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

Ideological  Biotic
Social  Abiotic
Technological  Atmospheric
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 78999
177 1157
178 0001112355
179 0227
180 5
### Savage Homestead Tree-Ring Dates
(Underline indicates cutting date)

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<thead>
<tr>
<th>Decade</th>
<th>Year</th>
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<td>182</td>
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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
Dinetsah 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

Species Use at Range Creek

Implications for Dating Success?
Dates derived from Douglas-fir (n=67) and pinyon (n=2) only
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

- Milk Ranch Canyon
- Quaking Aspen
- Lost Lake
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

Number of Dates

Year
1855 1860 1865 1870 1875 1880 1885 1890

Lost Lake Dates
Quaking Aspen Dates
MRC Dates

Face Dates  Peel Dates
El Malpais Reconstructed Annual Precipitation
1850-1990

Thanks to Henri Grissino-Mayer
Today’s Case Studies

El Malpais Historic Homesteads
The Savage Homestead

Locus 1

Locus 2

Locus 3

Image © 2007 DigitalGlobe
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
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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?