

BREAKTIME

The Newsletter of the Tree Failure Report Program

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**1994 Tree Failure Report Program Annual Meeting Highlights
and
Literature Listing**

The 1994 CTRFP Annual meeting was, to continue a tradition, pleasant, rewarding, and informative.

Several requests after the meeting for further information relevant to the topics presented prompted this meeting follow up letter. Each speaker at the meeting provided us with several selected literature references. In this way, cooperators and others that were not able to attend the meeting may also benefit from the information shared there.

Larry Costello put together an excellent program again this year. Meeting plans got a bit hectic at the last minute as R.S.V.P.'s exceeded the capacity of our intended meeting site. Larry quickly procured Tilden Park's beautiful Brazilian Room to accommodate all. Many thanks to East Bay Regional Park District for accommodating our meeting on short notice.

Meeting Review and Speaker's References
Welcome and TFR Program Status Report

Dr. Larry Costello opened the meeting and initiated the tradition of each member of the audience introducing themselves. With a full house of approximately 200 people, it took a little while, but it was very interesting for all to get a feel for who was present. The geographical range for the audience spanned from Los Angeles and San Diego to Redding, and East to Tucson, Arizona. The audience was made up of independent arborists, consulting arborists, city tree managers, landscape architects, Forestry Service personnel and academic professionals.

Dr. Alison Berry provided a historical perspective of the development of the California Tree Failure Report Program, some member statistics, current research, and program development news.

The late Lee Paine of the Forest Service had initiated a tree failure report program for trees occurring within Forest Service grounds, eventually accumulating close to 20,000 reports (stored on computer punch tape and recently converted to a database file by Dr. Berry). Dr. Berry, Dr. Costello, and Dr. Richard Harris developed a survey form and database with fields of interest for urban arboricultural hazard and site assessment in 1987. The CTRFP now has 457 members on the mailing list in 12 states, with one in B.C. and two in New Zealand. The number of reports in the database is now 1356, and 2000 report forms and return envelopes have been distributed to cooperators since summer 1993.

Recent CTRFP work includes an evaluation of the structural failure patterns of Monterey pine (in press), revision of the failure report form, development of The Guide to the Tree Failure Report Form, initiation of an information access pager number, response to individual information requests, new cooperator recruitment, and support research for lectures and CTRFP presentations at arboricultural meetings.

Literature:

- Costello, L.R. and A.M. Berry. 1991. *The California Tree Failure Report Program: An Overview*. Journal of Arboriculture. 17(9):250-255
- Johnson, D.W. 1981. *Tree Hazards: recognition and reduction in recreation sites*. USDA Forest Service. Forest Pest Management Technical Report R2-1.
- Paine, Lee A. 1967. *Effective tree hazard control on forested recreation sites; losses and protection costs evaluated*. Pacific Southwest Forest Range and Experiment Station. U.S. Forest Service Note PSW-157.
- Paine, Lee A. 1971. *Accident hazard evaluation and control decisions on forested recreation sites*. USDA Forestry Research Paper PSW-68.

Nelda Matheny

Detection and Evaluation of Wood Decay

Nelda Matheny presented a thorough survey of tree decay detection methods, ranging from sounding with a mallet to using long small drills and inspecting the wood chips, electric and soundwave resistance methods, to a new device that plots resistance of a tiny drill as it enters the wood. She reviewed some formulas in use for estimating wood strength loss as a function of decay, and outlined some of the unknown factors that make consistent, reliable strength estimation so difficult.

Literature

- Matheny, N.P. and J.R. Clark. 1994. *A photographic guide to the evaluation of hazard trees in urban areas*. 2nd ed. International Society of Arboriculture Savoy Il. pp. 22-31
- Smiley, E.T. and B.R. Fraedrich. 1992. *Determining strength loss from decay*. Journal of Arboriculture 18(4):201-204
- Mattheck, C., K. Bethge, and D. Erb. 1993. *Failure criteria for trees*. Arb. Journal 17:201-209.
- Coder, K.D. 1989. *Should or shouldn't you fill tree hollows?* Grounds Maintenance. Sept. pp. 68-73,100.
- Zabel, R.A. and J.J. Morrell. 1992. *Wood microbiology: Decay and its prevention*. Academic Press, Inc. pp.365-378.

Dr. Wayne Wilcox

Incipient Decay - What It Is and Why It Is Important

Significant strength loss in wood can occur before decay organisms ever develop to a stage visible to the naked eye. Dr. Wilcox described the severity of strength loss that can be associated with stages of incipient decay. He illustrated the modes of action of various decay organism classes, such as cellulose or lignin degradation, using slides made possible with specialized microscopy and lighting techniques.

Literature

- Wilcox, W.W. 1986. *Wood: Decay During Use*. pp. 5412-5416. In Encyclopedia of Materials Science and Engineering (M.B. Bever, ed.), Pergamon Press Ltd.
- Wilcox, W.W. 1993. *Comparative morphology of early stages of brown-rot wood decay*. IAWA Journal, Vol. 14(2):127-138.
- Wilcox, W.W. 1993. *Comparison of scanning electron microscopy and light microscopy for the diagnosis of early stages of brown rot wood decay*. IAWA Journal, Vol. 14(3):219-226.

Patricia Lindsey

Landscape Design Considerations in Reducing Tree Failure Potential

Many urban tree failures are the direct result of landscape designs or installations that fail to fulfill the physical, water, gas exchange, or expansion needs of the tree. Pat Lindsey demonstrated some typical oversights in the urban landscape and offered some solutions to tree failure at the design stage. Elimination of the standard afterthought 4x4' planting pit in favor of tree beds, permeable load bearing surfaces and/or planting mixes, careful consideration to aboveground space/light/intended use requirements, design alternatives to constricting grates and cages, and plant selection were some areas she explored.

Literature

- Mall, G. and J. Urban. 1989. *Designing the Ecological City - Giving trees room to grow*. American Forests May/June 1989. pp 61-64.
- Bassuk, N. and T. Whitlow. 1988. *Environmental Stress - Street trees*. Arboricultural Journal V12 pp 195-201.
- Urban, J. 1992. *Bringing order to the technical dysfunction within the urban forest*. J.Arboric. 18(2)85-90.
- Urban, J. 1989. *New Techniques - Urban tree planting*. J.Arboric. 15(11) 281-284.
- Craul, Phillip. 1992. *Urban Soil in Landscape Design*. John Wiley & Sons. New York, NY.
- Arnold, Henry. 1993. *Trees in Urban Design*. Van Nostrand Reinhold Co. New York, NY.

Roger Edberg

Oak failures - Analysis of Reports in the CTRFP Database

Coast Live Oak (*Quercus agrifolia*) is the third most frequently-reported species to the CTRFP and the most frequently reported hardwood. Database research has already focused on a frequently reported conifer species, *Pinus radiata*, so the second subject of a "failure profile" - an examination of the tree structure, site, weather, and management practices associated with trunk, root, or branch failures of a particular species - will be the Coast Live oak. The most apparent features of Coast live oak failures were: an unusually high proportion

of root failures (44%), a high proportion of root failures occurring in saturated soil, tendency for trunk failures to occur low on the trunk, a peak of failures in March, and a high association of all types of failure with decay.

Literature (Roger Edberg, cont'd.)

Breaktime V5(2). November 1993. *Failure Patterns of Quercus agrifolia*.

Swiecki, T.J., Bernhardt, E.A. and R.A. Arnold. 1990. *Impacts of Diseases and Arthropods on California's Rangeland Oaks*. Department of Forestry and Fire Protection, Forest and Rangeland Resources Assessment Program. Sacramento, CA

Stephen Quarles

Methods Used to Determine Strength Properties of Wood

Dr. Quarles described some parameters of wood strength: tension, compression, shear, and bending. He illustrated standard laboratory techniques for measuring each of these parameters, and also presented work in progress on an instrument designed to measure percentage of decay in standing telephone poles. These lecture topics were followed by an action video of wood strength testing techniques and the decay meter in use at the Forest Products Laboratory.

Literature

Wood Handbook: Wood as an Engineering Material. rev 1987. USDA Forest Service Agricultural Handbook 72. 466p.

1993 Annual Book of ASTM Standards. Section 4: Construction Volume 04.09, Wood. American Society for Testing and Materials.

Haygreen, J.G. and J.L. Bowyer. *Forest Products and Wood Science*. An Introduction. The Iowa State University Press. Ames, Iowa.

Bodig, J. and B.A. Sayne. *Mechanics of Wood and Wood Composites*. Van Nostrand Reinhold Company, New York.

CTFRP NEWS - Cooperator Suggestions

Tree Failure Report Forms are now 3 hole punched - suggested by Ted Elder, Elder & Elder, Ltd.

(19) Soil in tree vicinity (choose up to two, in order of importance) - and an additional line for choice # will replace the one choice limitation of before - suggested by Deborah Ellis, Horticultural Consultant.

TREES - a thought shared by J.R.Burgin

TREES

A tree's just a tree
Some will say,
To make boards for homes
And ski's for play;
For shade in the summer
And fuel when it's cold,
To be used by man,
Whether young or old.

Trees are topped and chopped,
to keep them small,
And cursed for dropping
Their leaves in the fall,
They're utterly silent,
As they stand so tall,
Abused by their keepers,
Until they fall.

When they grow into wires,
They're trimmed into a "V",
So they won't interfere
With you and me.
When they fall on a house
Because of abuse
Listen to the people,
As all hell breaks loose.

God put trees here,
In charge of man,
To feed us and shade us,
All over the land.
The oak and the redwood
Standing so tall,
The fruits and the Nuts
And the Dogwood small.

If there weren't any trees
There'd be nothing to climb,
Or build a tree house
Or tie your hammock with
twine.
So, take care of our trees
When you're out to play,
And think of this....
Have you hugged a tree
today?

by J.R.Burgin