SUSTAINABLE STRATEGIES
Plant Selection for San Diego’s Changing Ecosystems
SUSTAINABLE STRATEGIES
Plant Selection for San Diego’s Changing Ecosystems

1:30 - 3:00
INTRODUCTION:
MICHELLE LANDIS

HOW TO GROW / SPECIFY HEALTHY TREES:
BRIAN KEMPF – Urban Tree Foundation –
Wood Architecture

RELIABLE LOW WATER PLANTS:
SUZIE WIEST- Village Nurseries

REGIONAL PESTS:
NICK BASINSKI– County of SD Agriculture Dept.

DESIGN / CONSTRUCTION TECHNIQUES FOR
EXISTING TREES IN NEW LANDSCAPES:
VINCE MIKULANIS– Davey Resource Group –
Community Forestry Advisory Board – San Diego
Urban Forests Council

3:00-3:30
QUESTIONS AND COMMENTS
Panelists and Audience Discussion

3:30-4:30
NETWORKING & SOCIAL HOUR
Tree Central Leaders:
Proper nursery practices, specification and correction

Brian Kempf – Urban Tree Foundation, Wood Architecture
ACCEPTABLE

One central leader (No codominant leaders)

Aspect ratio is less than 0.66.

Example

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Aspect Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50&quot;</td>
<td>0.50&quot;</td>
<td>3.00</td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>1.00&quot;</td>
<td>2.50</td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>1.63&quot;</td>
<td>1.56</td>
</tr>
</tbody>
</table>

Aspect ratio of B/A less than 0.66 as measured 1" above the top of the branch union.

REJECTABLE

Multiple leaders (Several codominant leaders)

Aspect ratio is greater than 0.66.

Example

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Aspect Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50&quot;</td>
<td>1.80&quot;</td>
<td>1.39</td>
</tr>
<tr>
<td>2.00&quot;</td>
<td>2.00&quot;</td>
<td>1.00</td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>2.00&quot;</td>
<td>1.25</td>
</tr>
<tr>
<td>4.00&quot;</td>
<td>3.00&quot;</td>
<td>1.33</td>
</tr>
</tbody>
</table>

Aspect ratio of B/A greater than or equal to 0.66 as measured 1" above the top of the branch union.

Notes:

1- Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union.

2- Any tree not meeting the crown observations detail may be rejected.
Structural Pruning
A GUIDE FOR THE GREEN INDUSTRY

Edward F. Gilman
Brian Kempf
Nelda Matheny
Jim Clark
One central leader (No codominant leaders)

Aspect ratio is less than 0.66.

ACCEPTABLE

Multiple leaders (Several codominant leaders)

Aspect ratio is greater than 0.66.

REJECTABLE

Aspect ratio of B:A less than 0.66 as measured 1" above the top of the branch union.

<table>
<thead>
<tr>
<th>Example</th>
<th>A</th>
<th>B</th>
<th>Aspect Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50&quot;</td>
<td>0.50&quot;</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>0.90&quot;</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>2.0&quot;</td>
<td>1.03&quot;</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>1.63&quot;</td>
<td>0.64</td>
<td></td>
</tr>
</tbody>
</table>

Aspect ratio of B:A greater than or equal to 0.66 as measured 1" above the top of the branch union.

<table>
<thead>
<tr>
<th>Example</th>
<th>A</th>
<th>B</th>
<th>Aspect Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50&quot;</td>
<td>1.89&quot;</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>2.0&quot;</td>
<td>2.0&quot;</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2.50&quot;</td>
<td>2.0&quot;</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>4.0&quot;</td>
<td>3.0&quot;</td>
<td>0.75</td>
<td></td>
</tr>
</tbody>
</table>

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CROWN OBSERVATIONS - LOW BRANCHED
ACCEPTABLE

Aspect ratio is less than 0.66.

REJECTABLE

Aspect ratio is greater than 0.66.

Notes:
1. Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1” above the top of the branch union.

2. Any tree not meeting the crown observations detail may be rejected.
Notes:
1. Trees shall be of quality prescribed in crown observations and root observations details and specifications.
2. See specifications for further requirements related to this detail.

Central leader. (See crown observations detail).

Root ball surface shall be positioned to be one-quarter above finished grade.

Prior to mulching, lightly tamp soil around the root ball in 6" lifts to brace tree. Do not over compact. When the planting hole has been backfilled, pour water around the root ball to settle the soil.

Existing site soil added to create a smooth transition from the top of the raised root ball to the finished grade at a 15% max. slope.

4" layer of mulch. No more than 1" of mulch on top of root ball. (See specifications for mulch).

Original grade.
Finished grade.

Loosened soil. Dig and turn the soil to reduce compaction to the area and depth shown.

Existing soil.

Trunk caliper shall meet ANSI Z60 current edition for root ball size.

Root ball modified as required.

Round-topped soil berm 4" high x 8" wide above root ball surface shall be constructed around the root ball. Berm shall begin at root ball periphery.

Bottom of root ball rests on existing or recompacted soil.

SECTION VIEW

3x widest dimension of root ball.
Guideline Specifications for Nursery Tree Quality

Selecting Quality Nursery Stock

A committee comprised of municipal arborists, urban foresters, nurserymen, U.C. Cooperative Extension horticultural advisors, landscape architects, non-profit tree groups, horticultural consultants, etc., developed the attached specifications to ensure high quality landscape trees. After more than a year of work, they succeeded in drafting a document entitled Specification Guidelines for Container-grown Trees for California. This document will be published and the guidelines promoted throughout the nursery and landscape industry. Its intent is to help landscape professionals develop their own comprehensive and detailed specifications to ensure that they obtain high quality container-grown nursery trees. The document is also intended to help nursery professionals in their efforts to improve the quality of trees grown in California. These specifications can be modified for specific situations.

The following people worked on the Guideline Specifications for Nursery Tree Quality:

David Burger, UC Davis Department of Plant Sciences
Barrie Coate, Consulting Arborist, Los Gatos
Larry Costello, UC Cooperative Extension, Half Moon Bay
Robert Crudup, Valley Crest Tree Company, Sunol
Jim Geiger, US Forest Service, Pacific South West Region
Bruce Hagen, California Department of Forestry and Fire Protection, Santa Rosa, Retired
Richard Harris, Professor Emeritus, UC Davis Department of Plant Sciences
Brian Kempf, Urban Tree Foundation, Visalia
Jerry Koch, City of Berkeley Division of Urban Forestry, Retired
Bob Ludekens, L. E. Cooke Company, Visalia
Greg McPherson, US Forest Service, PSW Research Station, Center for Urban Forest Research
Martha Ozonoff, California ReLeaf, Davis
Ed Perry, UC Cooperative Extension, Stanislaus County
Markio Robert, Caltrans LDA Maintenance Division, Oakland

Illustrations:
For more information contact Brian Kempf 530-777-0551 or brian@urbanreef.org
Strategies for growing a high quality root system, trunk and canopy in a container nursery

Acknowledgments

Steering Committee: Dave Cox, LE Cooke Nursery; Haydi Boething Danielson, Boething Treeland Farms; Thomas Fetch, LE Cooke Nursery; Michael Frantz, Frantz Wholesale Nursery; Mark Marriott, Village Nurseries; John Serviss, Valley Crest Tree Co.; Sal Soriano, Monrovia; Chris Terry, Dave Wilson Nursery; Roger van Klaveren, Generation Growers.

Reviewers: Dr. Jim Clark, Hortscience Inc.; Dr. Laurence R. Costello, University of California Cooperative Extension; Sam Doane, J. Frank Schmidt & Son Co.; Bruce Hagen, California Department of Forestry and Fire Protection, Retired; Dr. Richard W. Harris, Professor Emeritus, University of California, Davis; Mark A. Halcomb, University of Tennessee Area Nursery Specialist Extension; Bruce Hammersmith, Skinners Nursery; Gordon Mann, Mann Made Resources; Michael D. Marshall, Marshall Tree Farm; John Melvin, California Department of Forestry and Fire Protection; Dave Muffy, Oaktopia.net; Dr. Daniel Struve, Ohio State University; Dennis Swartzell, Horticulture Consultants, Inc.; Dr. Gary Watson, Morton Arboretum; Keith Warren, J. Frank Schmidt & Son Co.

This document was funded in part by a grant from the California Department of Forestry and Fire Protection.

Draft 2009
Additional Information:

Select ‘Low-Water’ Plants for MWELO Compliance

Suzie Wiest, Village Nurseries
August 4, 2017
Founded in 1976 and offering nearly 1,000 acres of the West’s most varied and complete inventory of trees, shrubs, and perennials, Village is your single source for landscape material.

Partnerships developed with top breeders keep Village on the leading edge with the latest and most improved plant introductions.

- **8 Growing Grounds** from Sacramento to San Diego provide the full spectrum in micro-climates allowing us to supply fully acclimatized and top quality plant material.

- **4 Landscape Centers** in Huntington Beach, Orange, San Diego, and Sacramento
Good News for New Introductions!!!

Although there is not a current method of adding plants onto the WUCOLS list, the regulation wording has been modified and is not quite as restrictive as in the original version. It now says …

23 CCR § 492.4 - § 492.4. Water Efficient Landscape Worksheet.
(b) Water budget calculations shall adhere to the following requirements:
(1) The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR).
Reports are available at: http://ccuh.ucdavis.edu/Resources/plant-trials

UC Davis Irrigation Field Trials for Landscape Plants
Bouteloua gracilis ‘Blonde Ambition’ (PP# 22,048)

WUCOLS classification for the species is “Low”; 2017 UC Water Trials -“Low”
Ceanothus maritimus ‘Valley Violet’

WUCOLS classification for Regions 3 and 4 – “Low”; UC Water Trials – “Low”
Laurus nobilis ‘MonRik’ Little Ragu® (PP# 25,915)
Lomandra longifolia Platinum Beauty™ (PP# 25,962)

Included in the 2017 Irrigation Trial – observed as “Low” water use
Muhlenbergia capillaris ‘Irvine’ Plumetastic™ (PPAF)

- To be included in the 2018 field trials; sponsored by Village Nurseries
Penstemon heterophyllus ‘Margarita BOP’

WUCOLS classification in Regions 3 and 4 - “Low”; UC Davis Water Trials – “Low”
Salvia clevelandii ‘Winifred Gilman’

WUCOLS classification in Region 3 is “Low” and 4 - “Very Low”
Verbena lilacina ‘De La Mina’

WUCOLS classification in Regions 3 and 4 - “Low”
Emerging Wood Pests in San Diego County: How land managers can detect and respond to pests

Nick Basinski, San Diego County Department of Agriculture, Weights & Measures
Invasive Shothole Borer Beetle and Fungi

Adult female: 1.8-2.5 mm long

Adult male: 1.5 mm long

Fusarium euwallaceae

Graphium sp.

Acremonium sp.

Photos | top: Gevork Arakelian/LA County Dept of Agriculture; bottom: Akif Eskalen/UC Riverside
Shothole Borer Infestation in Tijuana River Valley, November 2015
Signs and Symptoms

(a) Round entry/exit hole ~0.85 mm in diameter  
(b) staining beneath bark  
(c) bark staining  
(d) gumming  
(e) frass  
(f) sugary exudate

Photos | a, c: Monica Dimson/UCCE Orange County; b, d: Akif Eskalen/UC Riverside
Infested Sycamore tree in UCI

24” 60cm

7” 18cm
<table>
<thead>
<tr>
<th>#</th>
<th>Plant Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Box elder</td>
<td><em>Acer negundo</em></td>
</tr>
<tr>
<td>2</td>
<td>Big leaf maple</td>
<td><em>Acer macrophyllum</em></td>
</tr>
<tr>
<td>3</td>
<td>Evergreen maple</td>
<td><em>Acer paxii</em></td>
</tr>
<tr>
<td>4</td>
<td>Trident maple</td>
<td><em>Acer buergerianum</em></td>
</tr>
<tr>
<td>5</td>
<td>Japanese maple</td>
<td><em>Acer palmatum</em></td>
</tr>
<tr>
<td>6</td>
<td>Castor bean</td>
<td><em>Ricinus communis</em></td>
</tr>
<tr>
<td>7</td>
<td>California sycamore</td>
<td><em>Platanus racemosa</em></td>
</tr>
<tr>
<td>8</td>
<td>Mexican sycamore</td>
<td><em>Platanus mexicana</em></td>
</tr>
<tr>
<td>9</td>
<td>Red willow</td>
<td><em>Salix laevigata</em></td>
</tr>
<tr>
<td>10</td>
<td>Avocado</td>
<td><em>Persea americana</em></td>
</tr>
<tr>
<td>11</td>
<td>Mimosa/Silk tree</td>
<td><em>Albizia julibrissin</em></td>
</tr>
<tr>
<td>12</td>
<td>English oak</td>
<td><em>Quercus robur</em></td>
</tr>
<tr>
<td>13</td>
<td>Coast live oak</td>
<td><em>Quercus agrifolia</em></td>
</tr>
<tr>
<td>14</td>
<td>London plane</td>
<td><em>Platanus x acerifolia</em></td>
</tr>
<tr>
<td>15</td>
<td>Fremont cottonwood</td>
<td><em>Populus fremontii</em></td>
</tr>
<tr>
<td>16</td>
<td>Black cottonwood</td>
<td><em>Populus trichocarpa</em></td>
</tr>
<tr>
<td>17</td>
<td>White alder</td>
<td><em>Alnus rhombifolia</em></td>
</tr>
<tr>
<td>18</td>
<td>Titoki</td>
<td><em>Alectryon excelsus</em></td>
</tr>
<tr>
<td>19</td>
<td>Engelmann oak</td>
<td><em>Quercus engelmannii</em></td>
</tr>
<tr>
<td>20</td>
<td>Cork oak</td>
<td><em>Quercus suber</em></td>
</tr>
<tr>
<td>21</td>
<td>Valley oak</td>
<td><em>Quercus lobata</em></td>
</tr>
<tr>
<td>22</td>
<td>Coral tree</td>
<td><em>Erythrina coralloidendron</em></td>
</tr>
<tr>
<td>23</td>
<td>Blue palo verde</td>
<td><em>Cercidium floridum</em></td>
</tr>
<tr>
<td>24</td>
<td>Palo verde</td>
<td><em>Parkinsonia aculeata</em></td>
</tr>
<tr>
<td>25</td>
<td>Moreton Bay chestnut</td>
<td><em>Castanospermum australe</em></td>
</tr>
<tr>
<td>26</td>
<td>Brea</td>
<td><em>Cercidium sonorae</em></td>
</tr>
<tr>
<td>27</td>
<td>Mesquite</td>
<td><em>Prosopis articulata</em></td>
</tr>
<tr>
<td>28</td>
<td>Weeping willow</td>
<td><em>Salix babylonica</em></td>
</tr>
<tr>
<td>29</td>
<td>Chinese holly</td>
<td><em>Ilex cornuta</em></td>
</tr>
<tr>
<td>30</td>
<td>Camellia</td>
<td><em>Camellia semiserrata</em></td>
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<tr>
<td>31</td>
<td>Acacia</td>
<td><em>Acacia spp.</em></td>
</tr>
<tr>
<td>32</td>
<td>American sweetgum</td>
<td><em>Liquidambar styraciflua</em></td>
</tr>
<tr>
<td>33</td>
<td>Red flowering gum</td>
<td><em>Eucalyptus ficifolia</em></td>
</tr>
<tr>
<td>34</td>
<td>Japanese wisteria</td>
<td><em>Wisteria floribunda</em></td>
</tr>
<tr>
<td>35</td>
<td>Goodding's black willow</td>
<td><em>Salix gooddingii</em></td>
</tr>
<tr>
<td>36</td>
<td>Tree of heaven</td>
<td><em>Alianthus altissima</em></td>
</tr>
<tr>
<td>37</td>
<td>Kurrajong</td>
<td><em>Brachychiton populneus</em></td>
</tr>
<tr>
<td>38</td>
<td>Black mission fig</td>
<td><em>Ficus carica</em></td>
</tr>
<tr>
<td>39</td>
<td>Japanese beech</td>
<td><em>Fagus crenata</em></td>
</tr>
<tr>
<td>40</td>
<td>Shiny xylosma</td>
<td><em>Xylosma congestum</em></td>
</tr>
<tr>
<td>41</td>
<td>Mimosa/Silk tree</td>
<td><em>Albizia julibrissin</em></td>
</tr>
<tr>
<td>42</td>
<td>Draft coral tree</td>
<td><em>Erythrina humeana</em></td>
</tr>
<tr>
<td>43</td>
<td>Black poplar</td>
<td><em>Populus nigra</em></td>
</tr>
<tr>
<td>44</td>
<td>Black Willow</td>
<td><em>Salix nigra</em></td>
</tr>
<tr>
<td>45</td>
<td>And the list keeps growing</td>
<td></td>
</tr>
</tbody>
</table>

* Native Species
Cultural Control and Sanitation

- Tree removal
- Treatment of slash and debris
- Chipping or grinding
- Solarization and composting
- Firewood movement
Goldspotted Oak Borer (GSOB)
(*Agrilus auroguttatus*).

Photos | Tom Coleman, PhD/USDA Forest Service-Forest Health Protection
GSOB hosts in California

(a) Coast live oak, *Quercus agrifolia*  
(b) California black oak, *Q. kelloggii*  
(c) Canyon live oak, *Q. chrysolepsis*  
(d) Englemann oak, *Q. engelmanni*

Photos | Tom Coleman, PhD/USDA Forest Service-Forest Health Protection
GSOB injury across several size classes

- **<10" DBH**
  - 30% injured by GSOB
  - 6% dead with GSOB injury

- **10-20" DBH**
  - 61% injured by GSOB
  - 8% dead with GSOB injury

- **20-30" DBH**
  - 77% injured by GSOB
  - 26% dead with GSOB injury

- **>30" DBH**
  - 85% injured by GSOB
  - 40% dead with GSOB injury

DBH=tree diameter at breast height
Symptoms/Evidence of Attack

- Branch dieback
- Crown thinning
- Staining
- Woodpecker feeding
GSOB exit holes

Oak Borer (GSOB)
at to oaks in California

Exit Hole
Combining management options into an effective and environmentally sensitive approach to managing GSOB

Integrated pest management (IPM)

Monitoring and Surveying

Insecticide use

Removal of infested trees

Restoration
Managing GSOB-infested wood

- Grinding
- Bark Removal
- Seasoning
- Tarping
Infested wood treatment and utilization
The danger posed by infested wood:

This amount of bark produced...

...168 beetles
South American Palm Weevil
www.dontmovefirewood.org

AYUDA A DETENER LA RESEMINACIÓN DE INSECTOS INVASIVOS Y ENFERMEDADES INVASIVAS

El Escarabajo barrenador del Roble con Manchas Doradas (GSOB) es un insecto invasivo. Se introdujo al condado de San Diego por la leña no nana. Ha matado miles de robles. Ha afectado parques, bosques y áreas residenciales. GSOB podría matar millones de robles en California. Inorraine para que pueda ayudar a las agencias locales, estatales y federales a prevenir que esta peste se propague. Aprenda acerca de GSOB en la página de internet www.gsoob.org.

COMO USTED PUEDE AYUDAR:
• Deja la leña en casa – no mueva madera a los parques ni los caminates
• Compre la leña en áreas locales.
• Sólo lleve la cantidad de leña que va a necesitar.

COMPRA LA LEÑA DONDE SE VA A USAR

firewood.ca.gov

DONTMOVEFIREWOOD.org
Tree Pest Websites

http://ucanr.edu/sites/gsobinfo/
http://ucanr.edu/sites/pshb/
http://cisr.ucr.edu/palmarum.html

Distribution maps and report forms can be accessed from these pages
Design and Construction Techniques for Trees in New Landscapes

Vince Mikulanis
Operations Manager - Davey Resource Group
San Diego Community Forestry Advisory Board
San Diego Urban Forests Council
Tree Protection

Existing trees on site require protection from construction activities

• **Tree Protection** is often a requirement of the local jurisdiction
• **Critical Root Zone** – 1ft radius for every 1in diameter of trunk
• **Tree Protection Zone** – Area where construction activities prohibited
  • Mulching, watering may be required within the TPZ
• **Tree Protection Barrier** – 4ft tall min, highly visible, sturdy barrier
SAN DIEGO ASLA STEWARDSHIP COMMITTEE
SUSTAINABLE STRATEGIES– Plant Selection for SD's Changing Ecosystems

WORKSHOP August 4TH, 2017
Irrigation BMP’s

- **Design** for Water Use Efficiency and site
  - Proper watering for all landscape elements
  - Site specific Requirements – drip, bubbler, rotor
- **Install** to Meet Design Criteria
  - Ensure contractors install to specs
- **Manage** Landscape Water Resources

![SET IT AND FORGET IT](image-url)
Tree Irrigation BMP’s

- **Trees require separate irrigation control valves!**
  - Infrequent, DEEP irrigation
- Water where the roots are!
- Drip / micro irrigation is best wherever practical
Consider Mulch as a Design Element

Benefits
- Helps retain soil moisture
- Adds Nutrients / Improves Soil Fertility and Structure
- Protects Drip Irrigation
- Reduces Competition
- Mower Damage Protection

Methods
- 3-4in deep
- Keep away from tree trunk
- Extend to dripline or 4-5ft min
Drip Systems for Trees

- Spiral drip tubing with in-line emitters.
- Start near the trunk and spiral outward beyond dripline
- Place under mulch for maximum effectiveness
Water Considerations

• Watering requirements for trees depend on size, species, location and season.
  • Consult an Arborist!
• Can vary from 10gal/week for new trees to 500+ gal per month for large trees
• May need to run irrigation for **HOURS** not minutes to ensure proper watering
  • Separate Irrigation Control Valves
• When watering, ensure soil is moist to a depth of 12-14 inches
Establishment Alternative

- Tree Watering Bags can be very effective
  - Provide sufficient water during establishment
- Must be manually filled
- Not a long term solution
Turf Replacement

- Great time to ensure proper irrigation for trees
- Mulch is very important
- If mulch was not already present – use a thinner layer of organic
- Heat from rock and artificial turf and damage existing AND new trees
Surviving Drought

- Lawns are less expensive to replace than trees of significant size
- Reducing turf irrigation – need to consider effects on trees
- 20% to 40% reduction CAN be OK but monitor tree health
- Supplemental irrigation may be required (soaker hose, slow drip from hose – may require watering times of a couple of hours)
- Provide a deep watering 1-2 times per month

- Check [www.sdrufc.com](http://www.sdrufc.com) for more info
Non-Preferred Irrigation

- Bubblers are not recommended within arborist community
- Do not provide proper soil moisture for trees
- Consider working with entity requiring irrigation bubbler for alternative methods
- If not possible, separate control valves and monitoring are necessary
Landscape and Tree Health Requires Full Circle Partnership and Education
TREES: NATURE’S SUNSCREEN

According to the American Cancer Society, shade is a valuable means of protection from the damaging effects of the sun’s ultraviolet (UV) rays. Trees are as important as a hat or sunglasses.

TREES KEEP US HEALTHY. FOLLOW THESE 5 STEPS TO KEEP THEM HEALTHY TOO:

1. GET MOVING
   Inspect trees and shrubs from the bottom up and look for specific problems such as brittle or dead branches, soft or decaying wood, small holes in trunk, or shallow pits in the bark and weak or off-color foliage.

2. STAY WELL FED
   Help your trees stay healthy by applying a slow-release fertilizer. This replaces nutrients and improves resistance to injury from disease, insects and stressful weather.

3. HEARTY HYDRATION
   Trees need to stay well-hydrated throughout the year. A subsurface watering method to quench their roots is ideal for all trees and shrubs, especially those suffering from drought stress.

4. MAKE GOOD CHOICES
   A little research and planning will maximize both your trees, lifespan and your landscape’s economic rewards when you plant the right tree in the right place.

5. SCHEDULE REGULAR CHECK-UPS
   Notice something that worries you? Schedule a check-up with a certified arborist to ensure the best care for your trees.

SAN DIEGO ASLA STEWARDSHIP COMMITTEE
SUSTAINABLE STRATEGIES– Plant Selection for SD's Changing Ecosystems

WORKSHOP August 4th, 2017
When Partnerships Fail
SUSTAINABLE STRATEGIES
Plant Selection for San Diego’s Changing Ecosystems