Conservation Planning & GeoDesign: Coupling Connectivity Models & 3-D Design

Ryan M. Perkl, Ph.D.
Planning Degree Program
School of Landscape Architecture & Planning
The University of Arizona

Collaborators:
Kyle Benne, Samuel Chambers, Garrett Smith

Contributors:
Brandon Herman, Ben Madeo, & Wanyi Song
Arizona’s Landscape Integrity
Arizona's Last of the Wild

LANDSCAPE BLOCKS
(LI = 100; >5,000 Ha)
Connectivity Network
"Wild Ways"
Important Connectivity Zones (ICZs) & Last of the Wild
Geodesign: Data Driven Simulation
Geodesign: Data Driven Simulation
What About Vegetation Design?
### Native Vegetation Library

**Species:** Blue Palo Verde, *Parkinsonia florida*

**Size:** 15’

**Elevation:** 0 – 4,000’

**Soil:** Well drained, alkaline

**Aspect:** Full sun

**Slope:** Bottomland

**Hydrology:** Drought Tolerant, prefers riparian. Min Temp: 18°F

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Size</th>
<th>Elevation</th>
<th>Soil</th>
<th>Aspect</th>
<th>Slope</th>
<th>Hydrology</th>
<th>Temp (threshold)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trees</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>blue palo verde</td>
<td><em>Parkinsonia</em></td>
<td>15ft</td>
<td>0 – 4,000’</td>
<td>well drained, alkaline</td>
<td>full</td>
<td>bottomland</td>
<td>drought tolerant, prefers riparian edge habitat</td>
<td>18F</td>
</tr>
<tr>
<td>velvet mesquite</td>
<td><em>Prosopis</em></td>
<td>30ft</td>
<td>0 – 4,800’</td>
<td>well drained, alkaline, deep soil</td>
<td>full</td>
<td>all</td>
<td>prefers deep water table</td>
<td>10F</td>
</tr>
<tr>
<td>white thorn acacia</td>
<td><em>Acacia</em></td>
<td>10ft</td>
<td>0 – 5,000’</td>
<td>sandy, caliche type, sandy loam, limestone soil</td>
<td>full</td>
<td>all</td>
<td>arid</td>
<td>10F</td>
</tr>
<tr>
<td>ironwood</td>
<td><em>Olneya tesota</em></td>
<td>30ft</td>
<td>0 – 2,300’</td>
<td>sandy/gravelly soil</td>
<td>full</td>
<td>bottomland</td>
<td>arid</td>
<td>20F</td>
</tr>
<tr>
<td><strong>Shrubs</strong></td>
<td></td>
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<tr>
<td>creosote</td>
<td><em>Larrea</em></td>
<td>8ft</td>
<td>0 – 4,000’</td>
<td>sandy, sandy loam, medium loam, caliche type</td>
<td>full - part shade</td>
<td>bottomland - med slope</td>
<td>arid</td>
<td>0F</td>
</tr>
<tr>
<td>triangle leaf bursage</td>
<td><em>Ambrosia</em></td>
<td>3ft</td>
<td>1,000 - 3,000ft</td>
<td>sandy, sandy loam, alkaline</td>
<td>full</td>
<td>all</td>
<td>arid</td>
<td>18F</td>
</tr>
<tr>
<td><strong>Cacti</strong></td>
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<tr>
<td>saguaro</td>
<td><em>Carnegiea</em></td>
<td>50ft</td>
<td>0 – 4, 000’</td>
<td>sandy, sandy loam, alkaline</td>
<td>full - part shade, Southern slopes at higher elevation</td>
<td>all</td>
<td>arid</td>
<td>20F</td>
</tr>
<tr>
<td>buckhorn cholla</td>
<td><em>Cylindropuntia</em></td>
<td>9ft</td>
<td>0 – 3,500’</td>
<td>sandy, well drained</td>
<td>full</td>
<td>all</td>
<td>arid</td>
<td>10F</td>
</tr>
<tr>
<td>engelman prickly pear</td>
<td><em>Opuntia</em></td>
<td>5ft</td>
<td>1,000 - 6,500ft</td>
<td>all</td>
<td>full - part shade</td>
<td>all</td>
<td>arid</td>
<td>10F</td>
</tr>
<tr>
<td>fishhook barrel</td>
<td><em>Ferocactus</em></td>
<td>8ft</td>
<td>0 – 5,000’</td>
<td>sandy or gravelly</td>
<td>full - part shade</td>
<td>all</td>
<td>arid</td>
<td>10F</td>
</tr>
</tbody>
</table>
Landscape Capability Models: Native Vegetation
Pattern Generators & Rule-Based Design Filters
Pattern Generators & Design Filters

Cohesion:

Density & Heterogeneity:

Linearity:
Vegetation Integration Concept
Pattern Integration and Editing
Current Vs. Proposed
Corridor Interior Populated
Corridor Vegetation Design in Action
Corridor Vegetation Design in Action
Corridor Vegetation Design in Action
Geodesign: Scenario Evaluation
Geodesign: Corridor Vegetation Design
Geodesign: Data Driven Simulation
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Thank You

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rperkl@email.arizona.edu

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References


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