Texas Regional Conditions

- **Winter temperatures**
  - Subtropical in Rio Grande Valley to cool/cold temperate (USDA zone 6) in Panhandle, most of population in z. 7 - 9

- **Summer temperatures**
  - HOT, HOT, and HOTTER
  - Extreme daily highs & little cooling at night
  - Wide fluctuations in higher West Texas elevations

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Texas Regional Conditions

- **Precipitation**
  - Yearly averages in Texas range from 60 in./yr. in Beaumont to 8 in./yr. in El Paso areas
  - Averages do not reflect distribution through the year

Examples:
- College Station average is @38 in./yr.,
- But received over 16” in two days in fall 1995
- 73 consecutive days without rain in summer 1993
- Only 8” from December 1995 through July 1996
- Over 50” of rain from January to August in 2007
- 2008 to 2013 B/CS/Houston officially country’s most anomalous climate region
- Severe extended floods in El Paso, summer 2006

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Reading Assignments

Pages 54 - 57

Plus Corresponding Color Plates in *Landscape Plants For Texas And Environs, Third Edition*
**Texas Regional Conditions**

- **Natural Climatic Zones, Soils, & Vegetation Types**
  - Extremely variable soils
  - Transition zone from mesic to xeric (E to W)
  - Nearly tropical to cool/cold temperate (S to N)
  - Temperate mixed conifer/hardwood forests, savannahs, grasslands, scrub, to desert (E to W)

**Variation in Texas Weather**

<table>
<thead>
<tr>
<th>Average</th>
<th>First / Low</th>
<th>Last / High</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA hardiness zone</td>
<td>6a</td>
<td>9b / 10a</td>
</tr>
<tr>
<td>Number 32 F days</td>
<td>&lt; 10</td>
<td>&gt; 125</td>
</tr>
<tr>
<td>Date 1st frost</td>
<td>Oct. 1</td>
<td>Dec. 7 or later</td>
</tr>
<tr>
<td>Date last frost</td>
<td>Feb. 15</td>
<td>Apr. 15</td>
</tr>
<tr>
<td>Days &gt; 90 F</td>
<td>&lt; 40</td>
<td>&gt; 180</td>
</tr>
<tr>
<td>Precipitation (in./yr.)</td>
<td>&lt; 8</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>Pan evaporation over precipitation (in./yr.)</td>
<td>&lt; 0</td>
<td>&gt; 68</td>
</tr>
<tr>
<td>RH at noon in July (%)</td>
<td>&lt; 40</td>
<td>&gt; 70</td>
</tr>
<tr>
<td>Max. 100 yr. wind (miles/hr.)</td>
<td>&lt; 70</td>
<td>&gt; 110</td>
</tr>
</tbody>
</table>

**Texas Regions**

- **Southwest tip of pine/hardwood forest of SE USA**
- Gently rolling to slightly hilly
- Mostly acidic well drained soils
- Sands, sandy-loams, clay-loams, to clay soils
- Hot summers, range of winter temperatures

**East Texas (Piney Woods)**

- Transition area overlapping in north with boreal species, in the west with Plains plants, in south with Southeastern U.S. flora and to the southwest with Central Texas flora.

**Northeast Texas & Midwest/NE U.S.**

- This region includes several Texas cities including Texarkana, Paris, Mount Pleasant, Gilmer, portions northeastern Metroplex, and many major cities in the Midwest and Northeastern U.S.
Painting With A Broader Brush, USA Regions: Midwest

- Cold winters, hot humid summers
- Variable soil pH, but generally fertile and arable
- Extended droughts rare in east, increasing in frequency in the west
- Precipitation fairly uniform through the year
- Originally predominantly prairies, with eastern portions part of the savanna and deciduous forest
- Prairies now invaded by trees/shrubs
- Cold is the primarily limiting factor to woody plant growth

Texas Regions

- Flat, poorly drained, tends to be swampy
- Moderate rainfall, fairly even distribution
- Prairie plants now invaded by trees
- Heavy gumbo clays
- Mild winters, steamy summers
- Significant maritime influences
- Near sea level

Coastal Prairies

Painting With A Broader Brush, USA Regions: Northeastern US

- Cold winters, summer hot to mild
- Soils predominantly acidic
- Rainfall generally uniform and extended droughts are rare
- Elevation and maritime influences are important in local climate
- Cold is the predominantly limiting factor to landscape plant utilization
- Deciduous to mixed deciduous/coniferous forests

Southeast Texas and Southern U.S.

Transition area overlapping in northwest with Southern Plains plants, in north with Midwest flora and in the Northeast with New England flora, and to the south with the subtropical gulf coast plants.

Several Texas cities including Madisonville, Huntsville, Crockett, Nacogdoches, Tyler, Longview, Lufkin, northern parts of Houston and Beaumont, etc.
**Painting With A Broader Brush, USA Regions: Southeastern US**

- Long hot humid summers except mountains, winters variable from mild to cold
- Rainfall rather uniform and extended droughts are unusual
- Soils are predominantly acidic (signature red clays), with some higher pH soils in the uplands
- Site and soil drainage is variable, but often acceptable
- Elevation and terrain varies from mountainous to sea level
  - Piedmont has rolling hills, coastal plain is flatter
- Heat and cold can limit landscape plant selection

**Texas Regions**

- Drainage mix of fair to poor
  - Problems with internal and surface drainage
- Gently rolling to slightly hilly
- Mix of slightly acidic sands to slightly alkaline black or gray clays
  - Soil pH often higher when irrigated with alkaline water
- Rainfall (E - W) & low temperatures (S - N) vary greatly

**Post Oak Savannah**

- Calcareous soils (alkaline)
- Mostly heavy clays, drainage variable
- Moderate rainfall
- Frequent summer drought
- Hot summers, range of winter lows

**Blacklands**

- Transition area overlapping in north with Southern Plains / Prairie plants,
  in east with Southeastern U.S. flora, in South with Coastal Plains
  plants, and in the west with Southwestern U.S. flora

Many important Texas cities including Austin, Bryan / College Station, San Antonio, San Marcos, Dallas / Fort Worth, Round Rock, Waco, etc.
Painting With A Broader Brush, USA Regions: Central Plains

- Rich agricultural lands
  - Soils deep & fertile, mostly well drained, acidic to alkaline
- Rainfall decreasing from east to west
  - Summer droughts common, hot summers, cold to mild winters
- Native vegetation, tall and short grass prairies with savannah and cross timber in southeast
- Elevation generally increasing to north and west
- Cold, heat, and drought often limiting to plants

Southwestern Flavor

Texas Regions

West Texas

- Little precipitation, peak late summer to fall
- Trees only near water
- Extreme summer heat
- Drying winds
- Range of winter temperatures
- Some sands, lots of caliche clays, mountain rubble

Texas Regions

Trans Pecos

- Wide range of elevations, 2500 to 8500 ft.
- Well drained soils, some caliche
- Little rain, mostly late summer / fall (monsoonal)
- Winter lows & summer heat are elevation dependent
Texas Regions

Hill Country

- Moderately rugged terrain
- Caliche slopes, limestone escarpment, thin rocky clays
- Rainfall, 15 - 35 in./yr.
- Frequent summer droughts
- Mild to cold winters
- Mostly good drainage

West Texas & Southwestern U.S.

Overlaps in north with Intermountain West & West Coast plants, in east with semi-arid Hill Country and Southern Plains flora


Painting With A Broader Brush, USA Regions: Southwestern US

- Very hot and very dry
  - Extended droughts any time of year, maybe for years
  - Chihuahuan, Mojave, & Sonoran Deserts
  - One to two peaks of precipitation

Texas Regions

High & Rolling Plains

- Clays and sands over caliche
- Few woody plants
- Rain (10 - 20 in.) mostly May - June
- Coldest region of Texas
- Summers very hot, but cooler than all but Trans-Pecos mountains
- Winds and hail can be very damaging

Images courtesy of Dr. Cynthia McKenney
**Northwest Texas, Central Plains, and Intermountain Western U.S.**

Transition area overlapping in north with boreal species, in the north, in the west with West Coast plants, in the south with Southeastern U.S. flora and to the east with Midwestern and eastern U.S. flora.

This region includes several Texas cities such as Lubbock, Amarillo, Dalhart, and Dumas and many major cities in the Central and Intermountain USA.

**Painting With A Broader Brush, USA Regions: Intermountain West**

- Elevation, prevailing winds, and continental effects dominate climate
- Series of mountains, plateaus and basins
- Highly variable winter and summer temperatures
- Rainfall impacted by mountainous terrain and wind patterns, winter snow fall is important to vegetation
- Much of the region is drought prone, water issues dominate landscaping
- Soils variable from acidic to basic
- Fires & winter desiccation can be problems

**“Aruba, Jamaica, oh I wanna take yah… to Bermuda, Bahamas, …”**

**Texas Regions**

- Warm temperate to subtropical
- Little rain (18 - 27 in./yr.), long droughts
- Sands to heavy clays
- Irrigation waters with high salinity
- Drought deciduous not cold deciduous plants
- Chaparral or brush country

Southern Rio Grande Valley
Texas Regions

Southern Gulf Coastal Plains

- Mild winters
- Rainfall becomes limiting (25 - 30 in/yr)
- Flat and often poorly drained
- Alkaline clay, caliche, sand
- Summers hot, winters mild
- Strong storms

South Texas & Immediate Gulf Coast

- Overlaps in west with xeric Southwestern U.S. plants, in east with mesic SE U.S. plants
- Protected locations in San Antonio, South Houston, Galveston, Corpus Christi, Brownsville, McAllen, South Padre, coastal developments from Texas to LA and in FL Panhandle, further inland in Central –South FL.

Painting With A Broader Brush, USA Regions:

Subtropical / Tropical Regions

- Encompasses portions of other regions:
  - Much of Florida
  - Immediate Gulf Coast MS, LA, TX
  - Lower Rio Grande Valley
  - Parts of Desert Southwest
  - Portions of Coastal California, Interior Valley of California, and Hawaii
- Salinity and wind tolerance important
- Local climates are hard to generalize, but cold is less of a limiting factor than in other US regions

Selected Trees and Shrubs for the U.S. West Coast

- Transition area overlapping in north with boreal species, in the north, west with Intermountain West flora and in the south with Southwestern U.S. and tropical flora.
- This region includes numerous major cities along the West Coast of USA
Painting With A Broader Brush, USA
Regions: West Coast

- Coastal temperate, Mediterranean climates
- Elevation and location relative to mountain ranges and ocean are important climatic factors
- Winter temperatures vary from subtropical to cold temperate
- Fog belts important for some ecosystems
- Wildfires are seasonal problem
- Soils are highly variable, but often fertile

Questions / Comments?

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