

Culturally Modified Trees: The Tree, The Myth, The Legend

Colorado Open Space Alliance Conference

Monday, September 18th, 2017

~ Beaver Run Resort, Breckenridge, Colorado ~

Welcome!

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Trees? What Trees?



- Question:
 - Who has culturally modified trees (CMTs) in their parks or open space properties?
 - Who has actively recorded CMTs for the purpose of preservation, education, or scientific research?

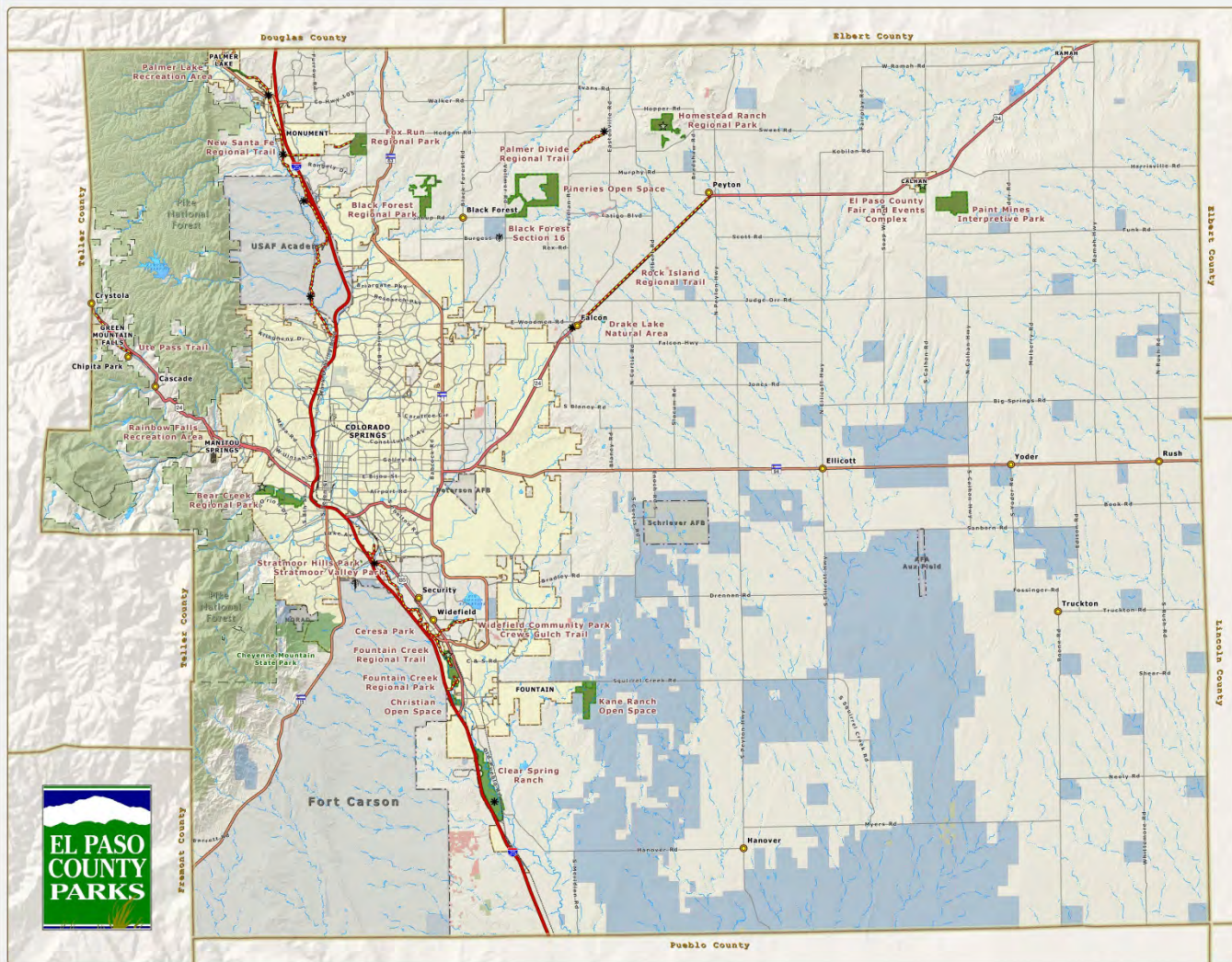
Project Background

- 2015: El Paso County Parks contracted with J.W. Anderson & Associates to perform assessment of CMTs in the Pineries Open Space.
- Goal: Locate, Photograph & Identify CMTs in Parks, Open Space or along Trails
- 2017: The CMT assessment continued in Black Forest Regional Park.



El Paso County Parks

Existing Parks, Trails, and Open Space

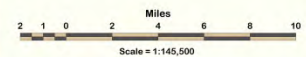


Existing Parks, Trails, and Open Space

Legend

- EPC Regional Trails
- Existing City Trails
- EPC Parks*
- EPC Trailheads
- EPC Special Facilities
- US Interstate Highways
- US Highways
- State Highways
- Major Roadways
- Railroads
- Lakes & Reservoirs
- Creeks - Perennial
- Creeks - Intermittent
- Unincorporated Towns
- Military Areas
- County Lands
- Federal Lands
- State Lands
- Incorporated Cities
- Pike National Forest
- County Boundary

*Note: Only larger open space areas are displayed.



June 2013

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What are Culturally Modified Trees?



- **Culturally Modified Trees (CMT)** are defined as trees that have been modified by the indigenous people of a region according to their traditions or cultural beliefs.
- The **Japanese Bonsai Tree** is probably the most well known of all culturally modified trees.

Types of CMTs



Peeled Bark Pattern



Grafted Branches

Types of CMTs



Bent Tree (Directional)



Bent/Grafted Tree

CMT Myths

“Every Bent Tree is a CMT”

Culturally Modified Tree (CMT) Verification Chart (V-Chart)

Rule out Natural Causes

Animals? (i.e., deer, elk, porcupines).

Weather? (i.e., heavy snowfall, strong winds).

Lightning?

Disease? (Mistletoe, etc.).

Recent, man-caused damage (lumbering, road work, etc.).



Confirm Man-Caused Indicators

✓ Peeled bark pattern and/or burls not caused by nature.

✓ Tie-down marks where tree was shaped, grafted or possibly planted.

✓ Other CMTs found in area and/or indications of Native American activity (i.e., bedrock mortar holes, stone enclosures, etc.).

✓ Location: near a trail or water source and/or oriented to point to important land mark(s).

✓ Appears to be over 100 years old.

Ponderosa Pines start to turn orange about 80-100 years of age and will turn full orange as they mature.



All negatives? Move on to confirm!

Key:

- A positive to any of the causes will likely rule out the tree being a Native American CMT.
- The more indicators that are confirmed, the higher the likelihood the tree is a Native American CMT.

Lois Adams 3/6/2017

CMT Myths

“These are natural compression wrinkles”



Tie-down or Ligature Marks (Cross-grain Scarring)

CMT Myths

“This is all natural phenomena”



Girdling of Primary Truck to
Intentionally Shape Tree



Peeled Bark for Cambium
Extraction

CMT Myths

“These trees are not old enough”



Dendrochronological Analysis Dated This Ponderosa Pine CMT at 360 Years Old

Legend: Native American History



Ute Chief Ouray (1833-1880) and His
Wife, Chipeta (1843-1924)

- Many Native American tribes had an ongoing presence in El Paso County and the Pikes Peak Region, including the Ute, Cherokee, Comanche, and Cheyenne.
- Ute Pass was the primary gateway to the mountain home of the Utes.
- At 14,115 feet tall, Pikes Peak was a sacred place for the Utes, and was called Tava.

Legend: Native American History



Southern Ute Chief Sapiah
(d.1936) - "Buckskin Charlie"



Ute Indians in Garden of the Gods
Circa 1913

Legend: Native American History

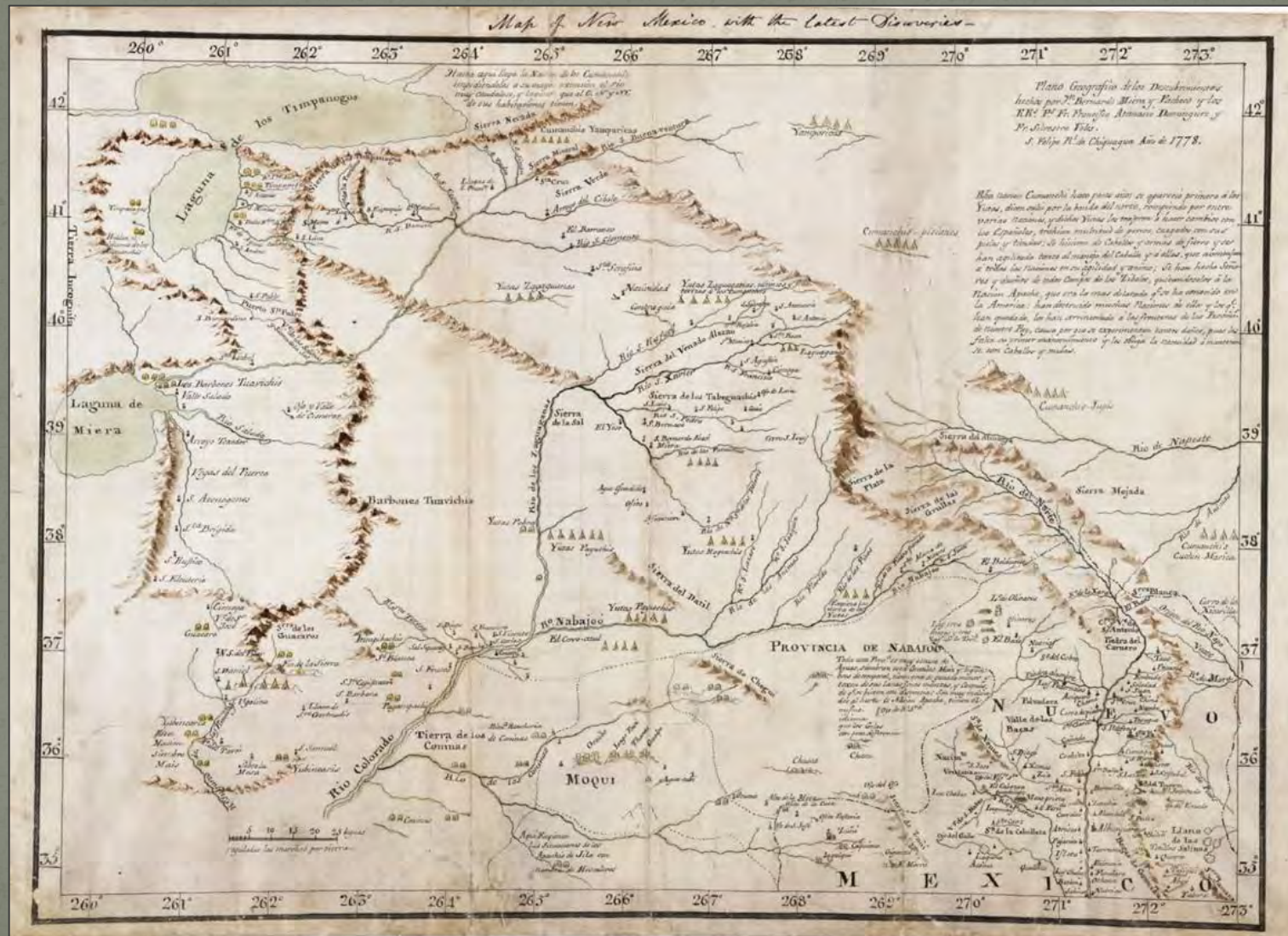


Ute Indians Attending the Ute Indian
Trail Dedication in Manitou Springs
Circa 1913



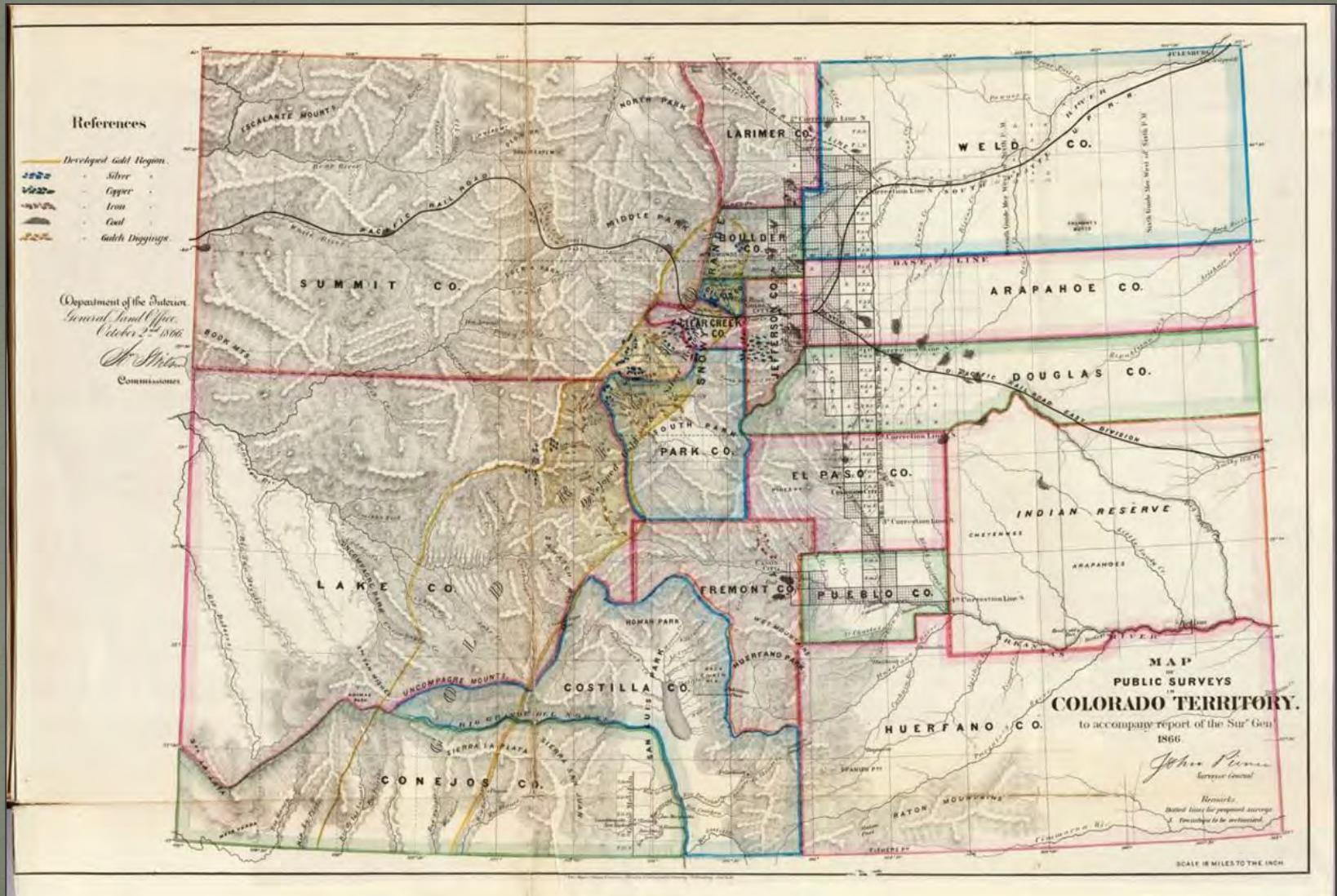
Covered Wagons Ascending Ute Pass
Outside of Manitou Springs

Legend: Native American History



Spanish Northern Frontier Map (1778) by Miera Y Pacheco

Legend: Native American History



Map of Original 17 Colorado Territory Counties (1866)

Legend: Native American History



Dr. Jefferson Discusses Peeled-Bark CMTs with
Great Sand Dunes Park Ranger

Loya Arrum, Northern Ute Elder, Talking
About the Prayer Trees – “Mystery of the Trees”

www.mountainstewards.org



Peeled-Bark CMT at Great Sand
Dunes National Park

CMT Assessment Results



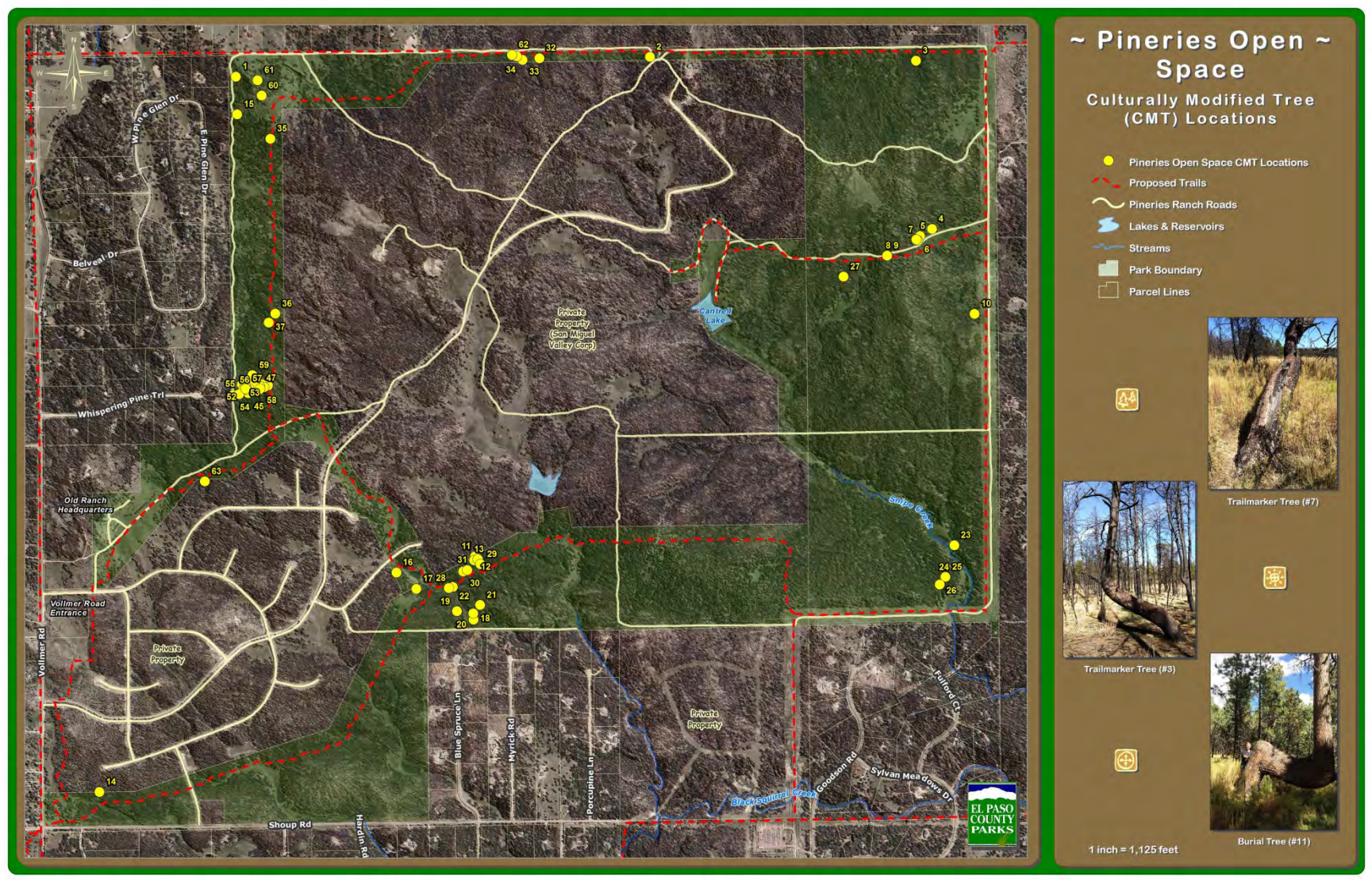
Culturally Modified Tree
Project Overview



Community Services Department
Planning Division with John W. Anderson
December 17, 2015

- Sixty-Three (63) CMTs were recorded in Pineries Open Space.
- GPS locations and tree attributes were collected and converted into spreadsheet and GIS formats.
- Project Overview (left) and Pineries Findings Report were submitted, along with photographs of each tree.

CMT Assessment Results



Map of Pineries Open Space Showing Locations of 63 CMTs

CMT Assessment Results

POS_CMT_ID	LATITUDE	LONGITUDE	ELEVATION	ORIENTATION	TREE_SPECIES	PRIMARY_TREE_TYPE	DESCRIPTION	PHOTO_HYPERLINK
1	39.041408	-104.653611	7593	90	Ponderosa	Trailmarker	At top of Divide w/Peeled Bark pattern (BSA)	01-POS-CMT-1
2	39.042004	-104.633524	7675	230	Ponderosa	Trailmarker	Near Water Tank, known as Jason's Tree (BSD)	02-POS-CMT-2
3	39.041770	-104.620620	7559	130	Ponderosa	Trailmarker	Near Black Forest Preserve, called Ross's Tree (BSD)	03-POS-CMT-3
4	39.035400	-104.619928	7479	120	Ponderosa	Burial	1st in Covey of 4 in meadow west of powerline (BSD)	04-POS-CMT-4
5	39.035130	-104.620510	7482	120	Ponderosa	Trailmarker	2nd in Covey of 4 in meadow west of powerline (BSD)	05-POS-CMT-5
6	39.034970	-104.620630	7484	Multiple	Ponderosa	Story	3rd in Covey of 4 in meadow west of powerline (BSD)	06-POS-CMT-6
7	39.035000	-104.620690	7487	90	Ponderosa	Trailmarker	4th in Covey of 4 in meadow west of powerline (BSD)	07-POS-CMT-7
8	39.034400	-104.622120	7506	130	Ponderosa	Trailmarker	West of Covey, next to possible Cat Face below (BSD)	08-POS-CMT-8
9	39.034400	-104.622120	7506	N/A	Ponderosa	Story	West of Covey, possible Story Tree or Cat Face (BSD)	09-POS-CMT-9
10	39.032170	-104.617900	7432	150	Ponderosa	Trailmarker	West of Power Pole #249 at eastern POS treeline (BSD)	10-POS-CMT-10
11	39.023176	-104.642240	7491	180	Ponderosa	Burial	CMT Nexus Pt 1st CMT in Monster CMT Covey (BSA)	11-POS-CMT-11
12	39.023030	-104.642285	7462	90	Ponderosa	Trailmarker	CMT Nexus Pt 2nd CMT in Monster CMT Covey (BSA)	12-POS-CMT-12
13	39.023071	-104.642095	7478	0/180	Ponderosa	Story	CMT Nexus Pt 3rd CMT in Monster CMT Covey (BSA)	13-POS-CMT-13
14	39.014404	-104.660550	7581	180	Ponderosa	Trailmarker	BSD w/Peeled Bark Pattern, west of Shoup Gate (BSD)	14-POS-CMT-14
15	39.039982	-104.653567	7601	80	Ponderosa	Trailmarker	At top of Divide with peeled bark pattern (BSA)	14-POS-CMT-15
16	39.022599	-104.646055	7472	180	Ponderosa	Story Tree	At top of Springmeadow Wetlands 5 w/3 others	16-POS-CMT-16
17	39.021974	-104.645088	7481	90	Ponderosa	Burial Tree	At top of Springmeadow Wetlands (BSD) Blue Stone*	17-POS-CMT-17
18	39.020790	-104.642331	7450	0/180	Ponderosa	Message	Bottom of Wetlands 4 "Schwarzenegger Tree" (BSA)	18-POS-CMT-18
19	39.021110	-104.643140	7447	190	Ponderosa	Trailmarker	Clustered with POS CMTs #19-21 Points at #19 (BSA)	19-POS-CMT-19
20	39.021020	-104.642950	7474	130	Ponderosa	Trailmarker	Clustered with POS CMTs #19-21 Points at #19 (BSA)	20-POS-CMT-20
21	39.021340	-104.642010	7463	Multiple	Ponderosa	Trailmarker	NE of Schwarzenegger Tree, but Points at Tava (BSD)	21-POS-CMT-21
22	39.022030	-104.643330	7476	180	Ponderosa	Trailmarker	Points way towards #19-22 Schwarzenegger Tree (BSD)	22-POS-CMT-22
23	39.023427	-104.618998	7392	Multiple	Ponderosa	Trailmarker	LT Bank Snipe Creek Orange Bark Peeled top broken (BSA)	23-POS-CMT-23
24	39.022222	-104.619444	7371	N/A	Ponderosa	Cat Face	RT Bank Snipe Creek above Powerline w/29 & 30 (BSA)	24-POS-CMT-24
25	39.022233	-104.619445	7343	N/A	Ponderosa	Cat Face	RT Bank Snipe Creek above Powerline w/28 & 30 (BSA)	25-POS-CMT-25
26	39.021944	-104.619722	7354	120	Ponderosa	Trailmarker	RT Bank Snipe Creek, directly west of #28 & 29 (BSA)	26-POS-CMT-26
27	39.033627	-104.624241	7460	Multiple	Ponderosa	Story	SW of Meadow Covey Group, Tuning Fork Near Top (BSD)	27-POS-CMT-27
28	39.021989	-104.643527	7460	20	Ponderosa	Trailmarker	Edge of wetlands, pointing toward Monster CMT Cove (BSD)	28-POS-CMT-28
29	39.022883	-104.641983	7470	Multiple	Ponderosa	Message	Near Monster CMT Cove (BSA)	29-POS-CMT-29
30	39.022610	-104.642815	7465	100	Ponderosa	Trailmarker	Near Monster CMT Cove (BSA)	30-POS-CMT-30
31	39.022666	-104.642622	7470	110	Ponderosa	Trailmarker	Near Monster CMT Cove, Adjacent to #30 (BSA)	31-POS-CMT-31
32	39.041996	-104.638990	7625	180	Ponderosa	Trailmarker	Possible CMT to SE ~ 50'; possible CMT to immediate W (BSD)	32-POS-CMT-32
33	39.041940	-104.639700	7640	210	Ponderosa	Trailmarker	Found Fallen on 08/30/16, located to east of #34 (BSD)	33-POS-CMT-33
34	39.042080	-104.639983	7670	N/A	Ponderosa	Message	White stone near tree; possible CMT to NW (BSD)	34-POS-CMT-34
35	39.038048	-104.651969	7635	Multiple	Ponderosa	Trailmarker	N/A	35-POS-CMT-35
36	39.032430	-104.651810	7750	150	Ponderosa	Trailmarker	Small tree	36-POS-CMT-36
37	39.032095	-104.652130	7645	90	Ponderosa	Trailmarker	Large tree	37-POS-CMT-37
38	39.029719	-104.652193	7680	180	Ponderosa	Trailmarker	Treasure Trove; sits next to CMT 39 (BSD)	38-POS-CMT-38
39	39.029715	-104.652198	7680	155	Ponderosa	Trailmarker	Treasure Trove; sits next to CMT 38 (BSA)	39-POS-CMT-39
40	39.029755	-104.652468	7665	145	Ponderosa	Trailmarker	Treasure Trove	40-POS-CMT-40
41	39.029660	-104.652388	7655	100	Ponderosa	Trailmarker	Treasure Trove	41-POS-CMT-41
42	39.029555	-104.652617	7680	150	Ponderosa	Trailmarker	Treasure Trove (BSA)	42-POS-CMT-42
43	39.029830	-104.653071	7685	170	Ponderosa	Trailmarker	Treasure Trove; The #4 Tree (BSD)	43-POS-CMT-43
44	39.029663	-104.653060	7675	110	Ponderosa	Trailmarker	Treasure Trove	44-POS-CMT-44
45	39.029437	-104.653149	7670	135	Ponderosa	Burial	Treasure Trove (BSA)	45-POS-CMT-45
46	39.029680	-104.653420	7680	190	Ponderosa	Trailmarker	Treasure Trove (BSD)	46-POS-CMT-46
47	39.029705	-104.652603	7625	185	Ponderosa	Trailmarker	Treasure Trove (BSA)	47-POS-CMT-47
48	39.029750	-104.652860	7635	245	Ponderosa	Trailmarker	Treasure Trove (BSA)	48-POS-CMT-48
49	39.029603	-104.653111	7670	0	Ponderosa	Message	Treasure Trove (BSA)	49-POS-CMT-49
50	39.029763	-104.653463	7625	0	Ponderosa	Cat Face	Treasure Trove, Next to #51 and #46 (BSA)	50-POS-CMT-50
51	39.029714	-104.653312	7625	115	Ponderosa	Trailmarker	Treasure Trove (BSA)	51-POS-CMT-51
52	39.029548	-104.653409	7680	105	Ponderosa	Trailmarker	Treasure Trove, Next to #46 (BSA)	52-POS-CMT-52
53	39.029562	-104.653397	7695	120	Ponderosa	Trailmarker	Treasure Trove, Next to #46 (BSA)	53-POS-CMT-53
54	39.029371	-104.653893	7670	25	Ponderosa	Trailmarker	Treasure Trove (BSA)	54-POS-CMT-54
55	39.029400	-104.653605	7640	150	Ponderosa	Trailmarker	Treasure Trove (BSA)	55-POS-CMT-55
56	39.029554	-104.653198	7670	0	Ponderosa	Message	Treasure Trove (BSA)	56-POS-CMT-56
57	39.029600	-104.653277	7635	75	Ponderosa	Directional	Treasure Trove, V-Tree, also directs to 285 degrees (BSA)	57-POS-CMT-57
58	39.029599	-104.652577	7630	240	Ponderosa	Trailmarker	Treasure Trove (BSA)	58-POS-CMT-58
59	39.030112	-104.652945	7650	320	Ponderosa	Trailmarker	Treasure Trove, Top of Palmer Divide (BSA)	59-POS-CMT-59
60	39.040668	-104.652365	7635	335	Ponderosa	Trailmarker	Northwest Corner, Points towards #61 (BSD)	60-POS-CMT-60
61	39.041258	-104.652556	7630	0	Ponderosa	Message	Northwest Corner, Burl Tree (BSA)	61-POS-CMT-61
62	39.042143	-104.640222	7600	240	Ponderosa	Trailmarker	North Trail Corridor (BSD)	62-POS-CMT-62
63	39.026110	-104.655300	7670	60	Ponderosa	Trailmarker	Elaine's Tree, Along trail corridor (BSA)	63-POS-CMT-63

Spreadsheet Showing CMT Attributes

CMT Assessment Results



Triple-Vertical Directional Tree



“Cat Face” Arborglyph Tree

CMT Assessment Results



The “Monster CMT” Cove: Three Tremendous Trees Grouped Together

Post Assessment Finds



This Directional Tree Points to...



...this Directional Tree (The Whale Tree)

Dendrochronology Analysis



Fox Run Regional Park – Fallen CMT

- Starting in early 2017, volunteers began collecting “cookies” from fallen CMTs for the purpose of dendrochronology, or tree ring analysis.
- Samples were collected from Fox Run Regional Park, Black Forest Regional Park, and on private land.
- The cookies were shipped to Dr. Lucy Bauer, who performed the dendrochronological analysis in order to accurately date each tree.
- Analysis showed that CMTs cannot be sampled in the usual manner (coring), as the tree modifications changes the overall ring pattern.
- All CMTs were dated over 190 years old (~1825).

Dendrochronology Analysis



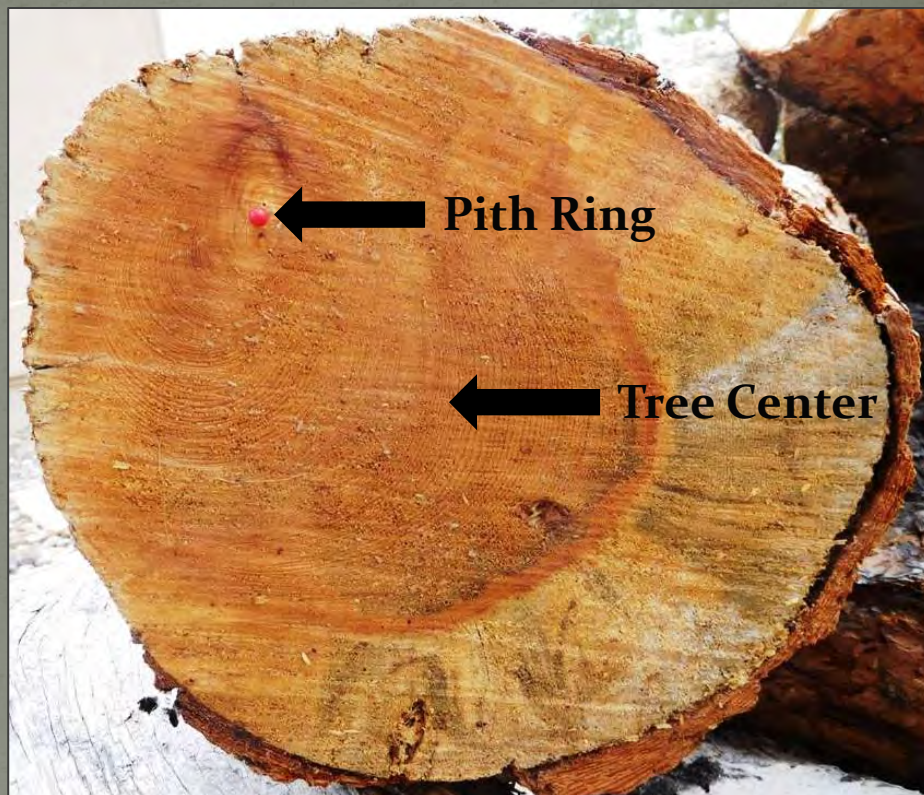
Candidate Trees Were Cataloged Before Cutting: Tree Circumference, Cut Height, Modification Type, Growth Environment



Dendrochronology Analysis



Sanding the entire cookie is not necessary. A router creates a smooth channel across the pith ring.



The Pith Ring (Year 1) of bent CMTs is offset, therefore incremental core boring to determine the age of bent CMTs yields inaccurate results.

Dendrochronology Analysis



Black Forest Regional Park's CMT
Cookie #27-B (right) is 193 Years Old

Dendrochronology Analysis



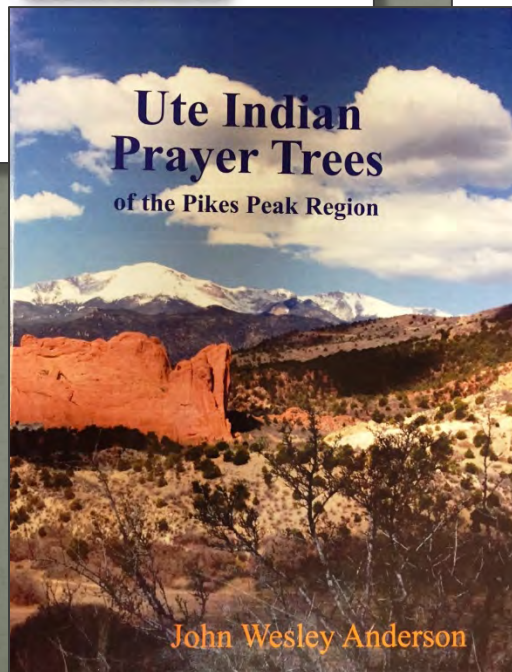
Tree Diameter Does Not Determine Age!

Diseased 11"-Diameter CMT
on Private Black Forest
Property Proved to be 360
Years Old! This Tree Started
It's Life began in the mid-
1600s!

Additional CMT Resources

EL PASO COUNTY
COLORADO

Culturally Modified Tree
Project Overview



Culturally Modified Trees of British Columbia

A Handbook for the Identification and
Recording of Culturally Modified Trees

Prepared by
Archaeology Branch
B.C. Ministry of Small Business, T
for the
Resources Inventory Co

Comanche Marker Trees of Texas

Steve Houser
Linda Pelon
Jimmy W. Arterberry



Mystery of the Trees

*Native American Markers of a Cultural Way of Life
That Soon May Be Gone*



Don and Diane Wells
with

Dr. John Nardo, Robert Wells and Lamar Marshall

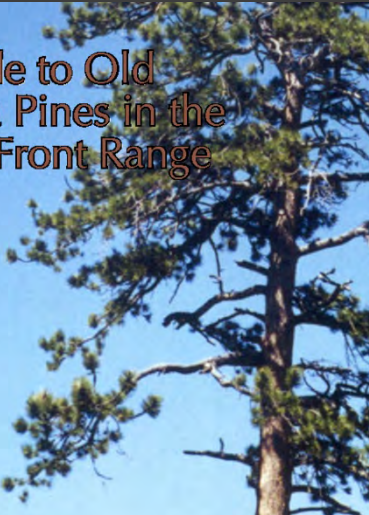
SECOND
PRINTING

Additional CMT Resources

Field Guide to Old Ponderosa Pines in the Colorado Front Range

By

Laurie Stroh Huckaby
Merrill R. Kaufmann
Paula J. Fornwalt
Jason M. Stoker
Chuck Dennis



UNITED STATES
DEPARTMENT OF
AGRICULTURE

FOREST SERVICE

ROCKY MOUNTAIN
RESEARCH STATION

GENERAL TECHNICAL
REPORT RMRS-GTR-109

SEPTEMBER 2003



Utah Forest News

Utah Forest Landowner
Education Program Newsletter

Utah State
UNIVERSITY

Volume 17 Number 1

Mountain Stewards Presents MYSTERY Of The TREES

Featuring
Wes Studi

A film by Robert Wells
Music by Charlie Wayne Watson



World's Oldest Ponderosa Pine Found in Utah Fire Study

"1765...1772...1777...1780...1782." Stan Kitchen recites from memory a partial list of drought years as indicated by the narrowness of growth rings that form each year on trees. Kitchen is a research botanist for the USDA Forest Service, Rocky Mountain Research Station, at the Shrub Sciences Laboratory in Provo, where he studies the link between fire and climate. By examining the record of fires and drought recorded in the rings of more than 800 trees in the Wah Wah Mountains, west of Milford, he has become intimately familiar with the history of the last several centuries of drought and fire for this remote and rugged location.

Kitchen uses a chain saw to remove a wedge of wood from near the base of selected trees, leaving the tree circumference about 80 percent intact so it continues to live. Samples are also taken from stumps, logs and snags. He brings these samples back to his lab for sanding and processing so the annual rings can be easily identified. One of the trees he sampled in 2003 turned out to be the oldest known living

ponderosa pine in the world. Kitchen took a sample from this tree at about 12 inches above the ground. The inner-most ring of the sample dates to the year 1075, making this tree at least 933 years old. But it probably took an additional 10 to 20 years to grow to the height of the sample, making the tree perhaps 950 years old.

To obtain ring data the samples are prepared and closely examined. The lighter colored wood in the rings is called "early wood" because it forms early in the season, and the darker strips are called "late wood" because they form later in the season. Each year a tree grows a strip of early and late wood, equaling one growth ring. Counting these rings reveals the tree's age. However, during



Stan Kitchen and Forester Clint Reese measure the world's oldest ponderosa pine in the Wah Wah Mountains.

INSIDE THIS ISSUE:

- Big Trees
- New Urban and Community Forester

TRADITIONAL SOCIETIES Indian Country Today



These images from the Great Lakes Trail Marker Tree Society show a typical burr oak (left), a single trunk trail marker tree (middle) and a double trunk trail marker tree with the group's founder Dennis Downes.

Trees Bent By American Indians Being Identified and Preserved

The trees are known as Indian marker trees or trail trees and were bent by Native Americans in their youth to mark trails or other landmarks

ICGMN Staff • July 7, 2017

"If they could talk, the stories they could tell," Steve Houser, an arborist and founding member of the

road map"

in their youth

marker trees

July 7, 2017 9:04 AM

Page 1 of 3



SEARCHING FOR A SIGN

THE BATTLE TO DOCUMENT AND SAVE OLD TREES THAT MAY HAVE ONCE MARKED NATIVE AMERICAN TRAILS

By Robert Wells
The battle to document and save old trees that may have once marked Native American trails is a long and arduous one. It is a battle that has been fought for decades, and it is one that is still being fought today. The trees in question are known as Indian marker trees or trail trees, and they are found in various parts of the United States. These trees are bent and shaped by Native Americans in their youth to mark trails or other landmarks. The trees are often gnarled and twisted, and they can be found in fields, forests, and along roads. The trees are a living record of the past, and they are a valuable resource for researchers and historians. The battle to document and save these trees is a battle that is being fought by a small group of people who are passionate about preserving our natural heritage.

The battle to document and save old trees that may have once marked native American trails.

From the November 2016 issue of *Landscape Architecture Magazine*

Six months before the stock market crash that plunged the country into the Great Depression, Richard Gloede, a landscape architect and the owner of a nursery in Evanston, Illinois, wrote a letter to General Abel Davis, the chair of the Cook County Forests Preserve's advisory committee. He implored Davis for help in protecting the "old Indian trail trees" along the shores of Lake Michigan. "I have located on the North Shore alone over one hundred and have photographed, measured them according to size, condition, which way they point by compass, etc.," Gloede wrote in a letter dated March 22, 1929. "It seems to me that these trees should be put in the best of care and kept so."

Questions? /Comments



Thank You for Your Attendance!



Please feel free to send additional questions or comments to
Ross Williams at rosswilliams@elpasoco.com