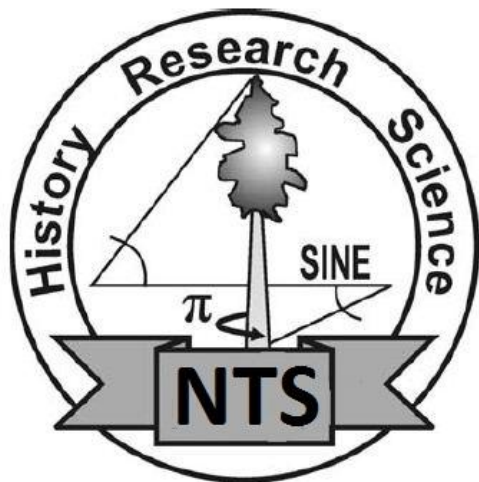


A photograph of a massive redwood tree trunk in a forest, with a person standing at its base for scale. The tree trunk is the central focus, showing deep vertical furrows in its bark. The forest floor is covered in green ferns and other vegetation. The background is filled with more trees and a dense canopy of green leaves.

eNTS

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Volume 2, Number 03,
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The Native Tree Society and the
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Mission Statement:

The Native Tree Society (NTS) is a cyberspace interest groups devoted to the documentation and celebration of trees and forests of the eastern North America and around the world, through art, poetry, music, mythology, science, medicine, wood crafts, and collecting research data for a variety of purposes. This is a discussion forum for people who view trees and forests not just as a crop to be harvested, but also as something of value in their own right. Membership in the Native Tree Society and its regional chapters is free and open to anyone with an interest in trees living anywhere in the world.

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COVER: Conni at base OF Rockefeller Tree, CA. Photo by Michael Taylor 2012.

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TABLE OF CONTENTS

Editor's Corner by Edward Frank	6
Re: Closeup on Forests of the Pacific Northwest by Kirk Johnson	7
Re: Closeup on Forests of the Pacific Northwest by Rand Brown	7
Re: Closeup on Forests of the Pacific Northwest by Rand Brown	7
Re: Tanglewood Park, NC revisited by Will Blozan	9
Re: Costa Rica Trees & Natural history #1 by Bart Bouricius	9
Tree Living species Tirimbina Costa Rica by Bart Bouricius	10
Measuring Objects in Tree Canopies by Edward Frank	14
Re: Measuring Objects in Tree Canopies by Rbert Leverett	17
Re: Measuring Objects in Tree Canopies by Turner Sharp	18
Re: Measuring Objects in Tree Canopies by Robert Leverett	18
Re: Measuring Objects in Tree Canopies by Edward Frank	19
Re: Measuring Objects in Tree Canopies by M.W.Taylor	20
Diameter Comparisons by Diameter Comparisons	21
Re: Diameter Comparisons by Robert Leverett	21
Re: 3D surface modeling of a giant redwood trunk by M.W.Taylor	22
Moravia, NY, Cottonwood by Elijah Whitcomb	23
St. Joseph's Cemetery, Auburn, NY, White Oaks by Elijah Whitcomb	24
Sequoia/Kings Canyon NP, CA (Re: World's Tallest Known Sugar Pine Grows In Oregon)	25
by Will Blozan	25
Sturdy Scandinavian Conifers Survived Ice Age	26
Re: Sturdy Scandinavian Conifers Survived Ice Age by Edward Frank	26
Re: Sturdy Scandinavian Conifers Survived Ice Age by Lee Frelich	26
Multitrunk versus single trunk trees (was Re: Moravia, NY, Cottonwood) by Elijah Whitcomb	27
Re: Multitrunk vs. single trunk tree by Robert Leverett	27
Re: Multitrunk vs. single trunk tree by Edward Frank	27
Re: Multitrunk vs. single trunk trees by Will Blozan	28
Re: Multitrunk vs. single trunk trees by Edward Frank	28
Re: Multitrunk vs. single trunk trees by Bart Bouricius	29
Re: Multitrunk vs. single trunk trees by Edward Frank	29
The Notable Trees of the National Trust, UK by Edward Frank	30
What are these eggs? by James Robert Smith	31
What's happening in Maine? by Anthony Aman	31
Climbing vs. Laser Rangefinder/ Clinometer Measurements by Anthony Aman	31
Climbing vs. Laser Rangefinder/ Clinometer Measurements by Anthony Aman	31
Climbing vs. Laser Rangefinder/ Clinometer Measurements by Andrew Joslin	32
Climbing vs. Laser Rangefinder/ Clinometer Measurements by Robert Leverett	33
New member- Patty Jenkins by Patty Jenkins	34
Re: Mountains-to-Sea Trail @ Craven Gap, NC by Brian Beduhn	34
Facebook Insights March 5, 2012 by Edward Frank	35
Jack Vance's "Houses of Iszm" and "Son of the Tree" by Edward Frank	37
Good online field guide for southern pines? by samson'sseed	38
Re: Good online field guide for southern pines? by Chris Morris	39
Re: Good online field guide for southern pines? by Larry Tucei	40
Re: Good online field guide for southern pines? by Jess Riddle	40
Re: Diameter Comparisons by Robert Leverett	41
Accolades for Bob Leverett by Edward Frank	42
Re: Accolades for Bob Leverett by Larry Tucei	42
Re: What's Been Cooking As Of Late? by Robert Leverett	43
Massasoit, MTSF, MA by Robert Leverett	44
Re: Montreat Trail System, NC by Bria Beduhn	45
Re: Meigs Mountain, GSMNP by Brian Beduhn	46
Cedar's of God in Lebanon (10 World Famous Trees) by Rand Brown	48
Re: 10 World Famous Trees by Edward Frank	49
Re: Capturing Natural Sounds by Michael Gatonska	50

Composer Portrait: Michael Gatonska by Edward Frank	50
Re: Capturing Natural Sounds by Michael Gatonska	51
Re: Capturing Natural Sounds by Edward Frank	51
Rockefeller Tree Surpasses 370 feet, CA ??? by M.W.Taylor	52
Re: Rockefeller Tree Surpasses 370 feet ??? by M.W.Taylor	52
Re: Rockefeller Tree Surpasses 370 feet by M.W.Taylor	52
Black River Valley, WI (Re: Massasoit, MTSF, MA) by Larry Tucei	55
Sand Live Oak-Quercus geminata vrs Live Oak Quercus virg. by Larry Tucei	56
Maple Leaves, a song from my Soft Echoes cycle by Michael Gatonska	57
338 point willow oak in Efland, NC by Patrick Brandt	58
Frazer Forest, Atlanta, GA by Eli Dickerson	61
Howland's Island, NY by Jess Riddle	65
Re: Howland's Island by Eli Whitcomb	66
The Discontinuous Range of the Atlantic White Cedar by samson'sseed	66
Re: California wolf trek shows importance of wilderness by Rand Brown	67
Re: Good online field guide for southern pines? by Don Bertolette	67
Advanced Tree Measuring Workshop April 18-19, 2012 (Cook Forest, PA April 18-19)	
by Dale Luthringer	68
Old Growth Forest Survey of Eastern Niagara Peninsula by Brice Kershner	70
Gautier Ms. Old Place Plantation Oak by Larry Tucei	71
VORTEX SOLO R/T 8 x36 by Robert Leverett	72
The Wilderness Society Announces New President by Kirk Johnson	72
Tsuga canadensis Soundscapes in Litchfield, CT by Michael Gatonska	74
Quercus velutina & Picea abies Soundscape by Michael Gatonska	74
Trek West by John Davis	75
CBH versus diameter? by Patrick Brandt	75
Re: CBH versus diameter? by Robert Leverett	75
Re: CBH versus diameter? by Robert Leverett	75
Re: CBH versus diameter? by Don Bertolette	75
Lower Huron Metroparks by Doug Bidlack	77
Re: Lower Huron Metroparks by Doug Bidlack	81
Pinus strobus in Meshomasic State Forest by Michael Gatonska	82
Re: Pinus strobus in Meshomasic State Forest by Will Blozan	82
Re: Pinus strobus in Meshomasic State Forest by Michael Gatonska	82
The Sap Man by Edward Frank	83
Indian Well/Paugussett Trail TTs by Ryan LeClair	83
Shellbark vs Shagbark Hickory (Re: Lower Huron Metroparks) by Jess Riddle	84
Bang for Your Buck Instruments (Re: VORTEX SOLO R/T 8 x36) by Robert Leverett	85
Re: Bang for your Buck Instruments (Re: VORTEX SOLO R/T 8 x36) by M.W.Taylor	85
ISSN Number for "eNTS: The Magazine of the NTS" by Edward Frank	86
Trees SC's License Plate Design Contest by Marcas Houtchings	86
Some Old WV Timber photos by James Robert Smith	87
Black Maple vs. Sugar Maple (Re: Lower Huron Metroparks) by Doug Bidlack	88
Re: Black Maple vs. Sugar Maple (Re: Lower Huron Metroparks) by Edward Frank	90
Yoshino cherries in bloom in the Cleveland area by Steve Galehouse	90
Devils Playground, Mojave National Preserve by Chris Morris	91
Re: Devils Playground, Mojave National Preserve by Edward Frank	93
Todd and Thumper Mtn Old Growth, MTSF, MA by Robert Leverett	94
Re: Charismatic Megafauna: What do Old Trees Look Like? by Larry Tucei	97
After the Wings of Migratory Birds Recording Release by Michael Gatonska	98
Music Score "Wild Leaves" for string quartet 2011 by Michael Gatonska	98
Re: Project Budburst for 2012 by Steve Galehouse	99
Magnolias in full bloom in Minneapolis by Lee Frelich	99
Re: Magnolias in full bloom in Minneapolis by Chris Morris	100
Re: Sanyo Seiki by Sanyo Seiki	100
Old Growth Cedars of Niagara Glen/Whirlpool Area, ONT by Bruce Kershner	101
Re: Some Old WV Timber photos by Robert Leverett	102
Re: 2012 spring yellow poplar bud burst by Russ Richardson	102
Unknown tree/shrub in n. OH by swamp_rattler	103

Great Pines Trail, MTSF, MA - Trail Guide Draft by Robert Leverett	104
The Last on Earth: Marcy Woods - NTS SP #15 by Bruce Kershner	105
Hanlon Creek Heritage Maple Grove - NTS SP #16 by Bruce Kershner	105
Andrew Jackson Live Oak Daphne Alabama by Larry Tucei	106
Re: Pinus strobus in Meshomasic State Forest by MonicaJakucLeverett	108
Re: Pinus strobus in Meshomasic State Forest by Andrew Joslin	108
Re: Pinus strobus in Meshomasic State Forest by James Robert Smith	108
Re: Pinus strobus in Meshomasic State Forest by Michael Gatonska	109
Re: Pinus strobus in Meshomasic State Forest by AndrewJoslin	109
Re: Pinus strobus in Meshomasic State Forest by Michael Gatonska	109
Re: Pinus strobus in Meshomasic State Forest by Robert Leverett	109
Michigan area - Treeguy (Bob) by Bob Tarabula	110
Re: Charismatic Megaflora: What do Old Trees Look Like? by Neil Pederson	110
Pine Tree Atop Inferno Cone, Craters of the Moon, ID by Edward Frank	112
Triple Twist Pine, Craters of the Moon, ID by Edward Frank	117
Big Cottonwood, NC by James Robert Smith	121
Re: Big Cottonwood, NC by James Robert Smith	123
Re: Big Cottonwood, NC by Robert Leverett	124
The Chaco forest in Paraguay being razed by Michael Gatonska	125
Re: The Chaco forest in Paraguay being razed by Bart Bouricius	125
'Hunger Games' forest scenes by Steve Galehouse	126
Re: 'Hunger Games' forest scenes by James Robert Smith	126
Cooper Creek WMA, GA by Eli Dickerson	127
Re: Cooper Creek WMA, GA by Rand Brown	132
Newberry National Monument, OR (Re: Triple Twist Pine, Craters of the Moon, ID) by Rand Brown	133
Sosbee Cove, Chattahoochee NF by Eli Dickerson	136
Re: Pinus strobus in Meshomasic State Forest by Michael Gatonska	142
Pinus resinosa in Hebron, CT by Michael Gatonska	142
Compensating for tripod arm swivel by Robert Leverett	143
ID? by James Robert Smith	144
Re: ID? by Steve Galehouse	144
Maple Leaves, a song from my Soft Echoes cycle by Michael Gatonska	145
Walker Calhoun has crossed over by Edward Frank	145
Re: Walker Calhoun has crossed over by Sky Davis	146
Founding Giants - Pennsylvania's Champion Trees (Scott Wade)	146
Jabba the Hutt Oak, CT by RyanLeClair	147
Richmond: Hollywood Cemetery by Barry Caselli	148
Re: Richmond: Hollywood Cemetery by Edward Frank	148
Re: Jabba the Hutt Oak, CT by Larry Tucei	149
Re: Jabba the Hutt Oak, CT by Tom Howard	149
Bulletin of the ENTS, Volume 7, No. 1, Winter 2012 by Don C. Bragg	150
Indian Well, CT - New Tuliptree Site by Robert Leverett	151
Re: Indian Well, CT - New Tuliptree Site by Edward Frank	153
Re: Indian Well, CT - New Tuliptree Site by Robert Leverett	154
Introduction – Joe Reynolds by Joe Reynolds	154
The Don Bragg Papers by Edward Frank	155
Sine Method as a More Accurate Height Predictor for Hardwood by Don C. Bragg	155
An Improved Tree Height Measurement Technique Tested On Mature Southern Pines. by Don C. Bragg	156
Practical Extension of a Lake States Tree Height Model by Don C. Bragg	156
A Comparison of Pine Height Models for the Crossett Experimental Forest by Don C. Bragg	157
3-Point Derivation of Dominant Tree Height Equations by Don C. Bragg	158
The Sine Method: An Alternative Height Measurement Technique by Don C. Bragg	159
North Syracuse Cemetery Oak Grove Mar. 2012 by Tom Howard	159
External Links	161

Editor's Corner

By Edward Frank

Webmaster , BBS Administrator,
eNTS Magazine Editor-in-Chief
edfrank@nativetreesociety.org

Welcome to the March 2012 issue of eNTS: The Magazine of the Native Tree Society. This issue has now officially been assigned an ISSN Number (ISSN 2166-4579) by the Library of Congress. According to the Library's website, the International Standard Serial Number (ISSN) is a standard identifier for serials (e.g., journals, magazines, newsletters, newspapers, annuals) whether published in print, online or other media. Dr. Don Bragg previously obtained an ISSN number for the Bulletin of the Eastern Native Tree Society ISSN: 1933-799X. I don't know why I didn't apply prior to this, but it was just one of the things that were postponed until now.

This issue contains reports from around the world. Bart Bouricious reports on a trip to Costa Rica. Brian Beduhn describes several sites in North Carolina. Eli Dickerson reports on Cooper Creek WMA, Frasier Forest, and Sosbee Cove in Georgia. James Robert Smith reports on an large Cottonwood in North Carolina. Elijah Whitcomb reports on a Moravia, NY Cottonwoods and white oaks in St. Joseph's Cemetery, Auburn, NY. Will Blozan reports about work in Sequoia/Kings Canyon NP in CA. Michael Taylor reports on the measurement of the Rockefeller Tree in CA (sort of). Larry Tucei continues his quest for great live oaks. Chris Morris reports on Devils Playground, Mojave National Preserve, Ca. There are reports by Jess Riddle, Ryan LeClair, Bob Leverett, Doug Bidlack, and Jess Riddle. We hear from Steve Galehouse, Chris Morris, Lee Frelich, Robert Leverett, and many others.

An interesting set of contributions was from Michael Gatonska in which he posted audio recording taken amongst different types of trees along with some of his musical scores based on natural sounds.

I edited and posted four older reports written by Bruce Kershner in the early 2000's prior to his untimely death. These reports deal with old growth forests in the Canadian Niagara Falls/Niagara Peninsula region. The largest of these is a massive phase 2 report on dozens of old growth sites in the eastern Niagara Peninsula region.

Don Bragg has published the Winter 2012, Vol. 7, No. 1, issue of the Bulletin of the Eastern Native Tree Society.

I contributed articles on two trees found in Craters of the Moon National Monument in ID, and book reviews of two tree themed science fiction books by Jack Vance.

Also different in this issue is that often I will post only the first post on a topic, but in this issue I also have included multiple replies to several topics. These represent important themes in our research. CBH versus diameter measurements, tree climbs versus laser rangefinder /clinometer measurements, measuring objects in tree canopies, multitrunck versus single trunk definitions, and potential plans to get Michael Gatonska up into the canopy to record sounds from within the treetops.

A final note is the notice of an Advanced Tree Measuring Workshop to be held at Cook Forest State Park, PA o April 18-19, 2012.

We have great things yet to do in the future.

Edward Forrest Frank



Photo by Patrick Brandt

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[Re: Closeup on Forests of the Pacific Northwest](#)

by **PAwildernessadvocate** » Thu Mar 01, 2012 1:37 pm

RyanLeClair wrote: Yes, the area has been butchered. I remember hearing that Olympic Nat'l Park was designed specifically to exclude most of the lower forests with high biomass. It seems the Park protects high-elevation forests for the most part.

If anyone is interested, a fantastic book on the history of Olympic National Park is "Olympic Battleground" by Carsten Lien. It covers in detail the protracted tug-of-war over how much of the lower west side rain forest valleys should be included in the park. As you'd expect, the timber industry wanted to retain access to the largest trees, while park advocates pushed to include as much as possible in the park. If I'm remembering right, though much of the lower Hoh River valley was disappointingly left out of the park, in compromise quite a bit of the Bogachiel and Queets River valleys were included.

Lien was a park ranger in Olympic NP for a number of years, and began his research on the book while documenting illegal timber sales within the park by a Park Supervisor named Fred Overly. Overly was selling healthy live old-growth Douglas-fir trees to local timber mills under the guise of forest health and public safety issues. Overly also sought egregiously inappropriate development projects for the park, such as a N-S road ("scenic drive") smack through the middle of the park. It's not in the book, but I once had a discussion with a park manager around '98 who told me there is more of Lien's research on file at the park showing that Overly was also coaching the Park Supervisor at Mt. Rainier NP on how to do illegal timber sales there too.

Lien exposed Overly, and Overly was reassigned somewhere back east. I think maybe to a National Historic Site, or something like that where he couldn't do much damage.

Lastly, here is some very good news. There is an active and vibrant campaign ongoing right now called

Wild Olympics which seeks to add acreage to Olympic NP, and add wilderness designations under the Wilderness Act of 1964 in the surrounding Olympic National Forest:

<http://wildolympics.org>

Sorry for rambling, but the Olympic Peninsula is practically about my favorite place on Earth!

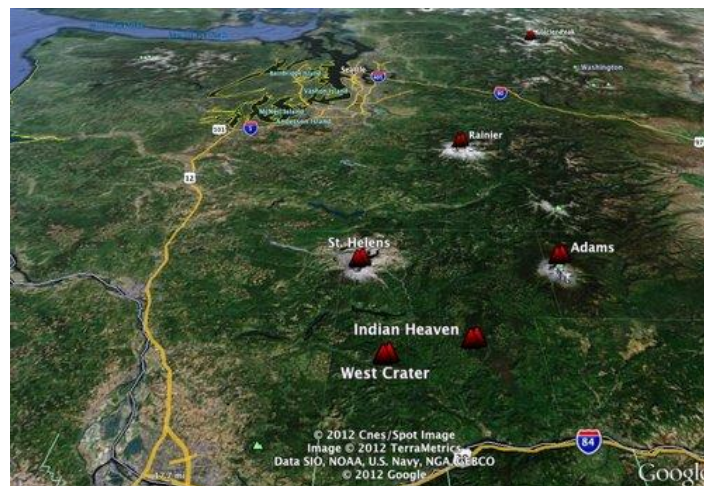
Kirk Johnson

[Re: Closeup on Forests of the Pacific Northwest](#)

by **Rand** » Thu Mar 01, 2012 2:00 pm

mdvaden wrote: If I'm guessing right, Mt. Rainier and Mt. St. Helens may be the two blank white spots on the right side.

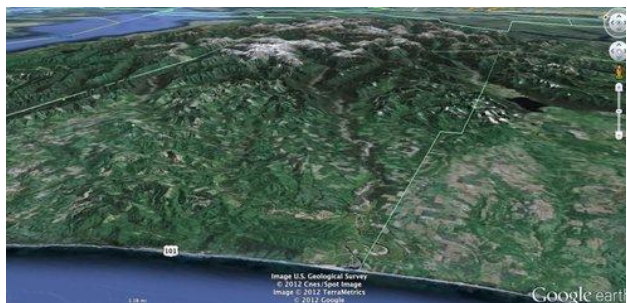
Here's a Google Earth shot, with a plugin that shows the names of all the volcanoes



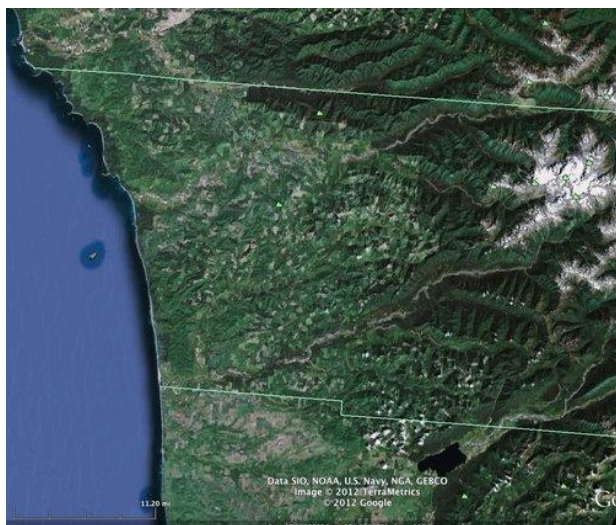
Re: Closeup on Forests of the Pacific Northwest

by **Rand** » Thu Mar 01, 2012 2:34 pm

It's kinda of Interesting to compare the biomass versus Google Earth Images and land ownership for the area:



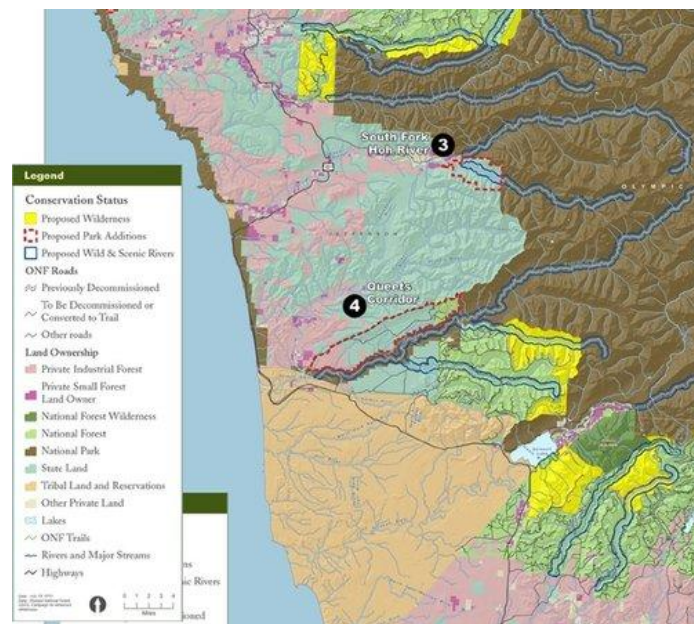
Google Earth 3D overview



Google Earth Overhead View



Biomass View



Land Ownership

The sad lesson here? If you don't want it cut, cutting has to be explicitly forbidden...and even then...

Rand Brown

Re: Tanglewood Park, NC revisited

by **Will Blozan** » Thu Mar 01, 2012 8:13 pm

Patrick, I know s. red oak is in that area and does occasionally get mistletoe. Scarlet oak seems to get it the most but the bark isn't right.

Tanglewood is awesome but the damn earthworms have destroyed the soil. I think the trees will from now on go downhill... Many of the n. red oaks are dead or dying and there is no soil structure or herb diversity to speak of. Sadly, this will be the ecological fate of most of our eastern woodlands.

Our work in NTS is all the more important as we witness the current state of our woodlands and document them before further decline.

Will Blozan

Re: Costa Rica Trees & Natural history #1

by **Bart Bouricius** » Fri Mar 02, 2012 9:56 am

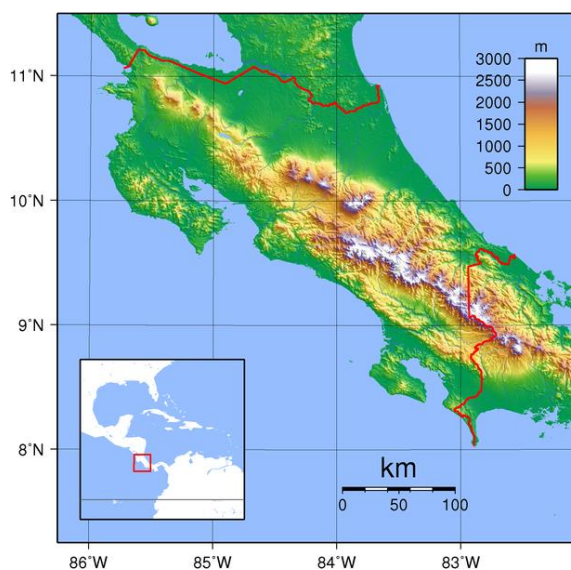
All of Costa Rica is "somewhat mountainous" except for small coastal plains, but certainly there is a huge difference in soil from the ridges to the richer soil washed to the bottom of ravines where most of my images are from, however Costa Rica, like much of Central America has volcanoes as a ubiquitous feature. Volcanic soil is famous for it's fertility and even on the ridge tops there is rather rich soil where often huge trees are able to grow, such as the Kapok relative (*Pseudobombax septenatum*) with it's peculiar photosynthesizing bark. As the landscape is younger than land in the Eastern US, the hill soil is not as leached of nutrients. It is difficult to know how much of the difference between some of the uphill landscapes and ravine gallery forest landscapes is a result of human intervention because there has been so much conversion of somewhat dry forests to pastures, and because there is so much variation in mineralization and climate micro systems. Some uplifted limestone karst topography is also found in a

couple of places on the pacific slopes, and annual rainfall can be quite different in slightly different locations. I do hope however that a geologist who may know more about this situation might have more illuminating comments than mine.

All this said, there is no question that the hills, which you can see on my other posts on Central/South America viewtopic.php?f=44&t=2008 viewtopic.php?f=156&t=3746, were much more forested before European settlement of Costa Rica, but I believe there is a remnant of what used to be there in the less accessible parts of the ravines albeit most of the valuable timber trees are probably no longer there. The gigantic Wild Cashews do have a relatively soft wood, and hence they were not highly coveted by loggers. There are so many other species of interest that there was simply not time to key them all out, and the Cashews were generally the largest trees and therefor got my attention.

On a different subject, I will be posting images today on some of the creatures that live in the trees, and in later days an extensive post on big trees of Amazonian Peru on my big tree hunt there this last September.

Bart Bouricius



http://en.wikipedia.org/wiki/File:Costa_Rica_Topography.png

Tree Living species Tirimbina Costa Rica

by **Bart Bouricius** » Fri Mar 02, 2012 7:52 pm

In January my wife Connie and I stayed at Tirimbina Research Station in the Forest in the state of Sarapiquí where I provided a climbing seminar to the staff and did some night climbing with my friend and fellow arachnid enthusiast Witold Lapinski and his friend Simone Blumenkamp. Although I have a few images of non arboreal beasts, I am posting primarily canopy, or tree living creatures from Tirimbina here for your entertainment.

First two images of leaf mimic praying mantises.

The "dead leaf" mantis was on my shoulder when I came down from a 100 foot climb on one of Witold's several rigged trees. He has to climb at night when the wandering spiders that he studies are out.



Dead leaf mimic mantis



Live leaf mimic mantis

The next image (photo by Connie Lentz) is of a Nocturnal porcupine *Coendou prehensilis* ensconced in a crevice of hollow Kapok Tree *Ceiba pentandra* sleeping all day.



Prehensile tailed porcupine

Here is one of the arachnids I study in the order opiliones which we know as harvestmen or daddy longlegs. Some of this group are predominantly arboreal and can be found foraging at all levels in the canopy. They have no venom contrary to a common urban myth. They are related to, but are not spiders.



Harvestman, Arachnid order Opiliones

Next below is one of the fearsome Bullet Ants *Paraponera clavata* whose sting is said to feel like being shot with a bullet. Ecologist Dan Janson, in an article he wrote about digging up a nest of these ants while being stung numerous times wrote that, one of the advantages of having done this particular bit of research is that "no one will have to do it again".

Several of These ants were foraging in large numbers in the tree Witold, Simone and I climbed at night. For more information on these ants, see this article by a friend Randy Morgan from the Cincinnati Zoo: <http://www.sasionline.org/antsfiles/pag...etbio.html>



Bullet Ant

Since we are dealing with ants, I am posting an image of a myrmecophyte or "ant plant" below. This is a plant in the family Melastomataceae which provides swollen chambers for ants to live in. My presumption is that, as in the many members of this family from Peru, which provide structures for ants to live in, the ants in this Costa Rican species also help protect the plant from its insect and other enemies in return. This however, is not always the case, as there are some species of ants that will sneak in and opportunistically occupy such spaces in some plants parasitically, without providing anything in return.

They then abandon the tree or herbaceous plant if it dies and may move on to another one.



ant harboring plant, family Melastomataceae

Now for something completely different, an unidentified tree frog:



unidentified tree frog

Below are two images of insects that were active at night. First a flying walking stick or "stink stick" (family Pseudophasmatidae), which like the Florida Two Striped Walking Stick *Anisomorpha buprestoides* produces a repugnant odor when annoyed. The second image is of a large katydid. These insects are in the family Tettigoniidae.



winged walking stick family Pseudophasmatidae



Katydid family Tettigoniidae

Last is something unrelated to trees at all, but possibly of interest to NTS members. Following are three images of a snake *Mastigodryas melanolomus* subduing a Lizard *Ameiva festiva* which Connie was able to photograph in action. I noticed some movement in the leaves by the side of the path and discovered that this snake had just grasped the lizard, but the fairly sizable lizard was not ready to give up without a fight and bit back. Though I can find nothing about this snake being venomous, the process of this lizard becoming inactive from simply a continuous biting certainly suggests that this snake may have some venom.



Struggle between snake and lizard



snake holds lizard still by pressing body on head



Snake lifts and carries off lethargic lizard

Bart Bouricius

James Robert Smith wrote: The rust color on his hind leg and tail isn't blood, then? Just part of his natural coloring and not blood?.

Regarding your suggestion of lizard bleeding, this whole episode took about 10 minutes and, though there could have been some blood, I didn't see any and in the roughly 30 photos we took there is no indication of any even on the several close ups. Also the lizard started slowing down dramatically within a couple of minutes. Of course you could not know this. If however it turns out that the snake does in fact have no venom, your suggestion will have to be one of the possibilities to think about. I suspect this will remain an unsolved mystery. I certainly do appreciate the suggestion though.

Here I believe it is the natural color, but I must confess that I am red-green colorblind, which in my case means that when it is sort of a muddy red or pinkish color I don't notice it. That said, Hog-nosed snakes for example are rear fanged snakes which have a mildly toxic saliva.

<http://en.wikipedia.org/wiki/Hognose>. They were originally assumed to be non venomous and certainly are not dangerous to humans, and bites are exceedingly rare, but the effects of their saliva entering small puncture wounds in a toad can stop the toad from struggling. The large Mussarana of Central and South America is another snake which because it hardly ever bites humans was also originally thought to be non venomous and it too has mild venom and is rear fanged. My thinking is that because the snake made sure to get its whole mouth including its rear teeth over the lizards hind quarters and then hold on in that position, it knew what it was doing in subduing a lizard not much lighter than the snake itself. Even when the lizard bit the snake, it would not let go and I do believe it is a good hypothesis that the relatively small needle like teeth of the snake would not produce a lot of blood as the snake simply hangs on without repeated bites as you might have got the impression was happening from the way I described the battle. It is certainly also possible that the snakes teeth might have punctured something important, but they are pretty small to do that easily. I should talk to my herpetologist friend Al Richmond at U-Mass, and see if he has any thoughts on this. - Bart Bouricius

Measuring Objects in Tree Canopies

by edfrank » Fri Mar 02, 2012 9:06 pm

Measuring Objects in Tree Canopies

Although it may seem obvious to those of us who regularly measure tree heights, many of these same techniques can be used to collect information on the height, size, and position of objects, such as nests, roosting sites, position of specific individuals when sighted, feeding areas, epiphytes and the like in a variety of field research projects. These measurements can be taken using small portable set of instruments including a laser rangefinder, clinometer, compass, reticule, and pocket calculator any number of measurements can easily and quickly be taken. This include among others:

- Height of target above ground level
- Height of object above the base of the tree
- Horizontal position of object with respect to the base of the tree
- Horizontal position of object with respect other objects or points in the canopy
- Size of objects within the canopy
- Size of branches upon which they are situated

Height

The height measurement of a point in a tree is the same basic process as measuring tree height.

The height of point B in the tree above eye level (A) is measured using a clinometer and laser rangefinder.

The distance from A to B is first directly measured using the rangefinder and that distance noted. This is the hypotenuse of the right triangle formed by ABD.

The angle (i) is measured with the clinometer by sighting from point A to Point B. This is the angle above a horizontal line at eye level and the object in the tree.

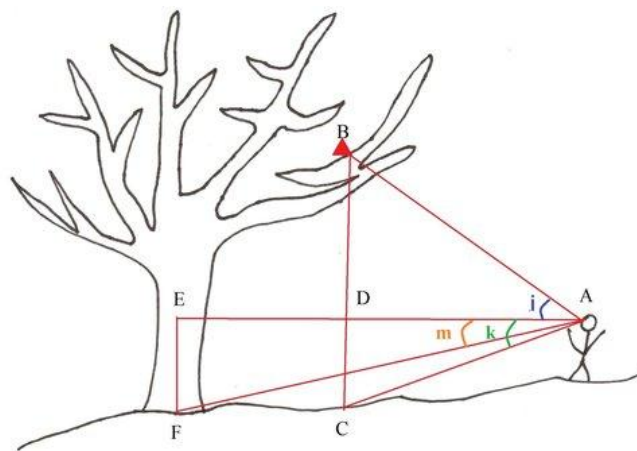


Figure 1: Basic height measurement diagram

The height (BD) above the measurers' eye level, line ADE is: $\sin(i) \times \text{distance}(AB)$. The horizontal distance (AD) is: $\cos(i) \times \text{distance}(AB)$. To measure the height above the base of the tree, the measurer next sights from (A) to (F) at the side of the tree at its base. The distance EF represents the vertical difference between the base of the tree and the measurers' eye level. This distance is calculated by measuring the distance AF with the rangefinder, then measuring the angle (m) with the clinometer. The vertical difference is: $\sin(m) \times \text{distance}(AF)$.

The horizontal distance along the line ADE is: $\cos(m) \times \text{distance}(AF)$. To calculate the vertical distance from point B to the base of the tree, point F, subtract the vertical change value from the second pair of calculations (distance EF) from the value obtained for height of B above eye level (distance BF) in the first pair of equations.

Mathematically this is correct, because if point F is below eye level, then the angle will be negative, the sine of the angle will be negative, and the vertical offset will be negative. So essentially if the base of the tree is below eye level, by subtracting this value, you are subtracting a negative value, or adding the absolute values of the offsets together. If the base of the tree is above eye level then the value for the vertical offset at the base is subtracted from overall height of the object above eye level.. It is easy to remember that if the base of the tree is below eye level, then the positive values of both vertical calculations are added together. If the base of the tree is above eye level then the value of the base

offset is subtracted from the height of the object above eye level.

A second consideration might be measuring the height of an object above ground level. The height of object B above eye level (A) can be calculated as above. The next step is to determine a position on the forest floor directly below the object in the tree. If the forest floor is nearly horizontal or slightly sloping the solution is straightforward. Calculate distance AD as described above. Have a second person walk along the line across the forest floor in the same compass direction as the object in the tree for the distance calculated as AD. Measure the position of the feet of the second person using the same process as described for the base of the tree. You can again calculate AD using the second set of equations to make sure you really are at the correct distance. If the terrain is steep, then estimate the position of the point under the object in the tree. Measure the angle and horizontal distance as above. Use this value to adjust how far the second person must go from the measurer to be directly under the object in the tree.

Check again when the target person reaches the prescribed spot. Make an additional adjustment if necessary through this iterative process.

More details on the problems, considerations, and options available for measuring vertical heights are available in the Native Tree Society Documents:

Tree Measuring Guideline of the Eastern Native Tree Society by Will Blozan

http://www.nativetreesociety.org/measure/Tree_Measuring_Guidelines-revised1.pdf and in The Really,

Really Basics of Laser Rangefinder/Clinometer Tree Height Measurements by Edward Frank

http://www.nativetreesociety.org/measure/really_basics_3a.pdf

3-Dimensional Position

The next stage is to map the relative position of two or more objects in three-dimensional space. For this step we need to add a compass to the equipment list. The process is much simpler if both objects can be seen from the same sighting position. I won't elaborate on procedures that allow calculations when both objects can't be seen at the same time, but they

are logical extrapolations of the procedures below.

First find a position where both objects can be seen by the measurer. Measure the height of each object above eye level and horizontal distance to each object using the first set of equations presented above. Tie these values into a common reference point, such as the base of the tree, or arbitrary point determined by the measurer using the instructions for the lower portion described above. Measure the azimuth, or compass angle to each object and to the common reference point. Note all the reading for both the vertical height calculations and for the azimuth measurements. These azimuth reading then can be converted into (x,y) coordinates and the (z) vertical values are as calculated above. Using the values for azimuth and horizontal distance (AD), the following equation provides the x (east-west) coordinate:

$\sin(\text{azimuth}) \times \text{horizontal distance (AD)} = x$. The y (north-south) coordinate is calculated as follows: $\cos(\text{azimuth}) \times \text{horizontal distance (AD)} = y$.

Combining these results the (x, y, z) coordinates for each point can be calculated relative to the position of the measurer.

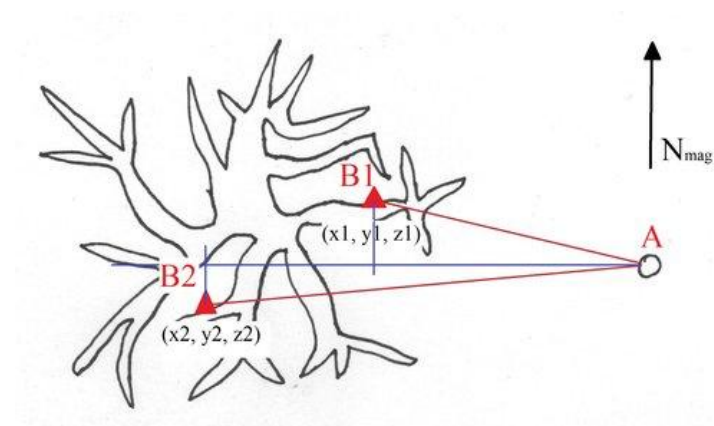


Figure 2: Horizontal map view

The relative positions of two objects can be calculated by subtracting the x, y and z position values of one point from another. For example the relative positions of B1 and B2 is $(x1-x2, y1-y2, z1-z2)$. To convert to the standard reference point consider that the measurer is at point (0, 0, 0) in this notation. The absolute position of any measured relative to the standard reference point is therefore the value of each parameter minus that of the reference point with respect to the measurer at (0, 0,

0). These values can then be reassigned as the new coordinated for the point relative to the standard reference point. The absolute distance between the two points is $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]^{0.5}$. The difference in height is simply $(z1-z2)$.

Size Measurements

The relative size of objects can be measured using a reticle providing the distance to the object is known.

The distance to the object can be directly measured using the laser rangefinder. The size of the object can be determined by measuring the width of the object using the scale within the reticle.



Figure 3: Macroscope 25

This image is of a Macroscope 25. It is a reticle that provides 25x magnification of a positionally correct image over a wide 8 mm field of view. It is used as a telescope to sight on an object at distance. It has been used to measure tree girths in the field without any problems by NTS researchers. There are models available from a number of manufacturers.

A reticled monocular is used to accurately measure diameters from great distances. The distance from the measured section of trunk multiplied by the reticle reading and divided by an optical factor results in the diameter of the target. The following summarized the

reticle procedure as found in Will Blozan's "Tree Measuring Guidelines of the Eastern Native Tree Society" for measuring tree trunk diameters:

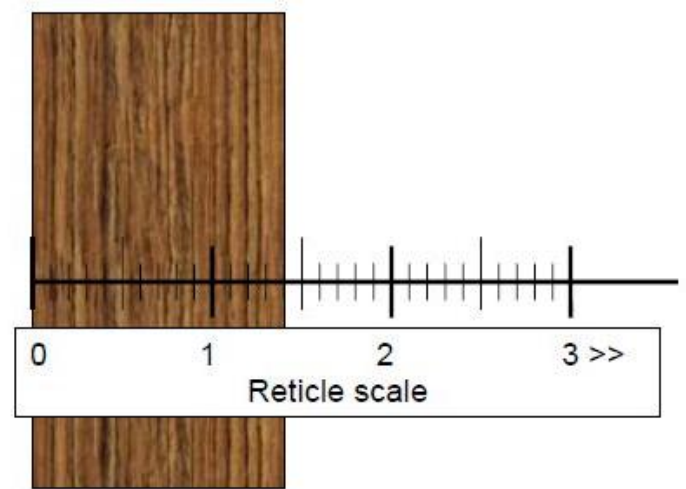


Figure 4: Reticle scale

As illustrated in the above diagram, the scale is oriented by fine adjustments of the tripod to line up with- and perpendicular to- the edge of the trunk at the "0" point on the scale. The optical intercept of the opposite side is read against the scale and estimated to the nearest 1/100th unit. The section of tree above is recorded as intercepting 1.41 on the reticle scale. To calculate the diameter the following formula would be used:

$$\text{Diameter} = (\text{Reticle scale}) \times (\text{distance to target}) \div (\text{optical factor}^*)$$

If the section above were 27.4 m (90 ft) away the diameter would be:

$$\text{Diameter} = (1.41) \times (27.4) \div 75; \text{ which is } 0.52 \text{ m (1.69 ft)}$$

(*Note: the optical factor is supplied by the manufacturer, and specific to the monocular model.)

A tripod provides the best measurements, but for a single grab measurement a steady hand can suffice instead. As always the scaling of the reticle should be checked using objects with known widths at various distances to check the calibration (the optical factor supplied by the manufacturer). In general it is useful to use objects of similar in size and at similar

distances to those that will be encountered in the field.

These procedures as outlined above will allow a canopy researcher or biologist to determine the height, locate the positions, and measure the size of objects, and subjects from ground level using a few, relatively inexpensive hand held pieces of equipment. The addition of a GPS unit to this basic equipment will also allow this data to be tied into maps of the area adding latitude and longitude numbers and approximate elevations.

Edward Frank

Re: Measuring Objects in Tree Canopies

by **dbhguru** » Sat Mar 03, 2012 12:12 pm

Ed, your post is timely and useful to our general Dendromorphometry discussions. I'm particularly glad you start off with the following statement

"Although it may seem obvious to those of us who regularly measure tree heights, many of these same techniques can be used to collect information on the height, size, and position of objects, such as nests, roosting sites, position of specific individuals when sighted, feeding areas, epiphytes and the like in a variety of field research projects."

The "obviousness" of the broader application of our methods is exemplified in such pursuits as trunk and limb modeling and our advanced methods of crown spread measurement. But, as we would agree, the applications are endless, and those pertinent to wildlife, such as height and relative positioning of nesting sites, could open up a whole new world.

When we turn our attention away from the top sprig and base of a tree to objects in the tree (and to objects not in the tree), we are really developing mathematical models to measure the positions of objects in 3-dimensional space. Assumptions explicitly, or at least implicitly, made about the

architecture of the object being measured can no longer be restrictive, such as a top vertically positioned over a base. Mentally freeing us up in the measuring field represents a giant leap forward – IMHO.

One point about the Macroscope 25 is that the reticle on my instrument spans 5 millimeters as opposed to 8. And my Macroscope 45 has a 3-mm reticle, which enables more accurate scale readings. A further point is that the factor supplied by the manufacture can be wrong. Will Blozan, Jess Riddle, and later myself, determined the factor of 75 applied to our particular instruments. I believe Michael Taylor or an associate has a Macroscope 25 that requires a different factor. The number 77 comes to mind. I'm not sure. The point here is that we have to validate the factor for our particular instrument. We can explain how to do that for anyone with a new instrument. The factor given for my instrument by the manufacturer was 82. It didn't work.

For those looking for automatic instrument returns, the slope distance between two points in 3-dimensional can be measured directly using the missing line routine of the TruPulse 360. I admit that this is an expensive way to do it – giving the hefty price of the 360, but it is a two-shot process. Of course, we can achieve the same result the longhand way using an x-y-z coordinate system. The azimuth return of the TruPulse, or a less expensive compass, allows the sweep (horizontal) angle between the points to be computed from the measurer's location.

The convenient HD return from the TruPulse (cosine application with laser and clinometer) allows a triangle to be measured in which the sides from the measurer's eye are the horizontal distances to the two points. Knowing these distances plus the included angle sets up a case for the law of cosines to determine the horizontal length of "missing line", i.e. the horizontal distance between the two points. Then determining the vertical distance between the two points by our usual sine-based method sets up an application for the Pathagorean Theorem to get the direct or slope distance between the points. We might see an application as determining the straight line distance between two nesting sites.

For readers who have made it to this point and haven't fallen asleep, I'll present one more idea. If one is fortunate enough to own a LTI TruPulse 360 with the missing line routine, would there ever be a reason to slug through the manual method given above to make the measurement? It turns out that there is.

Suppose the points chosen in 3-dimensional space are the tips of branches. If there is intervening clutter between the eye and the targets, the 360's laser may not return the correct distance to the target. However, the measurer can't pause the routine to shoot repeatedly to the same target to see if he/she is hitting what is being aiming at without first completing the routine. The missing line routine doesn't allow you to scan and test point A before proceeding to point B. Errors at one or both targets are virtually guaranteed if clutter is present, and you cannot know which values might be correct or incorrect. The next time you shoot, you get different results so that you're always in a quandary. Knowing that you have an accurate result is long and frustrating process, and often can't be done. An alternative method is almost always required with the missing line routine.

To fulfill its promise, Dendromorphometry must successfully address actual field conditions for all the situations we encounter. So, a lot more nuanced measuring is called for. Lots of alternative routines.

At the Cook Forest rendezvous scheduled for April 18-19, I'll give an updated PowerPoint presentation on Dendromorphometry. I'm working on it now.

Robert T. Leverett

[Re: Measuring Objects in Tree Canopies](#)

by **tsharp** » Sat Mar 03, 2012 11:26 pm

NTS: I hope to have a chance to measure the height above water/ground that young wood ducks encountered when taking leave of their nest. I happen to be on the Potomac River in the spring and saw several groups flutter down from big Sycamore trees

and would like to verify my impression that their first entry to the world may have exceeded 50 feet.

Turner Sharp

[Re: Measuring Objects in Tree Canopies](#)

by **M.W.Taylor** » Sun Mar 04, 2012 12:59 pm

Ed, thank you for this most informative post. As I read through your canopy mapping system I realize this is also a GREAT TruePulse360 and MapSmart project, especially if your views to the various objects are not all available from one viewpoint and you need to move about the tree's base.

Bob and I are helping Laser Technologies find new uses for their equipment and this is another one that is perfectly suited for the TP360. Thanks!

Michael Taylor

[Re: Measuring Objects in Tree Canopies](#)

by **dbhguru** » Sun Mar 04, 2012 1:12 pm

Turner, bully for you! Exciting. We await the answer. The more applications we can come up with, the more we can focus attention on the dendromorphometrical aspects of what we do, and free ourselves from the straight-jacketed world of exclusively measuring one or two tree dimensions. For the foreseeable future, that will be our primary use of Dendromorphometry, and will always play an important role. But Dendromorphometry is evolving into the discipline of measuring the location and dimension of objects in three-dimensional space using a variety of instruments and methods. The objective is to attain ever higher levels of accuracy. Trees present a real challenge and allow us to focus our attention on objects of general interest. We are developing entry level, intermediate, and advanced techniques, and are acquiring an ever expanding base of experience on what works best and where.

When we frame a measuring challenge as

determining the location of an object in 3-dimensional space relative to another, we cause the door to swing open much wider. We can talk about the height of a bridge above water, the top of an antenna above its base, the vertical distance between two limbs, a bird's nest above the ground, height of a waterfall, how horizontally far a limb sticks out over a house or edge of a cliff, the straight line distance between two objects in space, etc. Progressing from one dimension to multi-dimensional problems does open Pandora's box, but that is what Dendromorphometry is about. Some of the instruments available to us that use infrared or visible red lasers, tilt sensors, and compasses are meant to allow us to measure objects in space. However, useful guides to field measuring are in short supply. We have much to say on the subject, and are being heard by organizations like LTI.

Periodically, Ed takes the theoretical stuff that several of us put out on the BBs and organizes it into comprehensible guidelines. But this isn't just about the few. There's room for all to participate. The more applications that individual Ents can think of and pursue themselves, the sooner others out there in cyberspace will recognize the contribution that NTS is making and join our ranks.

Robert T. Leverett

[Re: Measuring Objects in Tree Canopies](#)

by **edfrank** » Sat Mar 03, 2012 4:23 pm

Bob, Thank you for the comments. In the post above I do state: **"As always the scaling of the reticle should be checked using objects with known widths at various distances to check the calibration."** I should have emphasized the point more and specified by calibration that I meant optical factor. I will edit the document to reflect that. I did not go over the laser rangefinder calibration as it is covered in greater detail in my "The Really, Really Basics of Laser Rangefinder/Clinometer Tree Height Measurements" referenced above.

What prompted this post was that I read a post concerning a parrot study in the tropics and I thought these techniques might be useful for documenting the nest and roosting locations. (Unfortunately after writing the document and posting it, I was unable to find the article on Facebook again.) There is more that can be done with the basic measurement techniques than just measure tree heights. There are a variety of telescopic reticles that can be used for these purposes. Really the optimum size would be one that almost fills the scale of the object you are looking at at the distance from which you want to examine it. Ideas and comparisons of different models would be useful for people doing other things than measuring tree trunks.

I became involved with tree mapping long after I had been heavily involved with mapping caves with a clinometer, compass, and tape. There are significant parallels between the two activities. When mapping trees you are marking the positions and dimensions of the trunk, branches, and nodes from an external reference point. With cave mapping you are mapping the trunk passages, the branches, and connecting chambers from inside the system.

It was not uncommon to map the position of major breakdown blocks, clusters of speleothems, or other features in the same way you mapped the passages. I applied that idea to mapping the position of features on the surface of the branches and trunks. The differences are the external position rather internal one, the use of a laser rangefinder instead of a tape, and the suggestion to use a reticle to measure size of objects that cannot be easily reached in person. The reticle idea could be applied to cave features high on a wall or an unreachable passage, although I am not aware of it ever being done.

The measurements could be done quickly and easily using separate basic instruments as I suggested.

Generally I would expect that researchers might already have some of these instruments in their kits. Certainly the process could be made much more accurate using the LTI TP360, and is something that should be explored.

Ed Frank

Re: Measuring Objects in Tree Canopies

by **M.W.Taylor** » Mon Mar 05, 2012 4:05 am

Ed, your post inspired me to make a few changes to Forest Mapper...see attached Forest Mapper version 2.0.

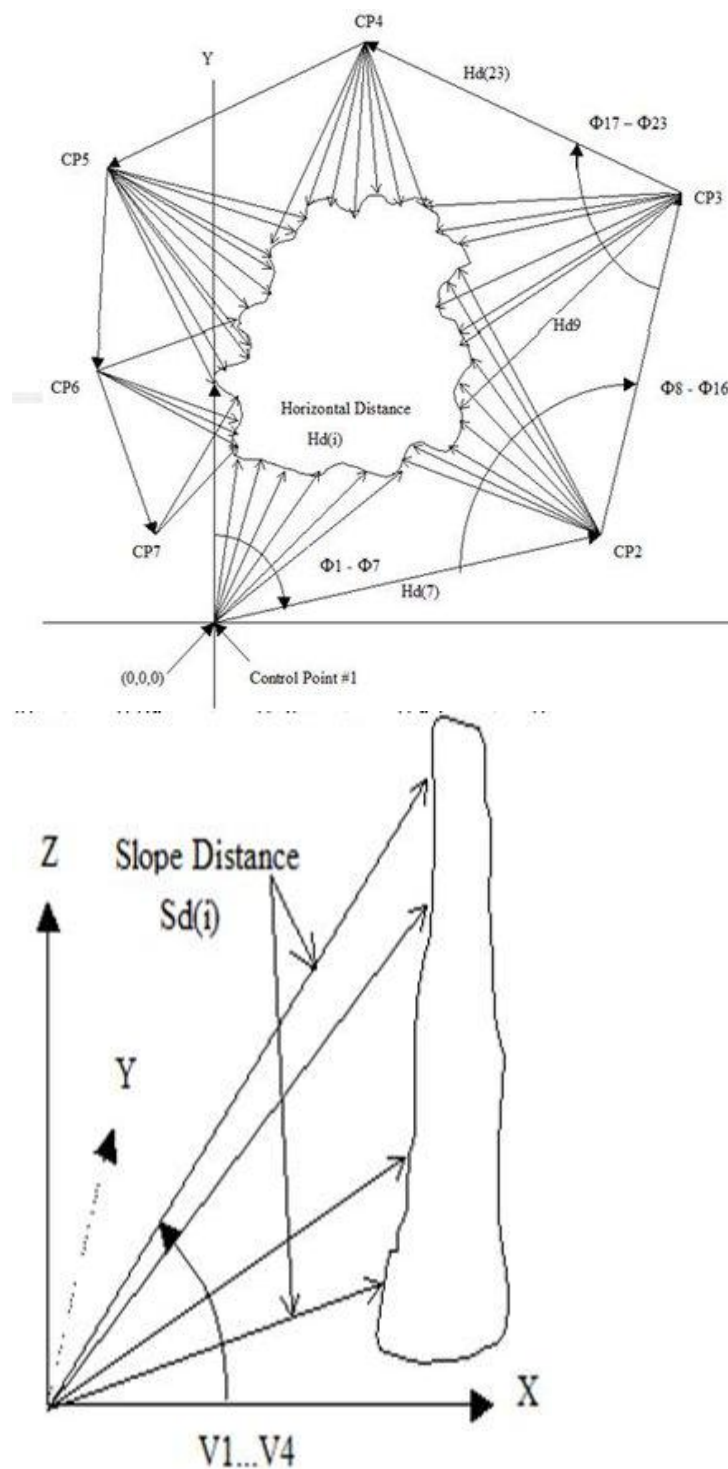
You can use your compass, clinometer, laser range-finder and this program to walk around the tree canopy and generate small point clouds of the tree and also document the various wildlife features in point cloud format with labels. I applied this concept to the rotating live oak tree MS Excel spreadsheet I posted a few months ago. See attached.. The trick is to synchronize the point cloud to the wildlife object point cloud. This is easy to do however with more software or just create the trunk surface data and wildlife positional point clouds together in the same LIDAR scan or compass/clino/laser survey using my custom code.

You can use the arrows for rotating or tilting oblique views. Control-m to generate a point cloud as per diagram. Or cut and past to import a LIDAR map to overlay with wildlife point cloud data. This program is NOT user friendly. I left a default survey example to show how data is applied in the tables as per illustration. If you have problems importing new point clouds or generating point clouds with the "mapper" Macro feel free to get back to me. It is a work in progress. You will need to disable macros to run this program however. The code is 100% from me and safe to run. I left the code open so you can view it. Goto Tools and then Visual Basic Editor..then click on Module1 to see Visual Basic Code.

Michael Taylor

 [forest_mapper2.0 - live oak.xls](#)

Forest Mapper2.0 (2.44 MiB)



Diameter Comparisons

by dbhguru » Fri Mar 02, 2012 9:54 pm

I recently received my RD 1000 back from LTI, repaired and ready to go. Earlier today, I set up an experiment to compare diameters measured using te RD 1000, the TruPulse 360, the Macroscope 25, and calipers. In the test below, you can see how the instruments compare. I am very impressed with my

RD 1000. Before it got an upgrade, I had problems. But now, it performs like a champ. At least it did today. I can measure diameter at a distance using the RD 1000 with reasonable assurance of good results, at least for the distances used in the test. Next will come longer shots. I expect performance to drop for the RD 1000, but by how much, I don't know.

Robert T. Leverett

Comparison between instruments on diameter measurement										
Macroscope 25/45										
Tree ==>	WA	AB	BB	BB	WA	BB	BB	TT	AVG	
Distance	66.25	52.25	60.25	54.25	67	60.75	55	23.45		
mm	1.8	1.21	1.42	1.9	0.98	0.81	1.04	0.75		
Diam In	19.080	10.116	13.689	16.492	18.910	14.172	16.473	5.065		
Diff In	0.180	0.134	0.039	0.058	0.290	0.172	0.227	0.065		0.146
TP 360										
Tree ==>	WA	AB	BB	BB	WA	BB	BB	TT	AVG	
Distance	66.25	52.25	60.25	54.25	67	60.75	55	23.5		
AZL	267.3	269.9	274.3	277.7	265.8	272.6	275.3	192.5		
AZR	268.6	270.8	275.4	279.1	267.2	273.7	276.7	193.6		
Ang	1.3	0.9	1.1	1.4	1.4	1.1	1.4	1.1		
Diam In	18.455	10.006	14.151	16.304	20.135	14.269	16.529	5.520		
Diff	0.445	0.244	0.501	0.246	0.935	0.269	0.171	0.520		0.416
RD 1000										
Tree ==>	WA	AB	BB	BB	WA	BB	BB	TT	AVG	
Distance	66.25	52.25	60.25	54.25	67	60.75	55	23.5		
Diam In	18.900	10.200	13.800	16.700	19.400	14.000	17.100	5.000		
Diff	0.000	0.050	0.150	0.150	0.200	0.000	0.400	0.000		0.119
Calipers										
Tree ==>	WA	AB	BB	BB	WA	BB	BB	TT		
Diam In	18.900	10.250	13.650	16.550	19.200	14.000	16.700	5.000		

Re: Diameter Comparisons

by dbhguru » Mon Mar 05, 2012 9:17 am

I replaced the prior table in the initial post with an updated one that has 10 trials. Note with the trunk at 142.5 feet, the RD 1000's performance dropped. In addition, expanding the scale one tick changes the diameter measure from 16.4 to 17.9. This was the weakness of the RD 1000 that I saw before. They updated the firmware and the instrument performs well at distance from 40 to 80 feet, but it remains to be seen how the instrument holds up from 20 to 200 feet. This testing process will continue and I'll add more trials, eventually providing statistically tested results. I then plan to develop tables that show the

performance of each instrument over a range of distances for a range of target sizes.

Another note about the RD 1000, I could have averaged the 16.4 and 17.9 to get 17.15. However, I knew the actual diameter from the calipers. In regular field measurements, I wouldn't know the diameter, I'd be trying to measure it from a distance using the RD 1000. If the scale at 16.4 were to appear a little shy of the trunk and 17.9 appeared a little to much, then averaging would make sense. However, at the distance, it would take a lot better eyes than mine to make that call. Optics is a weakness of the RD 1000.

Robert T. Leverett

Re: 3D surface modeling of a giant redwood trunk

by **M.W.Taylor** » Fri Mar 02, 2012 6:32 pm

Matt, the Tet-Face volume summation is what MapSmart uses also. I am using it to test my ForestForm1.8 program. The Tet-Face system uses less calculations than the "orthogonal-quad-face" pie-wedge that I am volumizing in ForestForm1.8. The Tet-Face summation adds up the volume just as you describe. A 3D central ray at the central base of the form (or mass centroid) to each vertex point on the triangular mesh creates a network of tetrahedrons that can quickly and easily be fitted to most polystructures and volumized. If the top or bottom is open like a partial tree trunk point cloud, then it must be closed prior to Tet-Face summation. Both the Ortho-Quad-Face and the Tet-Face break down when you get trees with multiple iteration and protruding structures. The Tet-Face summation in MapSmart adds up the space between the surface boundaries as though it were a continuous volume and thus over-estimates the size a little. I am not sure how Rapidform or Rhino3D deal with these polystructures? I assume they either just over-estimate or the software account for multiple surface boundaries. For \$10,000+ I would assume RapidForm has this capability.

I am currently re-coding the ForestForm (Version 2.0) to handle multiple iteration trees and any assorted complex polyform. I am also going to have the cloud load automatically into sheet2 instead of the old "cut and paste" technique. After doing that 1,000 times with 300k+ size point clouds, I need a better system. Also changing the ForestForm1.8 code to graph the quad-mesh as it is being interpolated and volumized. The final mesh will be rotatable like the older versions I posed. The rotating Mesh looks better than the point cloud. The lines show the surface curvature better than the raw point cloud in a 2d scatter plot.

I am very interested in the Rhino3D. The price is right. If it does everything MeshLab does (but with good documentation) and everything my custom VBA spreadsheet does for volumizing and surface area (but more user friendly) then I am interested in

getting the Rhino3D software. RapidForm is too expensive. If I got a grant for it or money was no issue then perhaps I would get that instead. Otherwise I will get by with MeshLab and ForestForm. The biggest problem I see with MeshLab is the lack of documentation.

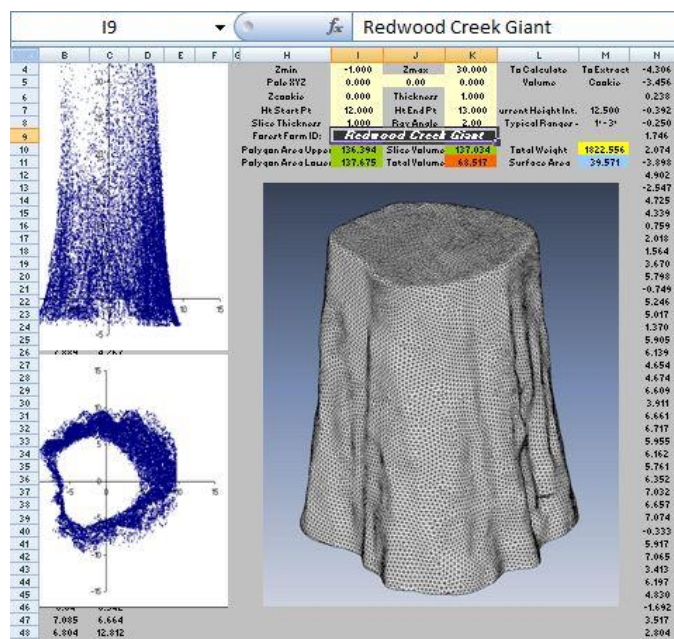
Matt, Thank you again for your suggestions and testing my code. You have been very helpful. I found a rather serious bug in the last Forest Form attachment so I am going to delete and reload with the more stable version. Also going to code the Tet-Mesh volumizer alternative. It is only a minor change to the VBA to add this so why not? It should be MUCH faster for volume solving and surface area calculation due to fewer processes.

 [forestform1.8.xls](#)

forestform1.8(8.46 MiB)

I just uploaded the latest bug free version of the volume solver. (above) ForestForm1.8. All previous versions should be considered obsolete.

Michael Taylor



Moravia, NY, Cottonwood

by **lucager1483** » Sat Mar 03, 2012 12:25 am

This trip report will be fairly brief, owing to the fact that it features only one measured tree. But it's a pretty big tree, so I figured that I should give it its shot at the spotlight. The tree is a locally famous (at least among tree people) eastern cottonwood, or *populus deltoides* in the village of Moravia, NY, which is located at the south end of Owasco Lake, one of the smaller Finger Lakes. Some ents may have heard of this tree or seen it in person, or even written about it (my apologies if that's the case). I visited the tree a couple of years ago after reading an archived local newspaper article making reference to it on the internet (I wasn't able to locate the article again for this report), but I made no measurements at the time. The poplar was touted as Cayuga County's largest tree, and I now would probably agree, both in terms of girth and total volume.

This past week, I had some time off from work and an itch to measure, so I figured I'd mosey on down and finally do the work and crunch the numbers and see if I really did have a noteworthy tree on my hands. In addition, Bob Leverett's recent report on the northern NY/Champlain Valley cottonwoods made me curious as to where this tree stood in comparison. The short answer: very favorably. Here are the stats: height: 107.8'; cbh: 29.0'; average crown spread: 100.7'. Like most area cottonwoods, this tree has lost many large limbs during its lifetime, as you may be able to see in the pictures below. Unlike most area cottonwoods, this tree has one solid trunk and its fallen limbs were located high in the canopy, so the crown spread has significant room for improvement. Maybe it's not the most beautiful or tallest tree around, but it's the biggest tree I've measured, and I figured I'd give her props. Here's a link to more stats, courtesy of the Galehouse trees database:

<http://alpha.treesdb.org/Browse/Sites/1095/Details>

Elijah Whitcomb

Here's the fat lady in all her glory:



St. Joseph's Cemetery, Auburn, NY, White Oaks

by **lucager1483** » Sat Mar 03, 2012 12:56 am

NTS, I measured two white oaks (*quercus alba*) this week at St. Joseph's Catholic Cemetery in Auburn, NY. The cemetery is private, but open to the public.

It is located just south of Auburn High School on Lake Avenue and across the road from Emerson Park and the north shore of Owasco Lake, one of central NY's Finger Lakes. Like many cemeteries, it features several non-native specimen trees, including European larch and Norway spruce. But the main attraction for me is a pair of open-grown white oaks

near the cemetery's western boundary. Neither is notably tall, but both have impressive girths and respectable crown spreads. The larger and western-most oak measures 75.3' in height, with a cbh of 19'2" and an average crown spread of 121.6'. The girth of the smaller oak is 17.6', with a similar height and lesser crown spread (neither measured for lack of time). The smaller tree also has a lightning rod attached, so my guess is that the trees are well cared-for and probably have been aided in their growth by way of extra water and fertilizer, but they're impressive nonetheless.

Here's a picture of both trees - the larger one is in the foreground:



75.3'; 19'2"; 121.6' White oak

Elijah Whitcomb

[Sequoia/Kings Canyon NP, CA \(Re: World's Tallest Known Sugar Pine Grows In Oregon\)](#)

by **Will Blozan** » Sun Mar 04, 2012 9:50 am

Michael, Redwood Canyon in SEKI has some superlative sugar pine as well. I have not posted on the latest finds there which to me, simply hint at the potential. As you know it is a goldmine for tall conifers and the sugar pines have been all but ignored.

I hiked in there one "off" day last spring with BVP, Steve Sillette and Marie Antoine. They were just hiking so I was denied a good tree hunting trip so we only saw trees along the trail. Huge boles and wispy tops lured me to go well off-trail but I was not in a situation to do so; thus the "hint" of what could be in there is all I can report.

These pines were on the trail, all measured with handheld Impulse by myself with BVP or Steve holding the reflector at base:

Girth X height

22.1' X 237.2'- poor shot; narrow angle and cluttered

16.8' X 244.1'- nice young-ish tree

24.5' X 236.2'- a beast next to above; poor shot likely taller



Big sugar pines in Redwood Canyon courtesy of Steve Sillett

On this trip we stopped to look at the immense Hart Tree. We tried to measure the height but it was way too thick and time was short. Here is a shot with Marie for scale.



Marie Antoine and Hart Tree

Will Blozan

Sturdy Scandinavian Conifers Survived Ice Age

<http://www.sciencedaily.com/releases/2012/03/120301143737.htm>

Professor Eske Willerslev from the Centre for GeoGenetics, University of Copenhagen, Denmark, Laura Parducci from the University of Uppsala, Sweden, and Inger Greve Alsos from Tromsø University Museum, Norway. Their research teams show that some Scandinavian conifers survived the inhospitable ice age climate likely for several thousands of years. The result is to be published in the scientific journal Science.

Re: Sturdy Scandinavian Conifers Survived Ice Age

by **edfrank** » Fri Mar 02, 2012 10:43 am

Interesting that trees may have survived. There are a number of pockets that by chance happened to escape the glaciations, or at least the last ones. The lower edge of the continental ice sheets tended to be more like fingers extending down into valleys much like mountain glaciers, rather than a faceless uniform wall of ice. The direction and reach of these fingers were both dependent on the existing ground topography and the thickness and direction of flow of the main masses of the continental glaciers. A large areas of southwestern Wisconsin (and parts of Minnesota and Iowa) are called the driftless area because they were bypassed by the ice sheets and are not covered by glacial sediment (drift). The topography in these areas is rougher as it has not been smoothed and planed off by the glaciers.

These edges of the ice sheet extended fairly far down into warmer areas. There outer edge was where the rate of melting back equaled the rate of forward flow of the ice, like a giant unidirectional conveyer belt going generally southward. So the region had to be relatively warmer to melt the ice at the fringe as fast as it flowed onward. There would be effects directly caused by the presence of the ice itself - cold winds flowing down the ice sheet, direct cooling by the ice

mass, but away from the ice a relatively short distance the overall climate could be much warmer.

The stomach contents of some woolly mammoths found preserved in the Siberian tundra are indicative of the warmer weather in the area just beyond the ice sheets. Many of the plants found are not tundra mosses, but plants normally found farther south in today's climate. Still if the areas were surrounded by ice, I would have expected they would have been too cold to support trees. Perhaps these were in areas that large enough to not be completely dominated by the glacier effects, or where at any one time the glaciation affected only one edge of the area at a time and did not completely surround the regions.

Edward Frank

Re: Sturdy Scandinavian Conifers Survived Ice Age

by **Lee Frelich** » Sun Mar 04, 2012 3:51 pm

I guess its not too surprising that spruce would survive in a refugium not covered by ice. All its needs is 6 weeks where daytime temperatures are above 50 degrees F to finish its life cycle. I suppose its possible that black spruce or tamarack may one day be discovered to have persisted in SW Wisconsin during the glaciation--both can grow on permafrost. On one hand, the severity of the interior continental climate may have prevented their persistence (compared to the oceanic climate of western Norway). On the other hand, SW Wisconsin is farther south and solar radiation would have been quite strong relative to northern Norway, so summers might have been warm enough. There aren't many if any bogs or lakes (which are found in the glaciated areas) in the driftless area, but there might be streamside deposits such as cutoff oxbows with fossil evidence from the glacial period.

Lee Frelich

Multitrunk versus single trunk trees (was Re: Moravia, NY, Cottonwood)

by **lucager1483** » Sun Mar 04, 2012 3:55 am

[Some people suggested the large cottonwood documented by Elijah Whitcomb appeared to be a double trunked tree in the photos. The following are from that discussion starting with Elijah's reply -ed.]

Regarding the fused trunk hypothesis, I hadn't even considered it until now. As Bart inferred, if the tree is a double, it really isn't noticeable in the overall form. My argument for the single-tree theory: 1) The main trunk, up to the first big split (~20-30' up), is fairly symmetrical all the way around from ground level (no bulbous protrusions or deep hollows); 2) Double trees (especially in this area) tend to split apart before reaching this size, I'm guessing from a combination of freeze-thaw cycles and heavy snow and wind, but that's just an uneducated guess; and 3) The tree presents itself, from almost every angle, as one individual, not two or more individuals combined. Part of the problem here is that I only took photos from one direction, so I'm not giving an overall representation of the tree. I respect every opinion expressed on this forum, especially those lots of experience with this kind of thing, and if I'm proven wrong, that's ok with me. You fellows have good eyes, and I certainly see the quality of your reasoning.

If anybody is in the area, I would encourage you to visit the cottonwood and take pictures, for sure. Just watch out for vehicles coming down the hill and around the bend while you're there.

Elijah Whitcomb

Re: Multitrunk vs. single trunk trees

by **dbhguru** » Sun Mar 04, 2012 8:49 am

In terms of the one or two tree theory, I'm inclined to give the tree the benefit of the doubt. As one who regularly observes cottonwoods and how they tend to

change shape as they grow larger, it is a tough call, but from your explanation and the images, I vote thumbs up.

Robert T. Leverett

Re: Multitrunk vs. single trunk trees

by **edfrank** » Sun Mar 04, 2012 12:29 pm

It is always nice to have someone or something in a photograph next to the tree for scale, but it isn't always practical. I usually carry a tripod and use the self timer if I can. That doesn't always work out so well either. I have a photo in my Allegheny River report of a large butternut taken by Dale Luthringer. In the original photo you can see a bit of Dale's foot as he tumbled head over heels running to get into the photo through the heavy grass.

As for the question of double or single trunk, there will be arguments between experienced measurers about whether a particular tree is a double or a single. Many old doubles have grown together so that the trunk is regular in form and on the face of everything no longer appear to be doubles. The opposite situation s where there is a large low protruding branch. If the tree and branch grow large enough, the low branch appears to look much like a second trunk. When faced by wind and weather it is possible that these may split along the attachment line to look as if they are two trunks. In many cases there is sufficient doubt that the only way to know for sure would be to cut the tree down at ground level and see what the cross section shows.

The posts I am sure were encourage you to think about the double versus single question while in the field looking at the tree itself. While there you can walk around it, see it from all angles, and get a better idea of whether is is a double or single than people can tell from the photographs. If I were to guess based on the photo alone, I would say likely a double, but that does not replace what you saw in the field. You were there, so it is your call.

Some people consider it being conservative to

consider something a double if they can't tell for sure otherwise. I think this corrupts the data set more so than an occasional misclassified tree. You should make your observations in the field, and then go with your best guess as to whether the tree is a single or double, and report that. Field inspection trumps photos except in the most egregious examples. This is not to say that someone else who goes out and looks at the tree will reach the same conclusion, but we hope so. Try to build in your mind characteristics that might distinguish singles from double or multitrunk trees, and apply these mental lists to what you are looking at. Keep up the good work, and keep reporting.

Edward Frank

Re: Multitrunk vs. single trunk trees

by **Will Blozan** » Sun Mar 04, 2012 2:21 pm

Photos from another angle would be helpful as well. When I look at the full-size image and zoom in it looks as if there may be three trunks or two that fuse and then fuse to another.

As Ed, says, sometimes it is difficult to tell and a "pith trace" done on a digital photo can help.

Here is an obvious example of a multitrunk fusion.



Ohio champion cottonwood

And here are some pith trace examples:



Ohio champion sycamore



Seven sisters live oak clump

The pith lines are not single at ground level so not a single trunk.

Will Blozan

Re: Multitrunk vs. single trunk trees

by **edfrank** » Sun Mar 04, 2012 3:48 pm

The pith lines need to merge before ground level for something to be a single trunk tree. If there is more than one pith line at ground level it is a multitrunk tree. If there is only one pith at ground level then it is

a single trunk tree. Low branches could come out below 4.5 feet, but above the ground and the tree still be a single trunk tree.

In the tree measuring guidelines, (all three of the documents, the original version, the one published in the Bulletin, and the updated version) Will Blozan writes:

"I use a "pith test" to define what a multitruk tree is. If the tree has more than one pith at ground level it is a multiple-stemmed tree. Note I did not say 4.5 feet above the ground. This is because the 4.5 foot height is a forestry standard and is an arbitrary and convenient place for most people to measure a tree. Some trees, like flowering dogwood or rhododendrons, may branch well below 4.5 feet but have a single pith at ground level. In the case of such trees, I would measure the narrowest point below the lowest fork. More detailed discussions of how to measure multitruk trees and trees with other odd forms is presented on the ENTS website."

Ed Frank

Re: Multitruk vs. single trunk trees

by **Bart Bouricius** » Sun Mar 04, 2012 5:28 pm

I have been amazed at how much a double pine that has fused can look like a single trunk tree. In my tree work I occasionally find that a tree is a double only after it is cut down. Sometimes this can be dangerous, as not much may be holding one part of a tree after a felling notch is made, thus one section of the tree may go prematurely and possibly the wrong way as mostly it is being held by bark. This scenario is exceedingly rare though, and when there is any doubt I rig both sections of the tree ahead of time.

Bart Bouricius

Re: Multitruk vs. single trunk trees

by **edfrank** » Sun Mar 04, 2012 6:06 pm

Someone wrote: I know this is not really practical, but it seems to me that theoretically you could compare the DNA from core samples of the leader and main trunk to determine if they were the same tree or two fused trees.

There is a basic misconception here. We are not defining whether something is a single or multitruk tree based on genetics. The multitruk tree may be growing from the same root mass and have identical DNA in all of its trunks. For measurement purposes we are classifying a multitruk tree as a different measurement category than a single trunk tree because of its growth pattern, not because of different genetics. There may be some cases where there actually are two different specimens of the same species of tree growing together to form a fused mass, but these would be I would guess an extremely rare circumstance. There are occasional examples of two different species growing together - the Hugging Trees in the multitruk tree classification scheme I previously proposed http://www.nativetreesociety.org/multi/index_multi.htm. I would expect that hugging trees of different species would be more common than two different trees from the same species.

Bart, Are there some good keys that help you identify when something really is a double that looks like a single trunk tree, or whether it is in fact a single trunk that others might not be aware? As you say sometimes you can't tell until the tree is cut down, but are there hidden indicators in other cases you might notice if searching for them?

Edward Frank

[The Notable Trees of the National Trust, UK](#)

by **edfrank** » Mon Mar 05, 2012 10:41 am

This is a series of short videos produced by the National Trust in the UK featuring Notable Trees across the countryside.



An introduction from Brian Muelaner

The Notable Trees of the National Trust - Introduction

http://www.youtube.com/watch?v=uFHRJgE_aY



The Notable Trees of the National Trust - Irish Yews, Florence Court

<http://www.youtube.com/watch?v=sWi6x8bU1Oc>

The Notable Trees of the National Trust - Arboriculture, Studley Royal

<http://www.youtube.com/watch?v=s-J0dzl43gw>

The Notable Trees of the National Trust - Dizzard Dwarf Wood, North Cornwall

<http://www.youtube.com/watch?v=w2kDMYFp9xI>

The Notable Trees of the National Trust - Crom Yews, Castle Crom, Fermanagh, NI

<http://www.youtube.com/watch?v=luDs5QR4GKs>

The Notable Trees of the National Trust - Plymouth Pear, Lanhydrock

<http://www.youtube.com/watch?v=pSBHmllExo0>



The Notable Trees of the National Trust - Sweet Chestnuts, Croft Castle

<http://www.youtube.com/watch?v=Lh-ph12YUpk>

The Notable Trees of the National Trust - Tolpuddle Martyrs' Trees, Dorset

<http://www.youtube.com/watch?v=G-MVv0zbPs8>

The Notable Trees of the National Trust - The Whitebeams of Cheddar Gorge & Leigh Woods

<http://www.youtube.com/watch?v=xInCcu9r-3g>

The Notable Trees of the National Trust - Ashridge Beech

http://www.youtube.com/watch?v=Z2xp_Qcexpw

Notable Trees of the National Trust - The Ankerwyke Yew

http://www.youtube.com/watch?v=3QG_ODDECJg

The Notable Trees of the National Trust - Borrowdale Yews

<http://www.youtube.com/watch?v=YBZnk2E7v0c>

The World of Ancient Trees - part 1 (UK) <http://www.youtube.com/watch?v=1-tNfDZuhlg>

The World of Ancient Trees - part 2 (UK) <http://www.youtube.com/watch?v=UEUjk-g7mbo>

What are these eggs?

by **jamesrobertsmith** » Sun Mar 04, 2012 11:15 pm

I know this has nothing to do with trees. But I was hiking in the Wilson Creek Recreation Area, NC again today and came upon these. They were in a pothole beside the creek at Hunt Fish Falls. The individual eggs were perfectly round globes, and collected together in huge clusters. I could see the dark embryos inside, but they resemble nothing with which I'm familiar. Frogs? Toads? Salamanders? Could they be some kind of insect?

<http://youtu.be/iRy1s0yMz0o>

The clusters were rather large. About the size of a soccer ball, maybe. Here's an attempt I made to take a closeup of one of the eggs and embryo:



This stream is VERY swift moving water. The eggs were in a pothole beside the creek. Maybe five or six feet from the current. From past experience I think this pothole is under water fairly often. We have a number of salamander species in the Wilson Creek area.

James Robert Smith

Answer: Salamander eggs- species not identified

What's happening in Maine?

by **tonytreeguy** » Mon Mar 05, 2012 12:28 am

Hello fellow tree lovers. I just discovered ENTS. Looking through past postings I see very little interest in the trees in my homestate, Maine. I am an arborist and enjoy climbing. Although Maine does not have the climate to produce national champion trees, we have a register of big trees. I am interested in finding and measuring trees here in the Pine Tree State and would like to make contact with other people with the same.

Anthony Aman

Climbing vs. Laser Rangefinder/ Clinometer Measurements

by **tonytreeguy** » Mon Mar 05, 2012 12:28 am

I am puzzled to see in the tree measurement instructions no mention of climbing to measure the height. Emphasis is made on how important it is to have accurate measurements. Instruments can measure to within a foot it is said. Yet by climbing and dropping a tape or a line, one can measure quite precisely the height of a tree. For my part, it seems far more satisfying and exciting to climb a tree to measure its height. I hope someone more informed than I am can help me understand why climbing is not listed as the preferred method.

Anthony Aman

Climbing vs. Laser Rangefinder/ Clinometer Measurements

by **edfrank** » Mon Mar 05, 2012 12:55 am

Tony, the ground based instruments allow you to measure within a foot. The tree measuring guidelines does include sections about climbing trees to measure them. For many of the biggest we have climbers

climb to the top to make sure we have the tallest point in the crown. There are limitations with climbing as well depending on how thin the upper branches might be, tape stretch, etc. The big difference between the two methods is that it is possible to measure a hundred tree heights in a day with a clinometer and rangefinder, while you can only rig and climb a handful of trees in a day.

Also the physical skill and ability to do the climbing further limits the participation to a much smaller pool of measurers. We like measurements from climbers. Climbers can do tape wraps for volume. They can see details not visible from the ground. There are many aspects of canopy research that can only be done by climbers. But is it the best method for most purposes?

Why laser rather than climbing as the preferred method? The accuracies obtained are comparable. Many more trees can be measured in a shorter amount of time from the ground, and more people can participate in ground based measurements than can participate in tree climbs. A team of people can measure dozens upon dozens of trees in a single cove in a single trip and understand the relationships between and the maximum size ranges for many different species with smaller easily carried instruments.

Maybe one or a few climbs could be made in that same time frame with much more gear to haul in. Even then you would not know if you climbed the tallest trees or even representative trees from the site. You can't really tell, no matter how good you are without the ground based measurements if you have climbed the best trees. You often need to get special permission to climb the tree. There is always a tradeoff in research between the number of data points you can sample and the amount of detail you can expect from each data point. The trade-off tends to favor ground based measurements for all be a limited number situations where climbing will give you something the lasers will not.

I also wanted to say that at this point in time we are working primarily on looking at tree heights as they are so pitifully bad in the forestry literature and guidebooks that they are useless for most scientific

research. We are starting to do more canopy research, and more detailed modeling, and this work will draw more and more upon the climbers in our group. Patty Jenkins with Tree Climbers International just came on board a couple days ago.

Edward Frank

[Climbing vs. Laser Rangefinder/ Clinometer Measurements](#)

by **Andrew Joslin** » Mon Mar 05, 2012 10:39 am

Hi Tony, I'm a climber in Massachusetts who's done a fair amount of tree measuring with the NTS. It is amazing to see how quickly some of the experienced NTS measurers can get a solid height measurement on a forest grown tree. Imagine a mixed grove of white ash and red maple in difficult terrain far from a trail. The grove includes hundreds of trees all competing to get their branches up to the top of the canopy, to make it more challenging some of the biggest diameter trunks will probably not be the tallest trees.

Using their experienced "tree eyes" and scanning with a laser rangefinder a skilled measurer can determine the potential tallest in the grove. Once the candidates are narrowed down the measurers get to work and obtain accurate measurements to determine the heights of the best prospects. Some tall white ash for example are crazy skinny trees, for many there's no way a climber can get close enough to the top to measure from the highest twig, even with an extension pole.

As Ed mentioned the climber comes in when a candidate tall tree like a conifer for example has a difficult "nested" top, almost impossible to sight the actual top twig from the ground. A climber can solve that problem by getting up there and determine the tallest point to help the measurers and drop a tape for further verification.

In comparison measuring sessions NTS using ground-based measuring technique have achieved accuracy within .5" of the tape measurement. And as

Ed also mentioned, a climber is required to do definitive volume measurements on the trunk and limbs to model the volume of an entire tree being studied as part of a research project.

-AJ

[Climbing vs. Laser Rangefinder/ Clinometer Measurements](#)

by **dbhguru** » Mon Mar 05, 2012 11:00 am

Tony, let me add a note or two to what Ed has said. In NTS, we've progressed a long way past the method of measuring tree heights using tape and clinometer. However, by and large, the timber profession and amateur big tree hunters are still locked into the tangent-based method, even to the point of having that error-prone technique built into popular hypsometers so as to perpetuate errors while believing that the distance accuracy of the infrared laser makes everything okay. It is a long story, and I won't go into details here. But what Ed says:

"I also wanted to say that at this point in time we are working primarily on looking at tree heights as they are so pitifully bad in the forestry literature and guidebooks that they are useless for most scientific research."

can't be stressed too much. We need your help to get better tree height numbers for Maine's best. A number of years ago, I visited the Ordway Pines at Norway, Maine. They are quite old. I successfully measured the tallest at around 152 feet. My co-author, the late Bruce Kershner ("Sierra Guide to Ancient Forests of the Northeast"), and a local forester had gotten results close to mine on earlier visits. However, in a newspaper article about the stand, after interviewing Kershner, the reporter checked with the State Forestry establishment about the stand and the particular tree and was assured that trees of that stature no longer grew anywhere in Maine. State Forestry bureaus are notoriously ill-informed about tree heights, and are often the source of misleading/erroneous/outdated information on the topic. However, they live in a bubble and tend to

insulate themselves from outside information. Sometimes the only way to open their eyes is to climb a tree and do a tape drop. We've done that many times here in Massachusetts. So, we don't get public statements any more by DCR foresters challenging our numbers. I'm told that some of them still grumble in their beards and choose not to believe the results we get. Fortunately, others in DCR have their eyes open and vouch for what we're doing. Maybe we can work together to make progress in Maine.

I believe that for a variety of purposes, climbing and doing tape drops will continue to be needed. We hope you can hook up with the big tree climber-researchers in NTS. You'll see Will Blozan, Bart Bouricius, and Andrew Joslin's names a lot. Recently Patty Jenkins joined our ranks. Patty is the Director of Tree Climbers International. Very exciting news. Thanks to Ed's and Andrew's outreach on Face Book and elsewhere, the word is getting out. So welcome aboard.

Robert T. Leverett

New member- Patty Jenkins

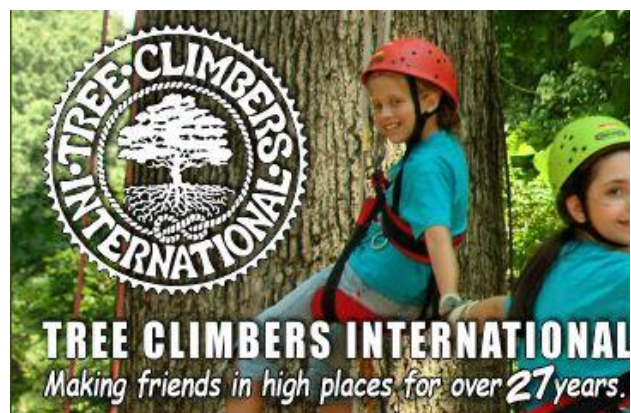
by **pattyjenkins1** » Sat Mar 03, 2012 4:39 pm

Hi everyone. I'm the director of Tree Climbers International, which my husband Peter started in 1983. The tallest tree I climbed was a Sitka spruce on the west coast of Washington State; we slept at 167 feet. I haven't climbed since then (I'm a person who walks on crutches due to having had polio at a very young age). My favorite tree is the American beech, though only by a hair. There are so many beautiful trees that it's hard to choose. My favorite thing to say to non-climbers and skeptics is "Once you climb a tree, you'll never look at trees the same way again." My experience is that tree climbers become tree conservationists.

Looking forward to participating in and learning from lots of the discussions on this board.

Patty Jenkins

Get High / Climb Trees



<http://treeclimbing.com/>

<http://www.facebook.com/TreeClimbersInternationalInc>

Re: Mountains-to-Sea Trail @ Craven Gap, NC

by **bbeduhn** » Mon Mar 05, 2012 10:23 am

Previously reported: Craven Gap is at the intersection of Town Mountain and the BRP. [This is] a fine second growth forest. It has many mature trees, some of great height. The elevation is 3000-3200 feet. It's mostly sloping.

I finally got back to measure this section with no leaves on the trees. A few measurements and a few corrections.

The black oak @ 127' is actually a red oak @ 123.7'. I figured I had those confused. That would be an impressive number for a black oak. The ironwood originally mentioned is black birch.

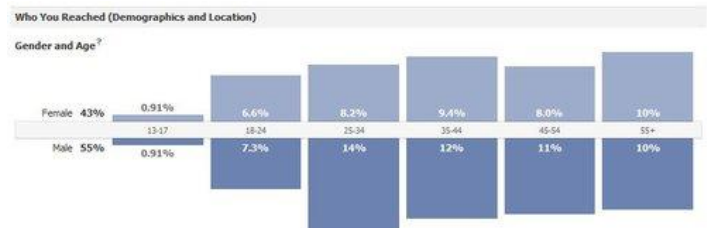
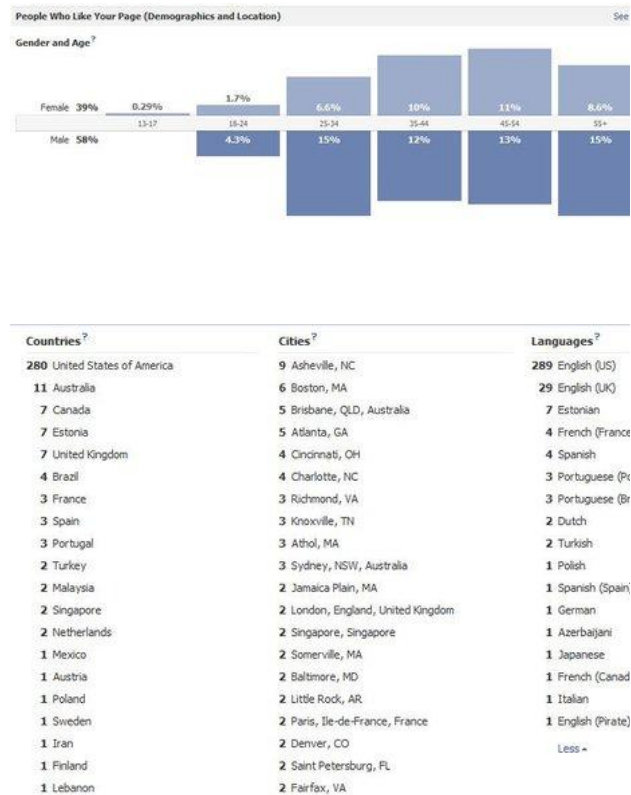
<i>liriodendron tulipifera</i>	tuliptree	138.6'	133.9'
		134.4'	133' 131.8' 131'
<i>quercus rubra</i>	red oak	123.7'	
<i>quercus velutina</i>	black oak	106.9'	
<i>quercus alba</i>	white oak	114.4'	110.5'
<i>fraxinus americana</i>	white ash	121.6'	121'
		119.7'	
<i>carya glabra</i> var. <i>ovata</i>	red hickory	122.6'	117.1'
<i>prunus serotina</i>	blk cherry	114.7'	
<i>robinia pseudoacacia</i>	blk locust	110.2'	110.1'

Brian Beduhn

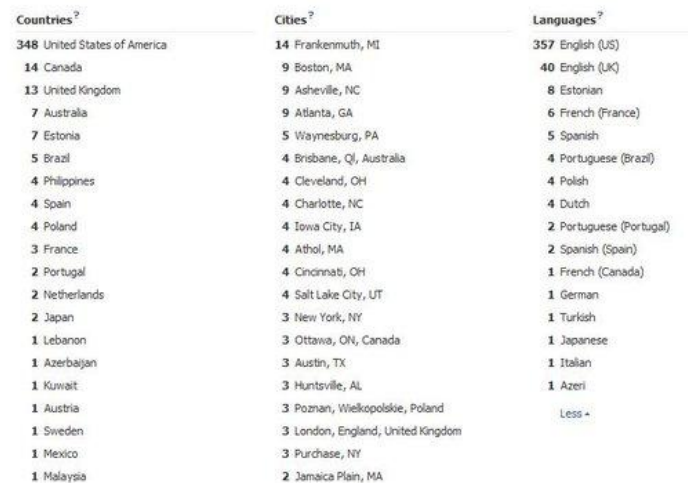
Facebook Insights March 5, 2012

by **edfrank** » Mon Mar 05, 2012 12:49 pm

Facebook provides a series of statistics and graphs about who visits the Native Tree Society Facebook page. I thought I would share the numbers for you. What they mean - I am not so sure about.



Who we are reaching?

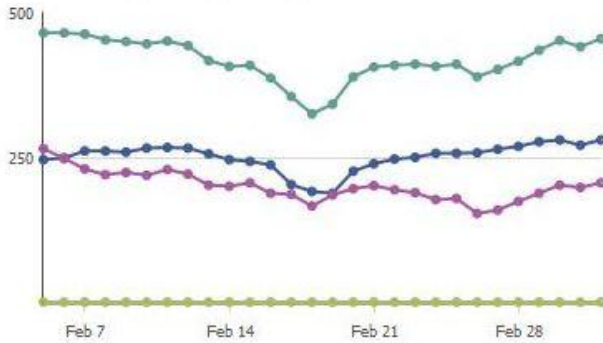


How You Reached People (Reach and Frequency)

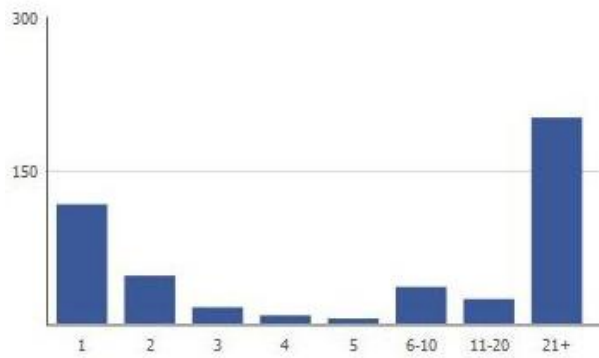
All Page Content ▾

Reach?

☒ Organic? ☒ Paid? ☒ Viral? ☒ Total?



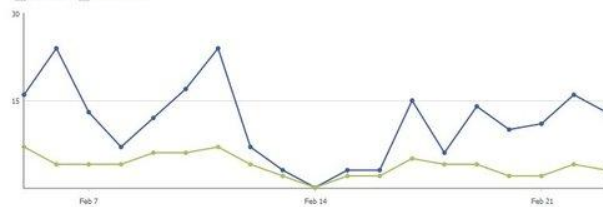
Unique Users by Frequency?



Visits to Your Page

Page Views

☒ Page Views? ☒ Unique Visitors?



Total Tab Views?

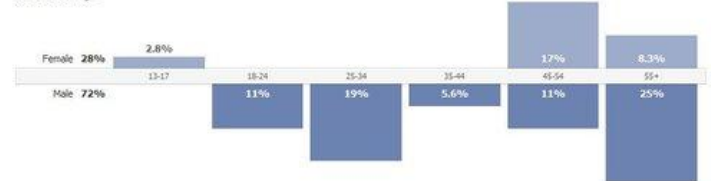
209 Viral
2 Photos
2 RSS for Pages

External Referrers?

11 nativetreetsociety.org
2 google.com

Who Is Talking About Your Page (Demographics and Location)

Gender and Age?



Countries?

30 United States of America
2 Canada
1 Austria
1 Spain
1 Australia
1 United Kingdom

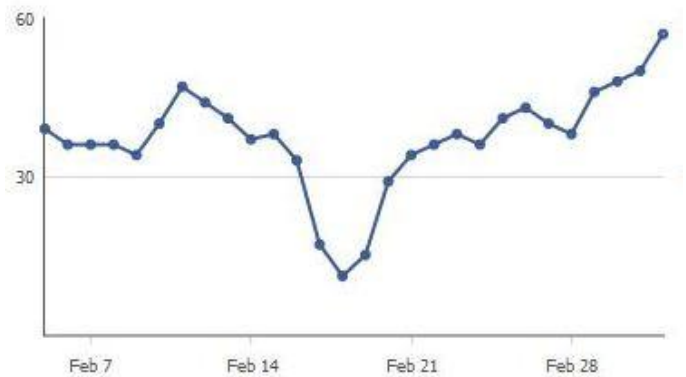
Languages?

31 English (US)
3 English (UK)
1 Spanish (Spain)
1 German

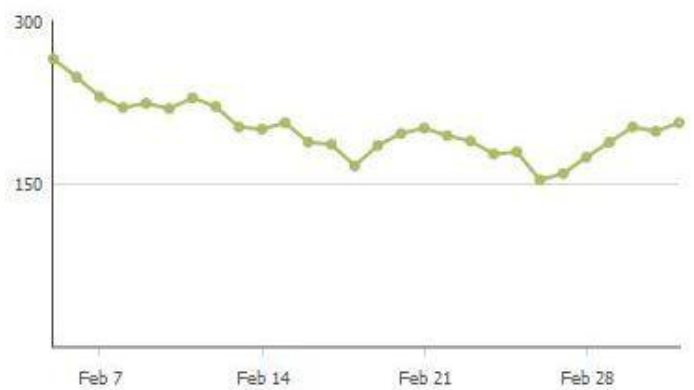
How People Are Talking About Your Page

All Stories ▾

☒ Talking About This?



Viral Reach?



Jack Vance's "Houses of Iszm" and "Son of the Tree"

by **edfrank** » Mon Mar 05, 2012 8:16 pm

Trees in Fiction

There are many fictional stories in which trees play a significant role in the story's plot and progression.

Many of these stories are found in science fiction and fantasy literature. I want to start a discussion of some of these stories by posting a review/commentary on a couple of examples from my collection, and want to encourage others to post similar reviews of fiction, movies, poetry in which trees and forests play a pivotal role. These examples do not need to be a theme that dominates the entire book, but can include colorful passages within scenes from a larger book.

Jack Vance

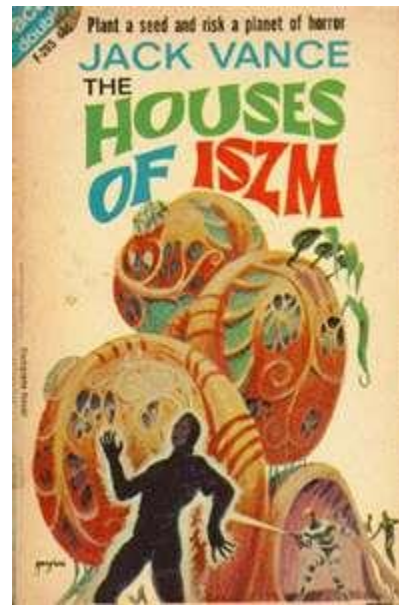
Jack Vance is an American mystery, science fiction, and fantasy author. Most of his work has been published under that name, but he also has used several other pseudonyms. Wikipedia http://en.wikipedia.org/wiki/Jack_Vance summarizes some of his awards: "Among his awards are: Hugo Awards, in 1963 for *The Dragon Masters*, in 1967 for *The Last Castle*, and in 2010 for his memoir *This is Me, Jack Vance!*; a Nebula Award in 1966, also for *The Last Castle*; the Jupiter Award in 1975; the World Fantasy Award in 1984 for life achievement and in 1990 for *Lyonesse: Madouc*; an Edgar (the mystery equivalent of the Nebula) for the best first mystery novel in 1961 for *The Man in the Cage*; in 1992, he was Guest of Honor at the WorldCon in Orlando, Florida; and in 1997 he was named a SFWA Grand Master. A 2009 profile in the New York Times Magazine described Vance as "one of American literature's most distinctive and undervalued voices."

Jack Vance has written some absolutely wonderful stories. The science fiction novels are generally tinged with the flavor of space opera. Many authors have written excellent novels and also have written some real dogs. But with Jack Vance even his lesser

novels are worth a read, and I have always felt I got my monies worth with a Jack Vance novel.

The Houses of Iszm

This story was first published in 1954 in *Startling Stories*, and was expanded to 30,000 words and republished as half of an Ace Double F-265 paired with "The Son of the Tree" also by Jack Vance. Ace Doubles were a series of books where two different novelettes or novellas were published back to back in a single paperback volume.



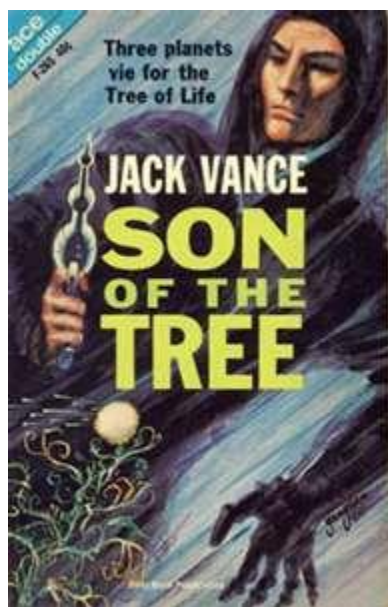
The story is set on the planet Iszm. The natives have over time bred a native "tree" so that when it grows it forms a series of pod rooms, complete with all the furnishings, security, doorways, etc. The Iszic have been growing pod homes for 200,000 years. The secret and origin of growing these homes are very guarded because this is what keeps the planet in business. The native Iszic are paranoid that people are going to steal a female tree that could produce millions of seeds. This would allow the thieves to grow their own homes, breaking the lucrative monopoly held by the Iszic. The protagonist is a botanist from Earth, named Ailie Farr, that becomes caught up in the intrigues surrounding attempts to steal a female tree.

A few passages give a feel for the novel, "*From a distance, it seemed simple to steal a house. A seed no*

larger than a grain of barley...” “Here the humbler casts lived I modest three-pod houses growing in rows with strips of hot sand between the dwellings.

These houses were neutral in color, a brownish gray-green with a central tuft of large leaves casting black shade over the pods.” By contrast the higher class houses were giant complexes with dozens of rooms and every amenity. The novel is fast paced, filled with intrigue, and certainly worth reading.

Son of the Tree



This story was first published in Thrilling Wonder stories in 1951. The novelette was expanded to 31,000 words and republished as an Ace Double F-265 paired with the Houses of Iszm. The story follows the activities of Joe Smith, a traveler passing through the system. The world is called Kyril and is dominated by a Druid hierarchy of about two million people, and a laity numbering close to five billion peasants. In this theocracy the object of worship is a giant tree called the “Tree of Life.” The trunk of the tree is five miles in diameter and the top soars to a height of twelve miles. The Druids of Kyril, and the Mang, a race native to the nearby planet of Mangtse are vying for control of third nearby world just rising to civilization. Joe Smith becomes entrapped in the intrigue among the parties and associated with the Druid Princess Elfane, and Hableyat a spy for the Mangtse.

A vast breathing sappy mass, a trunk five miles in diameter, twelve miles from the great kneed roots to the ultimate bud- the “Vital Exprescience” in the cant of the Druids. The foliage spread out and fell away on limber boughs, each as thick as the Thearch’s palace, hung like the thatch on an old-fashioned hay ride. The leaves were roughly triangular, three feet long – bright yellow in the upper air, darkening through lime, green, rose, scarlet, blue-black toward the ground. The tree ruled the horizons, shouldered aside the clouds, wore thunder and lightning like a wreath of tinsel. It is the soul of life, raw life, trampling ad vanquishing the inert, and Joe understood well how it had came to be worshipped by the first marveling settlers on Kyril.

The great tree in the movie Avatar is but an upstart sprout in comparison to the “Tree of Life” in this novel. Again the novel is fast paced, easy to read, and full of intrigue. Perhaps both novels suffer to a degree in being bound back to back in the Ace Double as they have a similar story structure, but still I recommend both books.

Edward Frank

[Good online field guide for southern pines?](#)

by **samson'sseed** » Mon Mar 05, 2012 9:50 am

Is there a good online field guide for southern pines?

I'm planning on visiting the Moody Forest Preserve near Baxley, Georgia later this spring. There's supposed to be a virgin open pine savannah at that locality along with sandhill habitat and cypress swamps.

I've gotten pretty good at distinguishing between shortleaf and loblolly pine but have never noticed slash and longleaf pine in Augusta. Those 2 should be common where I'm planning on going.

Re: Good online field guide for southern pines?

by **Chris** » Tue Mar 06, 2012 11:15 pm

These two do a pretty good job of showing differences in those two species.

<http://www.duke.edu/~cwcook/trees/pipa.html>

<http://www.duke.edu/~cwcook/trees/piel.html>

But I don't really like the bark for Slash. I find the "orange" bark sections are larger, more prominent [see the below from Will]



issues and general habitat [Longleaf on higher, drier, sandy places with more grass layer, Slash is lower, wetter, palmetto scrub. Compare these bottom two



Slash Pine in Osceola National Forest, Florida



Longleaf Pine Weymouth Woods, NC

Chris Morris

There are also some less well describable "form"

[Re: Good online field guide for southern pines?](#)

by **Larry Tucei** » Thu Mar 08, 2012 1:34 pm

Samson, When you are around the Slash and Longleaf Pines you can easily distinguish the two. Slash and LL have totally different bark characteristics. LL gray and scaly. Slash orange to brown plates like in Ryans photo. The needles on the Slash are a shorter than the LL. The cones are also way different. Slash are 4-6" long while LL can be 8-12". Crown strutures are also different. I hope this helps. The Longleaf Alliance has some great info on that species. <http://www.longleafalliance.org/>



Needles



Longleaf Bark

Larry Tucei

[Re: Good online field guide for southern pines?](#)

by **Jess Riddle** » Thu Mar 08, 2012 10:41 pm

Samson, the Moody tract is an absolutely wonderful site! I hope you have multiple days for your visit.

Most of the floodplain is hardwood dominated, although there are still a few sloughs with the original cypress. Old tupelos are more common, some with enourmous swollen bases over eight feet in diameter, and some of the slightly drier areas have impressive oaks. Some small species, like buttonbush, reach exceptional sizes at the site, and are impressive in their own right. In addition to the pine species you mention, there are a few spruce pine in the floodplain and along the blough.

My favorite resource for identifying plants in the area is Weakley's Flora, a free download at <http://www.herbarium.unc.edu/flora.htm>. It's a bit technical for some people's taste, though still easier to use than many of the older state flora's, so you might want to check Virginia Tech's dendrology pages too.

Jess Riddle