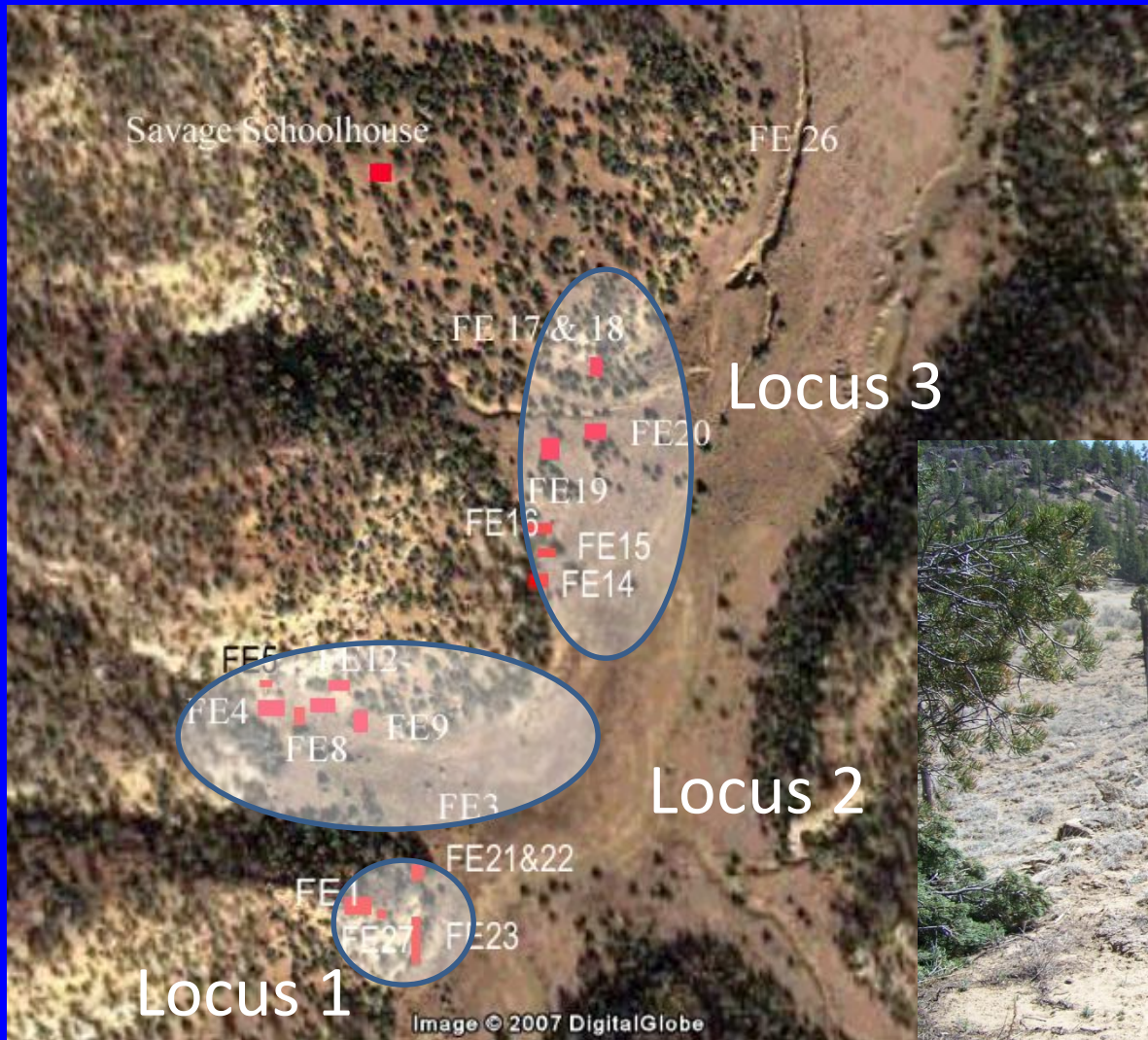
Thanks to Henri Grissino-Mayer

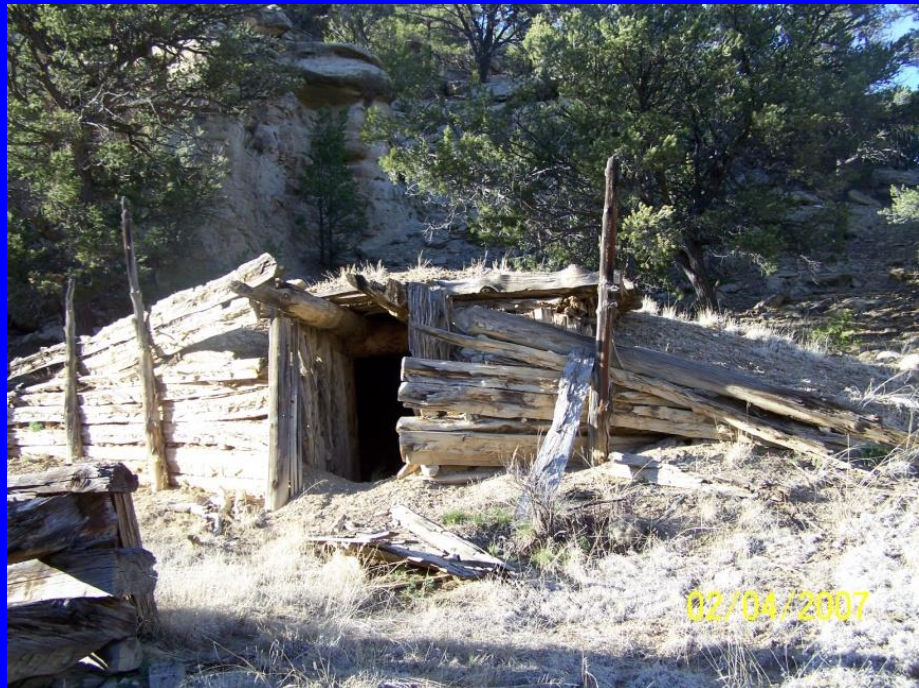
Today's Case Studies



El Malpais Historic Homesteads

The Savage Homestead





El Malpais Cabins: Sampling



Coring with the electric drill



Sawing cross sections

Species Use: Feature 8: The Dugout

Ponderosa
superstructure
Split juniper wall logs



Beam Procurement: Feature 17 The Shed

Trimming Slats from Sawmill
Frame door, windows, footers, top
All Ponderosa, except
Juniper corner posts



Savage Homestead Tree-Ring Dates

(Underline indicates cutting date)

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194	<u>000</u>

Savage Homestead Sequence

Initial Construction: Locus 1
dated 1934, repair 1936

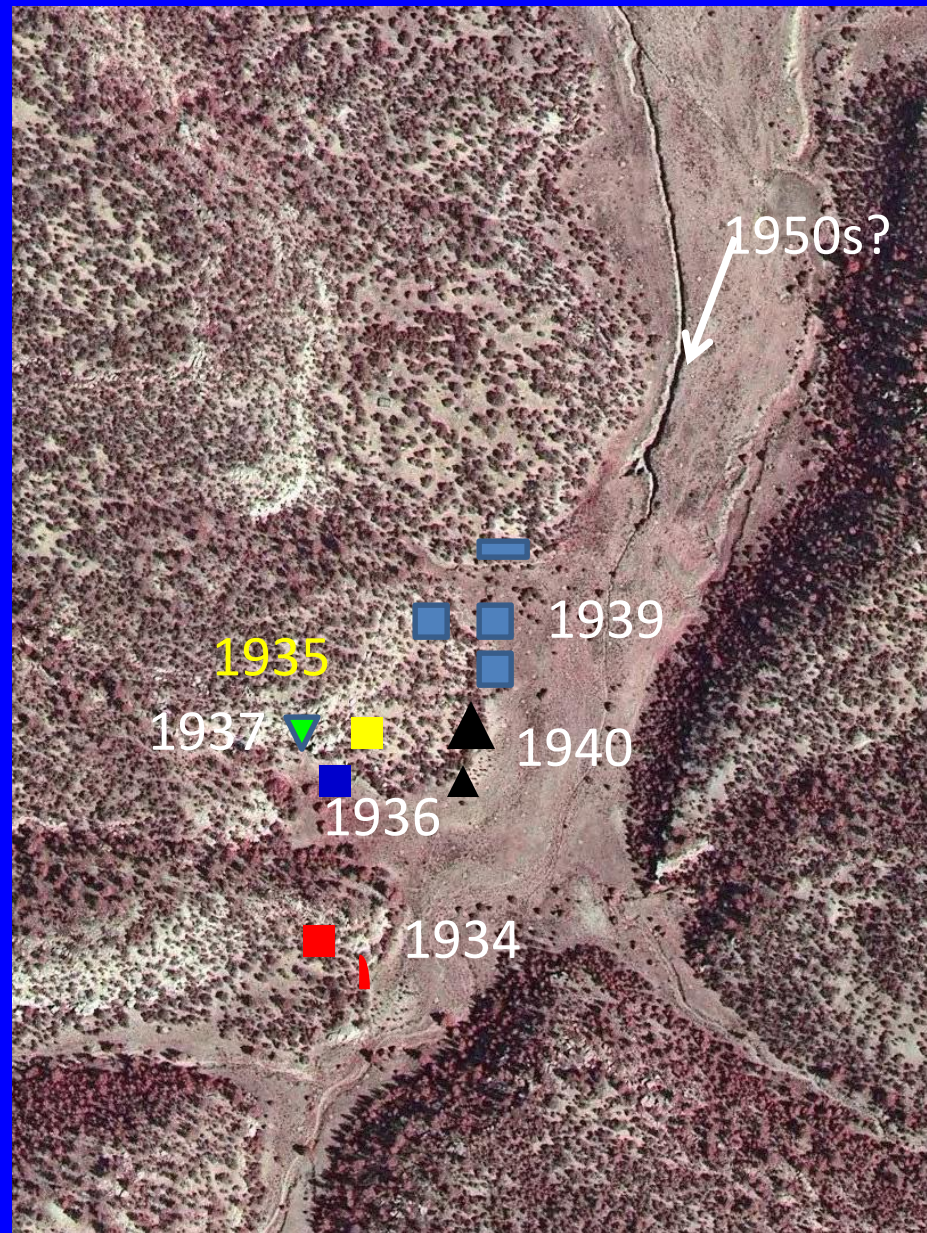
Locus 2: Initial construction
dated fall 1935 (FE12)
most construction 1936-1938

Locus 3: Construction almost all
Fall 1939

FE 14 & FE 15—Construction
Spring 1940

Site Abandonment 1940s?

Arroyo Cutting early 1950s?



Savage Homestead: Oral History



John L. Savage

Childhood: 10-12
1935-1938