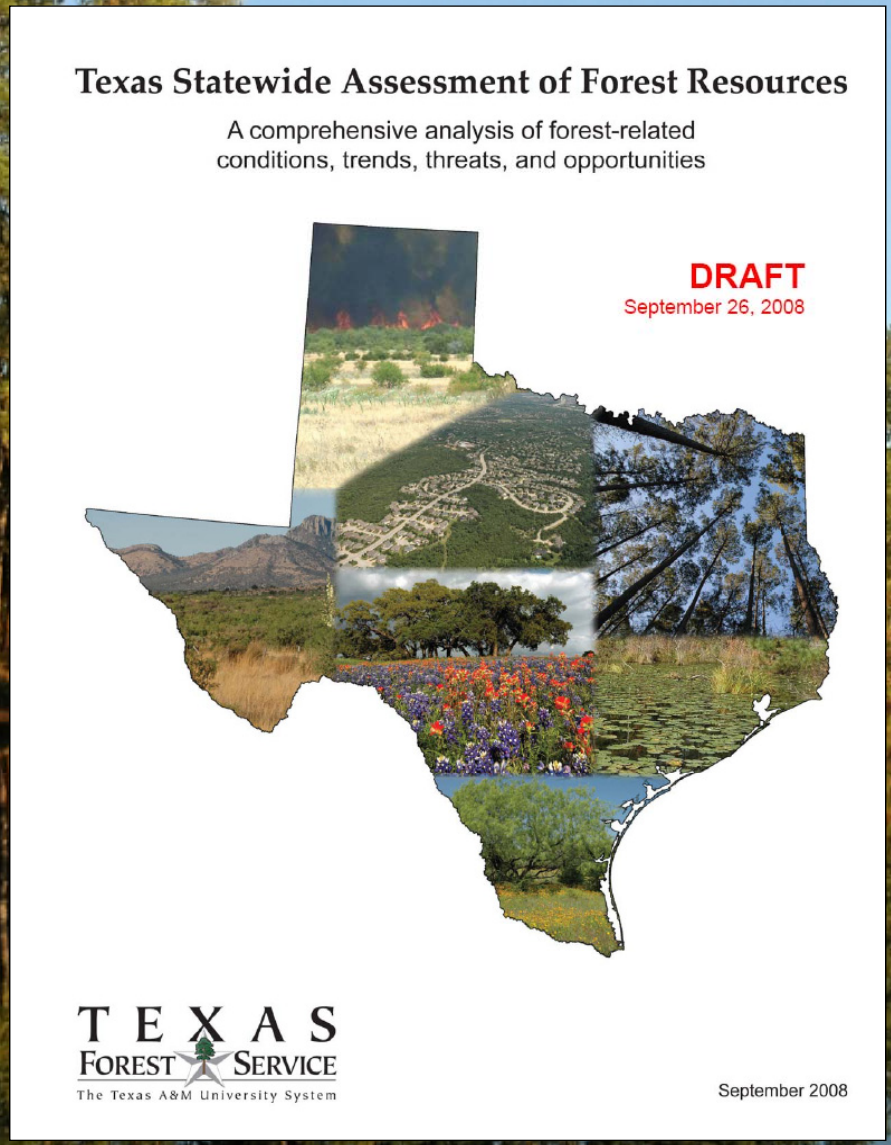
Texas State Assessment



Brad Barber

Ron Billings

State-wide Assessment of Forest Resources

Provides an analysis of forest conditions and trends and delineates priority rural and urban forest landscapes.

State-wide Forest Resource Strategy

Provides long-term strategies to manage priority landscapes identified in the State Assessment.

Annual Report on Use of Federal Funds

Describes how S&PF funds were used in the given fiscal year to address the assessment and strategy.

Texas Statewide Assessment

S&PF Redesign and 2008 Farm Bill require states to develop Statewide Assessment of Forest Resources

Statewide assessment will:

- Describe forest conditions on all ownerships
- Identify forest-related benefits and services
- Identify threats to the forest resource
- Highlight issues and trends of concern as well as opportunities for action
- Delineate high priority forest landscapes to be addressed
- Be geospatially based

Texas Statewide Assessment

Delineation of priority rural and urban forest landscape areas should be accomplished through geospatial analysis

Geospatial analysis should include thematic layers that address:

- Development Risk
- Fragmentation
- Wildfire Risk
- Forest Health Risk
- Fish and Wildlife Habitat
- Water Quality and Supply
- Economic Potential
- Green Infrastructure

Texas Statewide Assessment

Geospatial assessment can include weighted overlay analysis resulting in a composite index layer that delineates priority landscape areas

State may choose to:

- Conduct separate analyses to address specific management or unique program-related questions
- Use analyses already completed for individual programs, such as those completed for the Forest Stewardship Spatial Analysis Project (SAP)

Texas Statewide Assessment

Southern Group of State Foresters (SGSF) charged Texas Forest Service with developing "template"/example/model assessment

SGSF State Assessment Template Task Force

Ken Arney	USFS	John Giedraitis	TX
Brad Barber	TX	Marilynn Grossman	TX
Mark Bays	OK	John Miller	VA
Ron Billings	TX	Bill Oates	TX
Tom Boggus	TX	Scott Phillips	SC
Laura Calendrella	USFS	Jim Rooni	TX
John Campbell	VA	Pete Smith	TX
Burl Carraway	TX	Tom Spencer	TX
Mike Countess	SGSF	Darren Spinks	AR
Jan Davis	TX & RIC	Mark Stanford	TX
Carl Garrison *(Chair)*	VA		

Texas Statewide Assessment

Texas Statewide Assessment of Forest Resources was developed around issues facing the state's forest and tree resources rather than being based on the forest resources themselves

Issue based

rather than

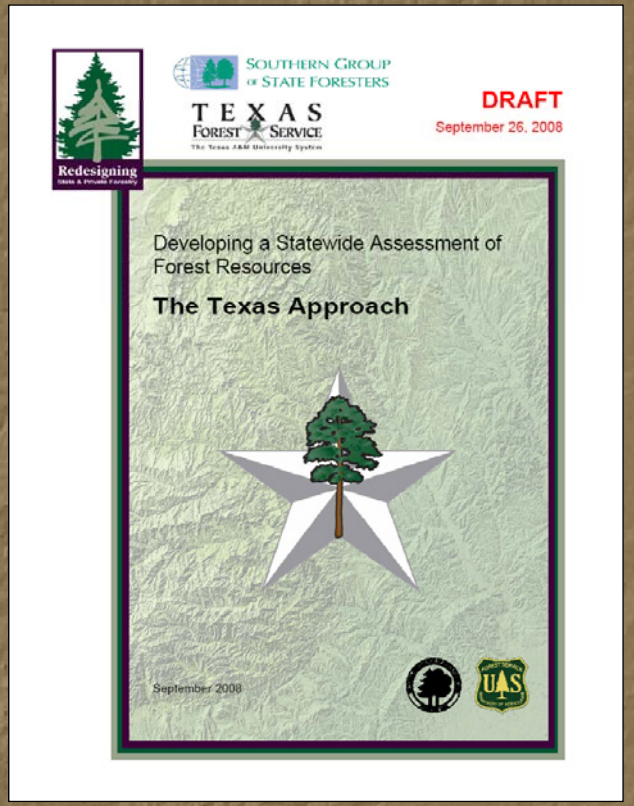
resource based

Texas Statewide Assessment

Because issues vary in importance among states, task force decided that instead of “fill-in-the-blank” template, an example, or model, assessment would be developed

Companion “how-to” document:

- How assessment was developed
- How relevant spatial data can be analyzed to identify priority areas
- States free to follow this model or develop one that better fits their state and preferences
- Following model will allow for better comparison across states



Texas Statewide Assessment

Texas Statewide Assessment of Forest Resources

Conditions and Trends .....

National and Regional

Southern Wildfire Risk

Southern Forest Land

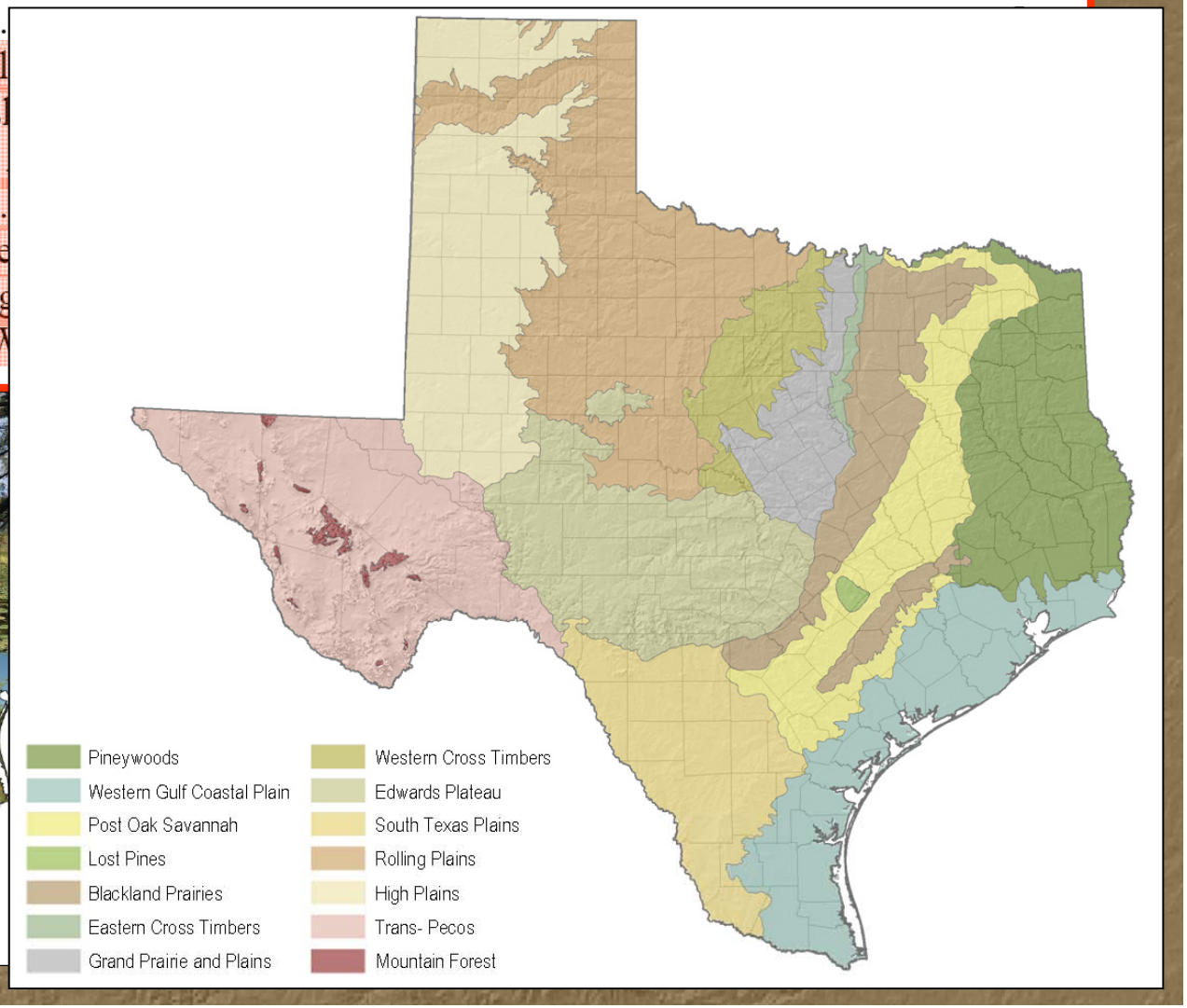
Texas Ecoregions .....

Status of the Forest Re

Population and Demog

Climate Change and W

TEXAS FOREST SERVICE
The Texas A&M University System



Texas Statewide Assessment

Texas Statewide Assessment of Forest Resources

Stakeholder Issues 33
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TEXAS FOREST SERVICE
The Texas A&M University System

September 2008

Combined Rural and Urban Priority 111
Comparison with State Wildlife Action Plan 117

Appendix A-121
Data Layers Used in Spatial Overlay Analyses A-123
Simple Example of Weighted Overlay Analysis A-159

Texas Statewide Assessment

Stakeholder input gathered through on-line survey (Survey Monkey)

Summary of Stakeholder Survey on Issues
(86 responses to 292 surveyed—29%)

Issue	Extremely Important	Important	Doesn't Matter Much	Not Important	Don't Know	Number Of Comments
Population Growth and Urbanization	**48**	35	3	1	1	16
Central Texas Woodlands Conservation	**48**	33	3			9
Sustainability of Forest Resources in East TX	**48**	38				9
Water Quality and Quantity	**66**	20				9
Urban Forest Sustainability	**40**	42				8
Forest Health	**46**	40				3
Other Issues of Stakeholder Importance						40

Texas Statewide Assessment

Separate spatial analyses for each issue

Texas Statewide Assessment

Layer Selection

Guiding principle from task force:

> Use input data layers and principles of weighted overlay analysis provided by SFLA

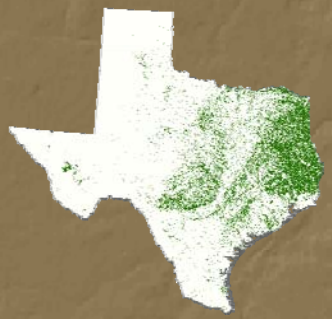
- For **rural** analyses, using all or some of the SFLA input layers was considered sufficient for spatially identifying priority areas across the landscape
- For **urban** analyses, in addition to 8 of the 13 SFLA layers used, 16 other layers were developed and used

If a layer was considered to inform an issue, then it was included for that issue

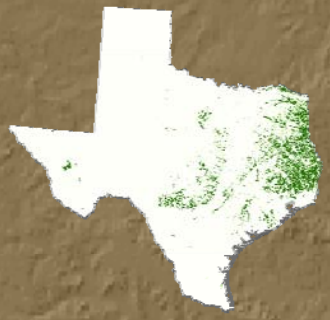
Texas Statewide Assessment

Layers from Southern Forest Land Assessment

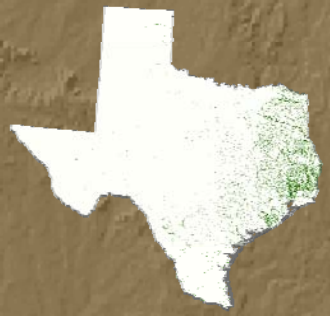
Forestland



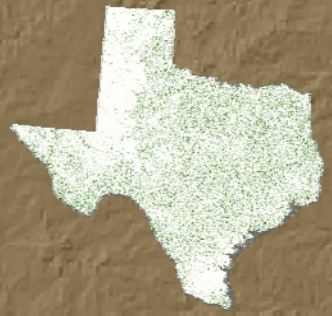
Forest Patches



Wetlands

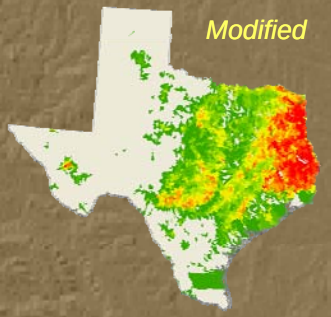


Riparian Areas



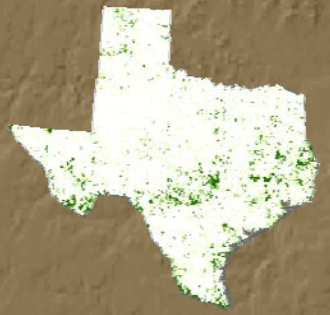
Priority Watersheds

Modified



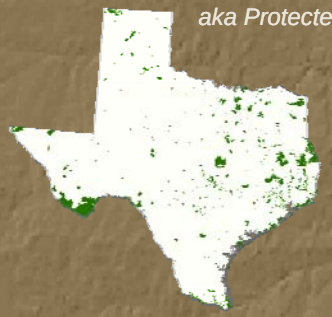
Site Productivity

T&E Species



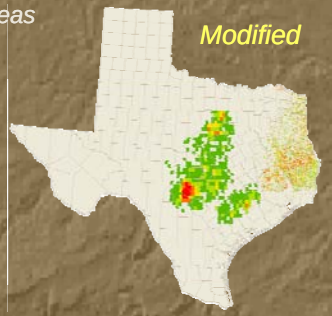
Proximity to Public Lands

aka Protected Areas



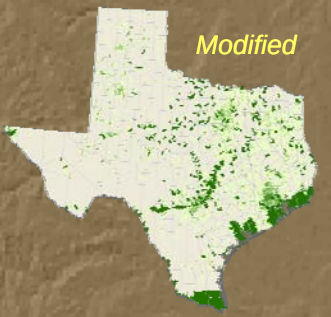
Forest Health

Modified

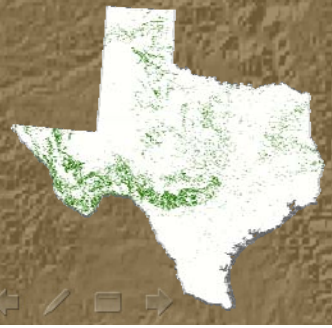


Public Drinking Water

Modified

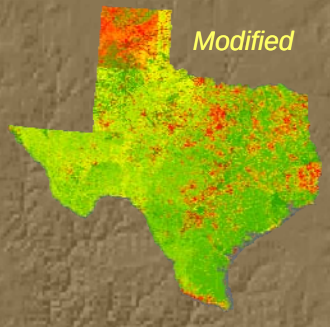


Slope

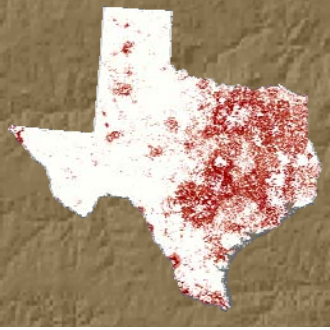


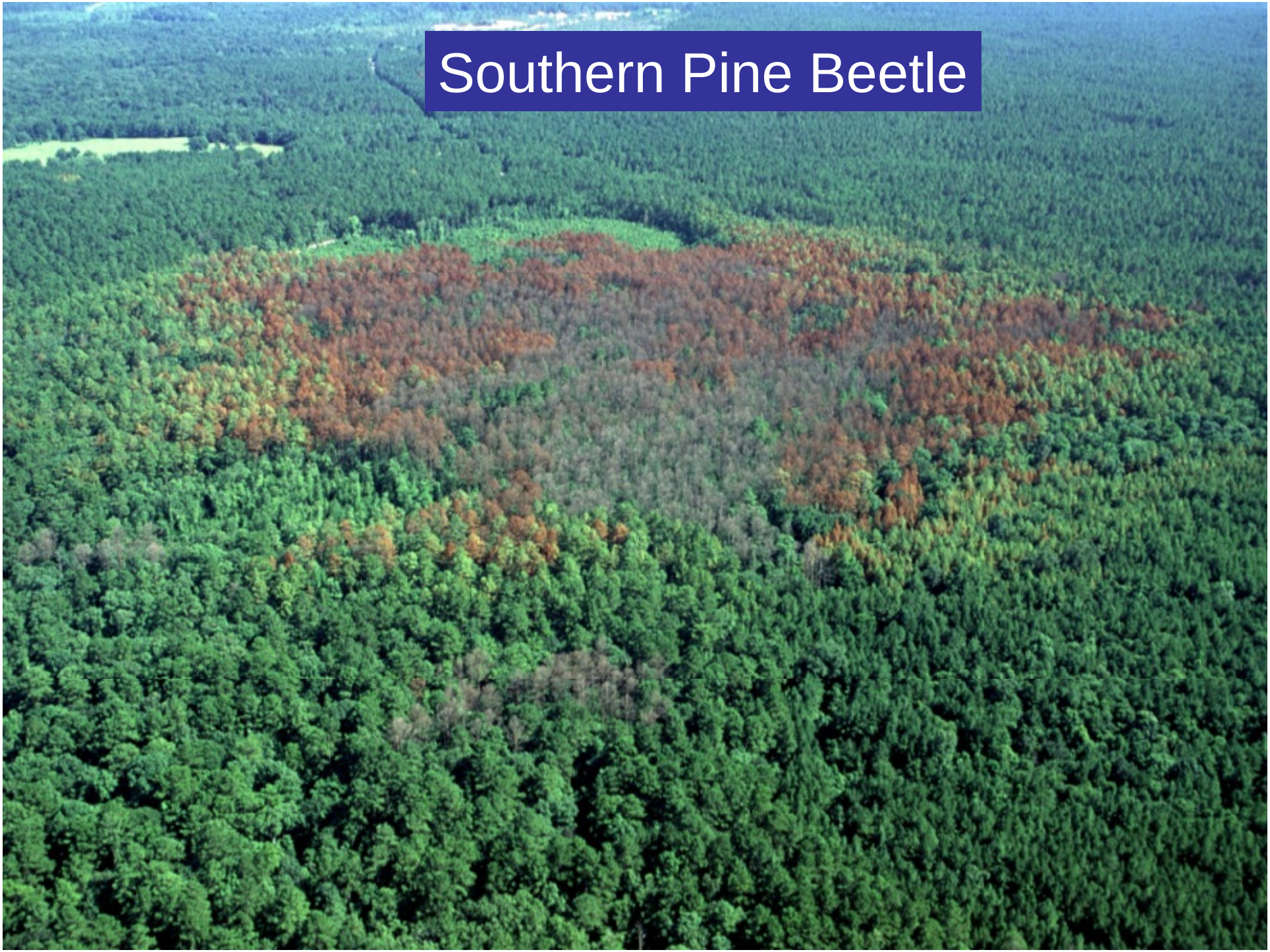
Wildfire Risk

Modified



Development Level

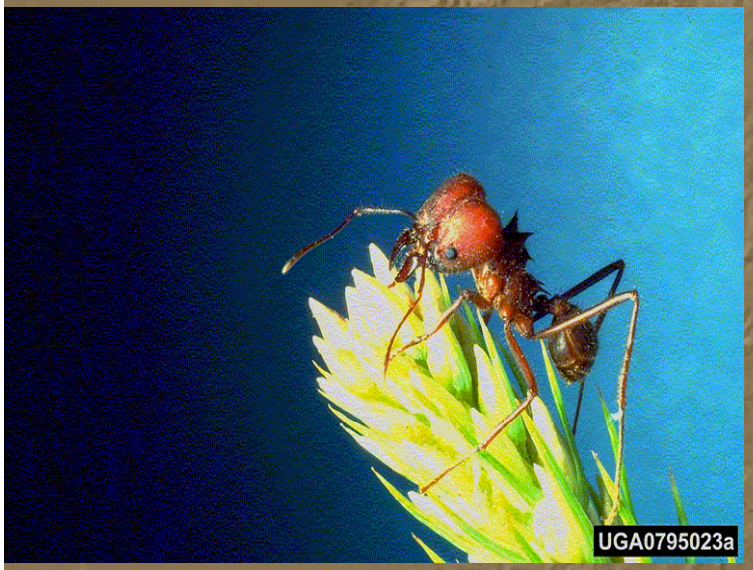


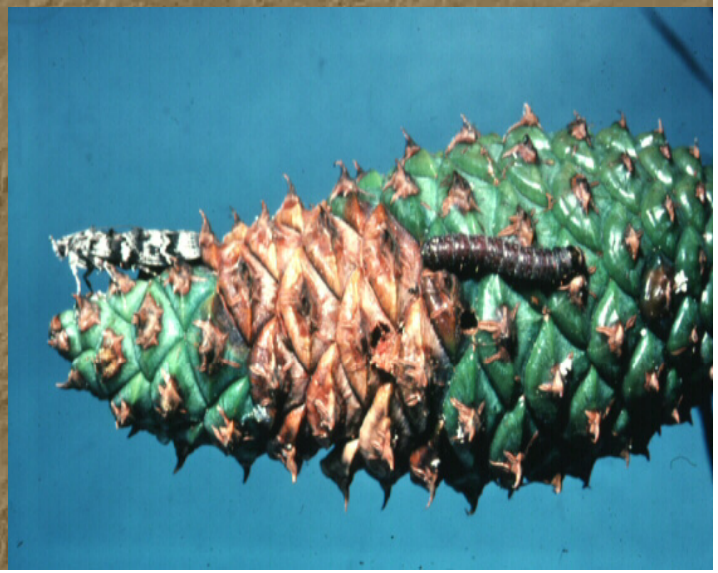

Southern Pine Beetle

Oak Wilt in Rural Landscapes

Oak Wilt in Urban Landscapes

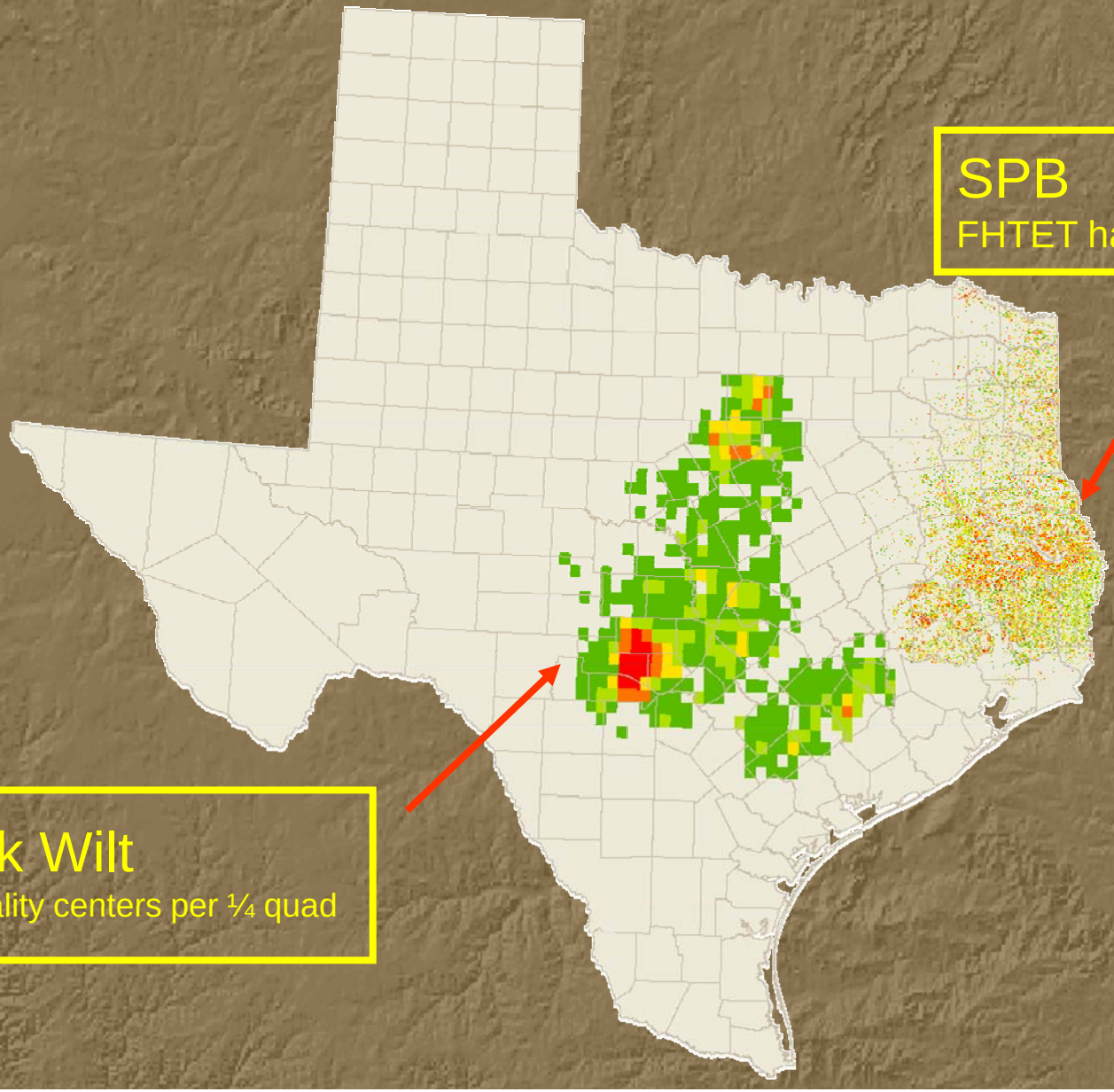
Other Forest Pests





Other Forest Health Issues

Forest Health



SPB
FHTET hazard map

Oak Wilt
Mortality centers per ¼ quad

Texas Statewide Assessment

Texas Statewide Assessment of Forest Resources

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Texas Statewide Assessment

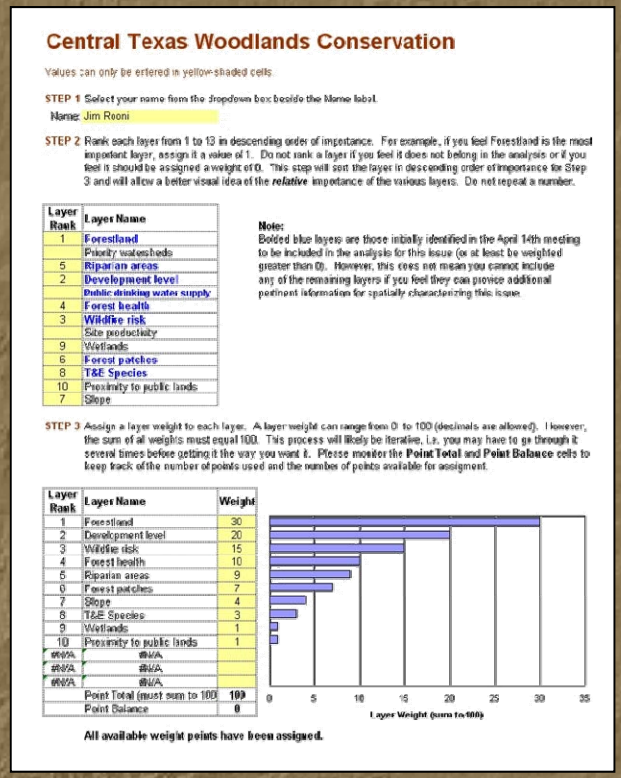
Spatial Overlay Analysis

- Geospatial analysis is a way of making sense of how various types of information (e.g., natural resource, environmental, or cultural) are related geographically and express this visually as a map
- Spatial analysis involves geospatial layers, or themes, which are thematic sets of spatial data representing one type of information, such as land use, cover type, roads, census tracts, or streams
- Spatial analysis allows us to simplify and quantify the relationships among various thematic layers when overlaid together

Texas Statewide Assessment

Layer Weighting

- Weights assigned to thematic layers according to perceived relative importance of each layer in addressing objectives of the analysis
- Weights assigned by TFS program leaders with issue leader having final word
- Interactive spreadsheet used for assigning weights



Central Texas Woodlands Conservation

Values can only be entered in yellow-shaded cells.

STEP 1 Select your name from the dropdown box beside the Name label.

Name: Jim Reoni

STEP 2 Rank each layer from 1 to 13 in descending order of importance. For example, if you feel Forestland is the most important layer, assign it a value of 1. Do not rank a layer if you feel it does not belong in the analysis or if you feel it should be assigned a weight of 0. This step will sort the layer in descending order of importance for Step 3 and will allow a better visual idea of the ***relative*** importance of the various layers. Do not repeat a number.

Layer Rank	Layer Name
1	**Forestland**
	Priority watersheds
5	**Riparian areas**
2	**Development level**
	Public drinking water supply
4	**Forest health**
3	**Wildfire risk**
	Site productivity
9	Wetlands
6	**Forest patches**
8	**T&E Species**
10	Proximity to public lands
7	Slope

Note:
Bolded blue layers are those initially identified in the April 14th meeting to be included in the analysis for this issue (or at least be weighted greater than 0). However, this does not mean you cannot include any of the remaining layers if you feel they can provide additional pertinent information for spatially characterizing this issue.

STEP 3 Assign a layer weight to each layer. A layer weight can range from 0 to 100 (decimals are allowed). However, the sum of all weights must equal 100. This process will likely be iterative, i.e. you may have to go through it several times before getting it the way you want it. Please monitor the **Point Total** and **Point Balance** cells to keep track of the number of points used and the number of points available for assignment.

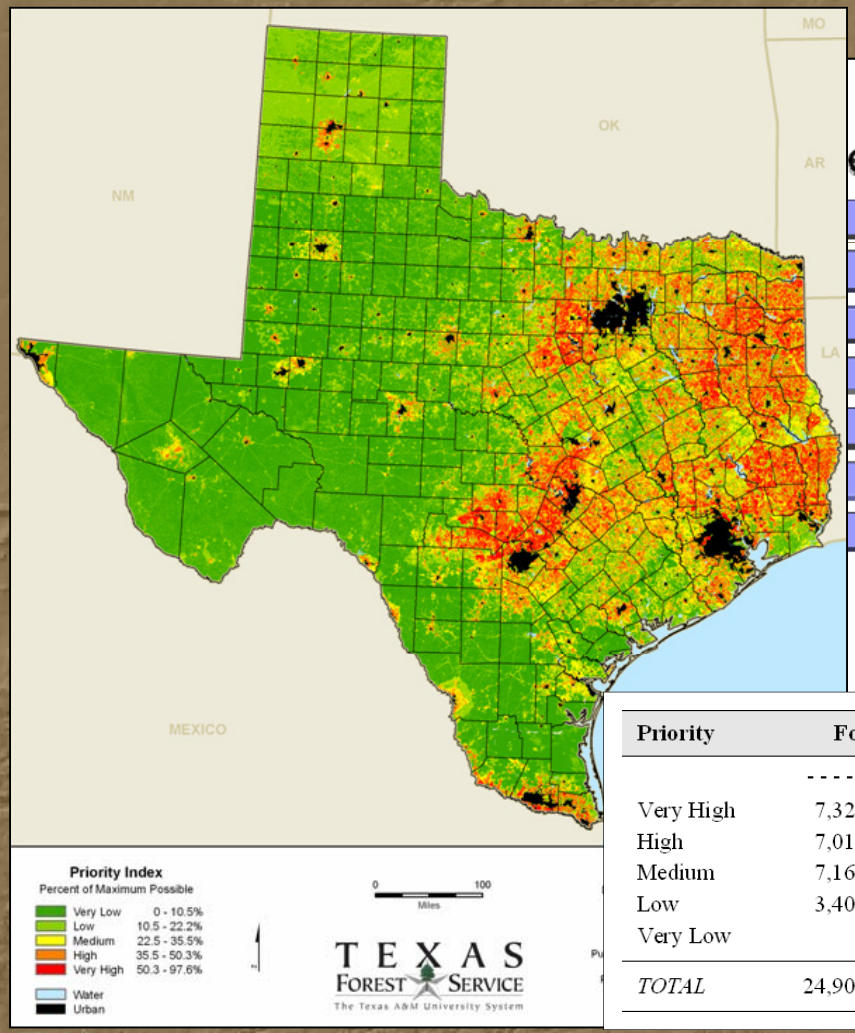
Layer Rank	Layer Name	Weight
1	Forestland	30
2	Development level	20
3	Wildfire risk	15
4	Forest health	10
5	Riparian areas	9
0	Forest patches	7
7	Slope	4
8	T&E Species	3
9	Wetlands	1
10	Proximity to public lands	1
#N/A	#N/A	
#N/A	#N/A	
#N/A	#N/A	
	Point Total (must sum to 100)	100
	Point Balance	0

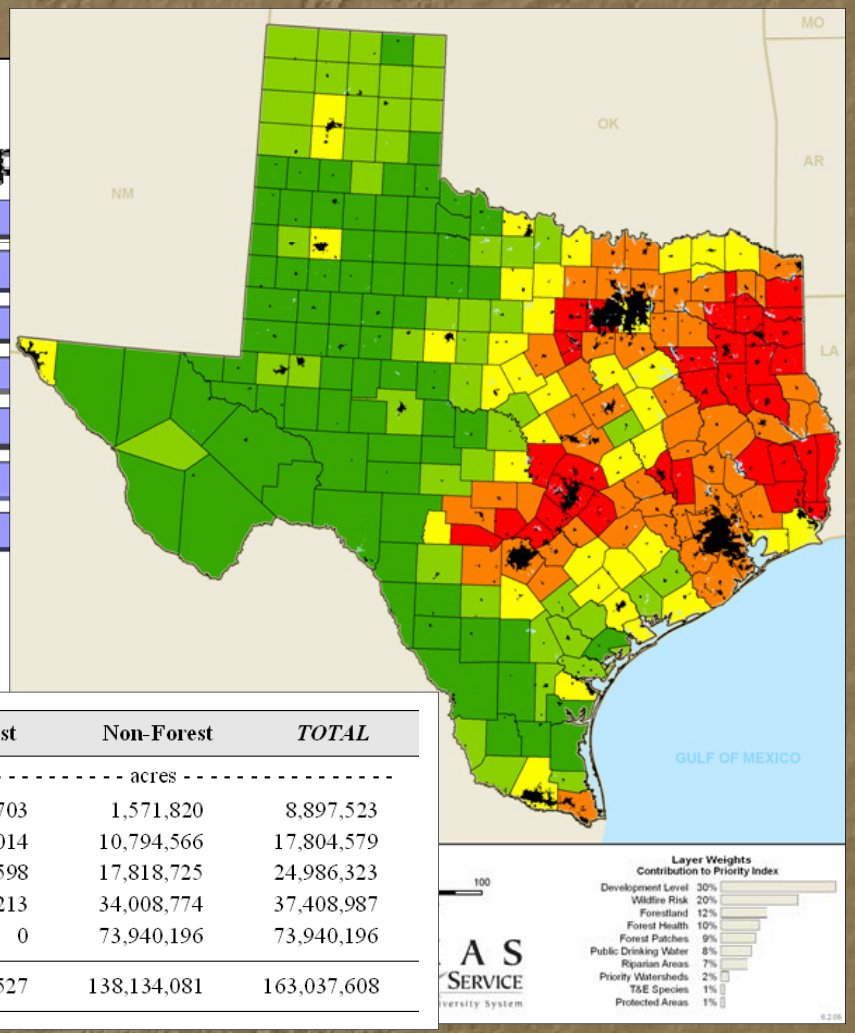
All available weight points have been assigned.

Texas Statewide Assessment

Issue 1: Population Growth and Urbanization

Texas communities are growing at an alarming rate. Community leaders need proactive management tools and technical support systems to help prepare for the effects of "high-velocity" growth on forest resources before it happens—not after.



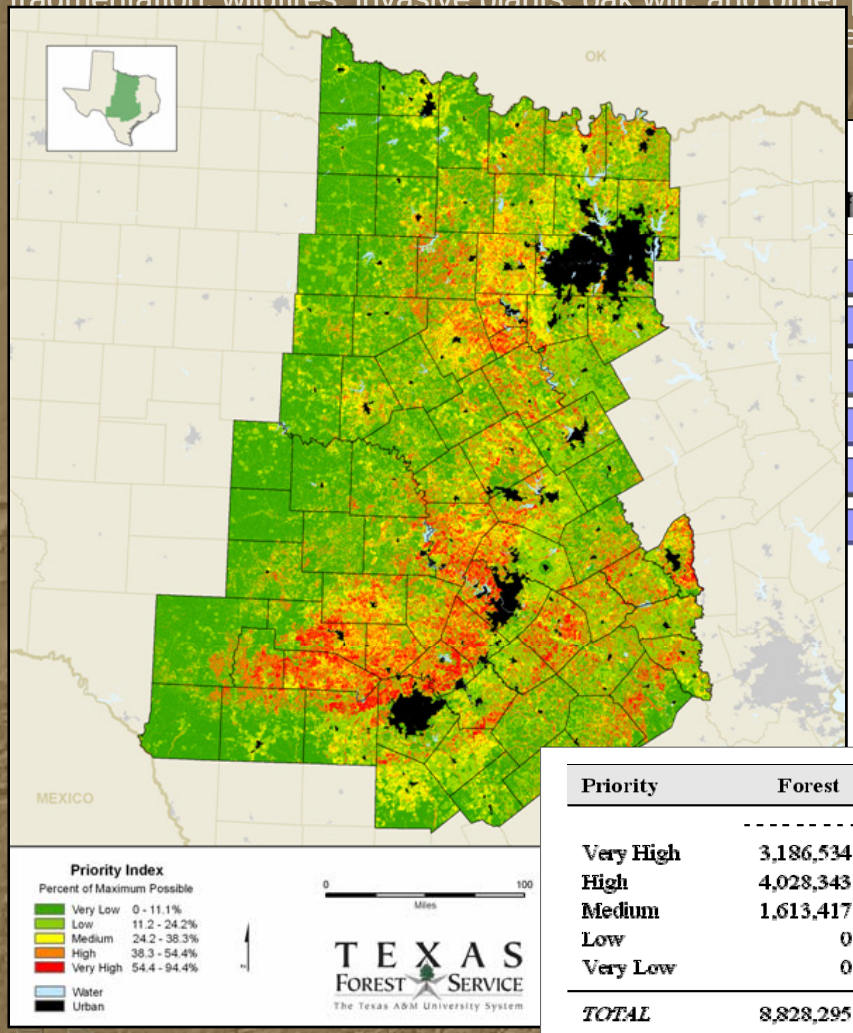


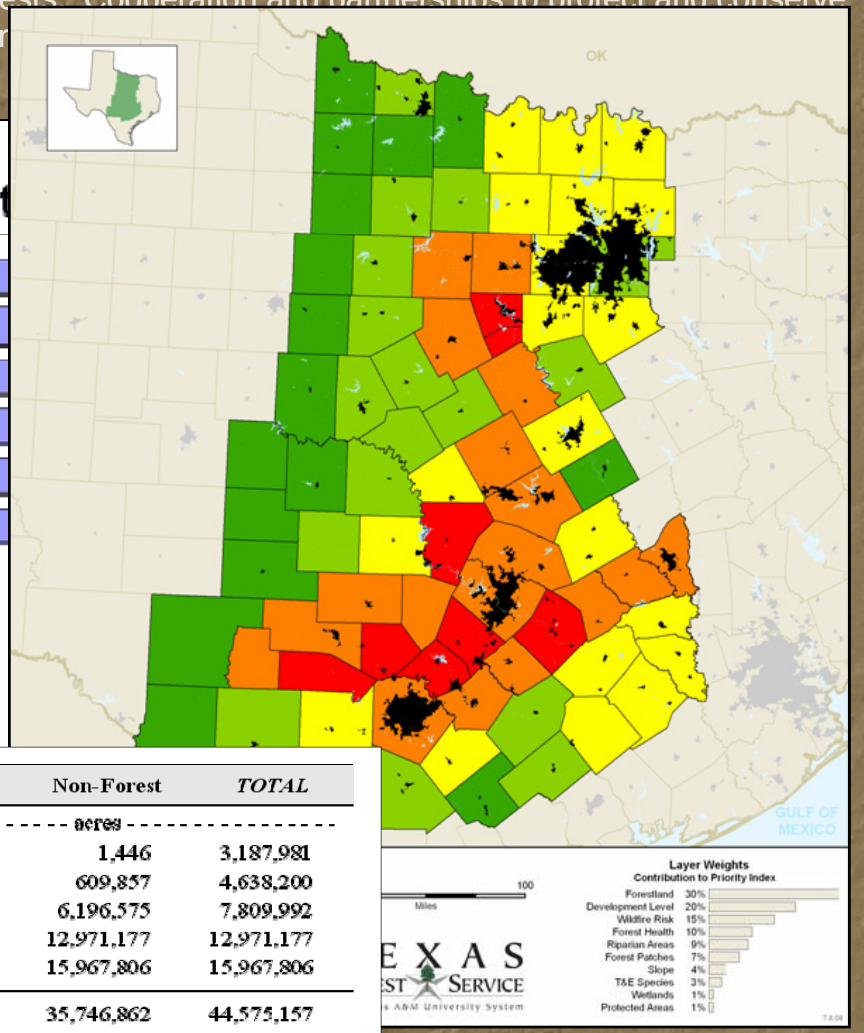
Priority	Forest	Non-Forest	*TOTAL*
	- - - - - - - - - - - - - - - acres - - - - - - - - - - - - - - -		
Very High	7,325,703	1,571,820	8,897,523
High	7,010,014	10,794,566	17,804,579
Medium	7,167,598	17,818,725	24,986,323
Low	3,400,213	34,008,774	37,408,987
Very Low	0	73,940,196	73,940,196
TOTAL	24,903,527	138,134,081	163,037,608

Texas Statewide Assessment

Issue 2: Central Texas Woodlands Conservation

The woodlands of Central and West Texas are valuable resources for shade, recreation, wildlife, environmental, and watershed protection. Yet, these resources are coming under increasing pressure from an exploding population, land fragmentation, wildfires, invasive plants, oak wilt, and other pests. Cooperation and partnerships to protect and conserve





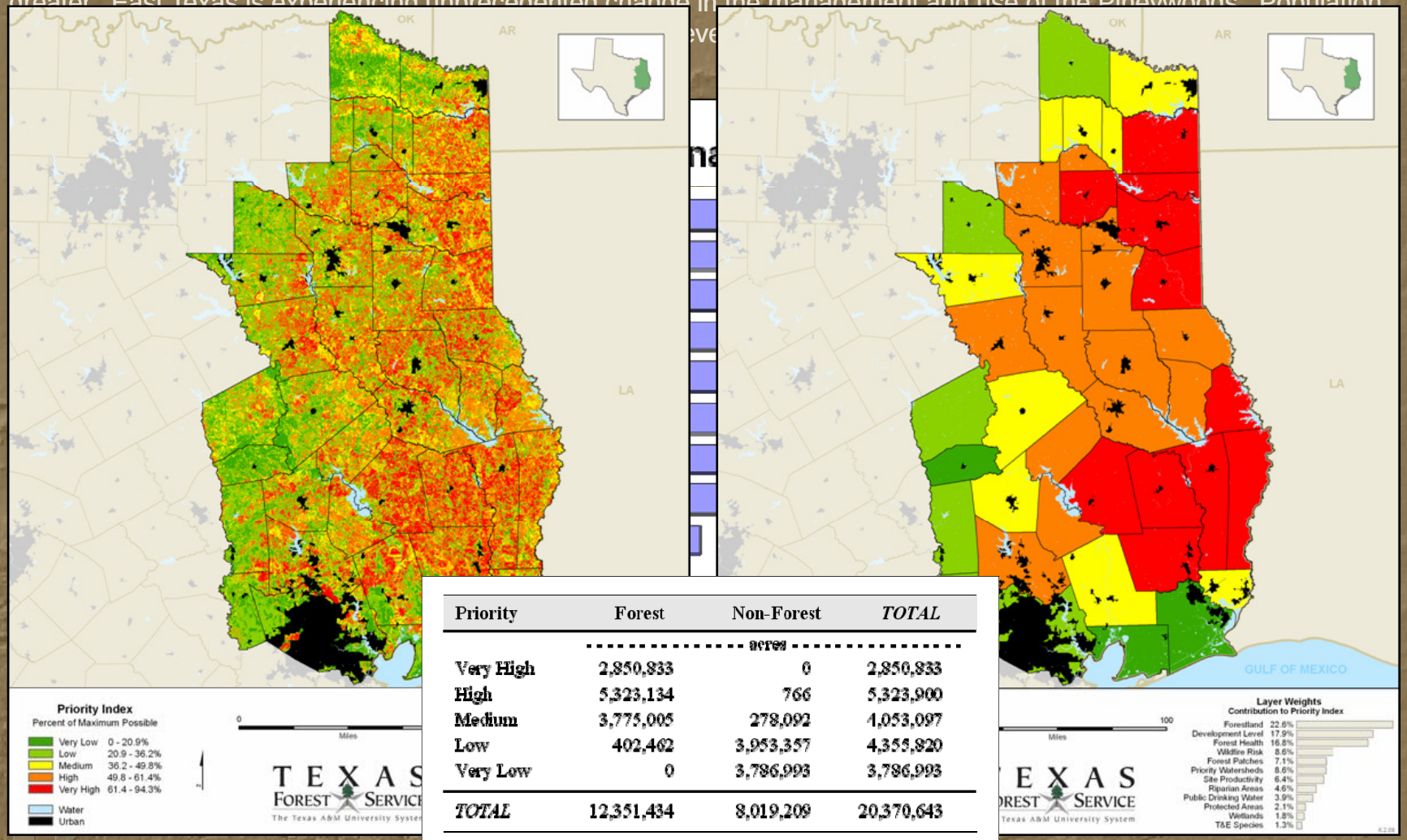
Priority	Forest	Non-Forest	*TOTAL*
		acres	
Very High	3,186,534	1,446	3,187,981
High	4,028,343	609,857	4,638,200
Medium	1,613,417	6,196,575	7,809,992
Low	0	12,971,177	12,971,177
Very Low	0	15,967,806	15,967,806
TOTAL	8,828,295	35,746,862	44,575,157

Central Texas Woodlands

Texas Statewide Assessment

Issue 3: Sustainability of Forest Resources in East TX

For more than a century, the forests of East Texas have provided a number of economic and societal advantages such as manufacturing, employment, recreation, and environmental protection. Today, pressure on this resource has never been greater. East Texas is experiencing unprecedented change in the management and use of the Pineywoods. Population

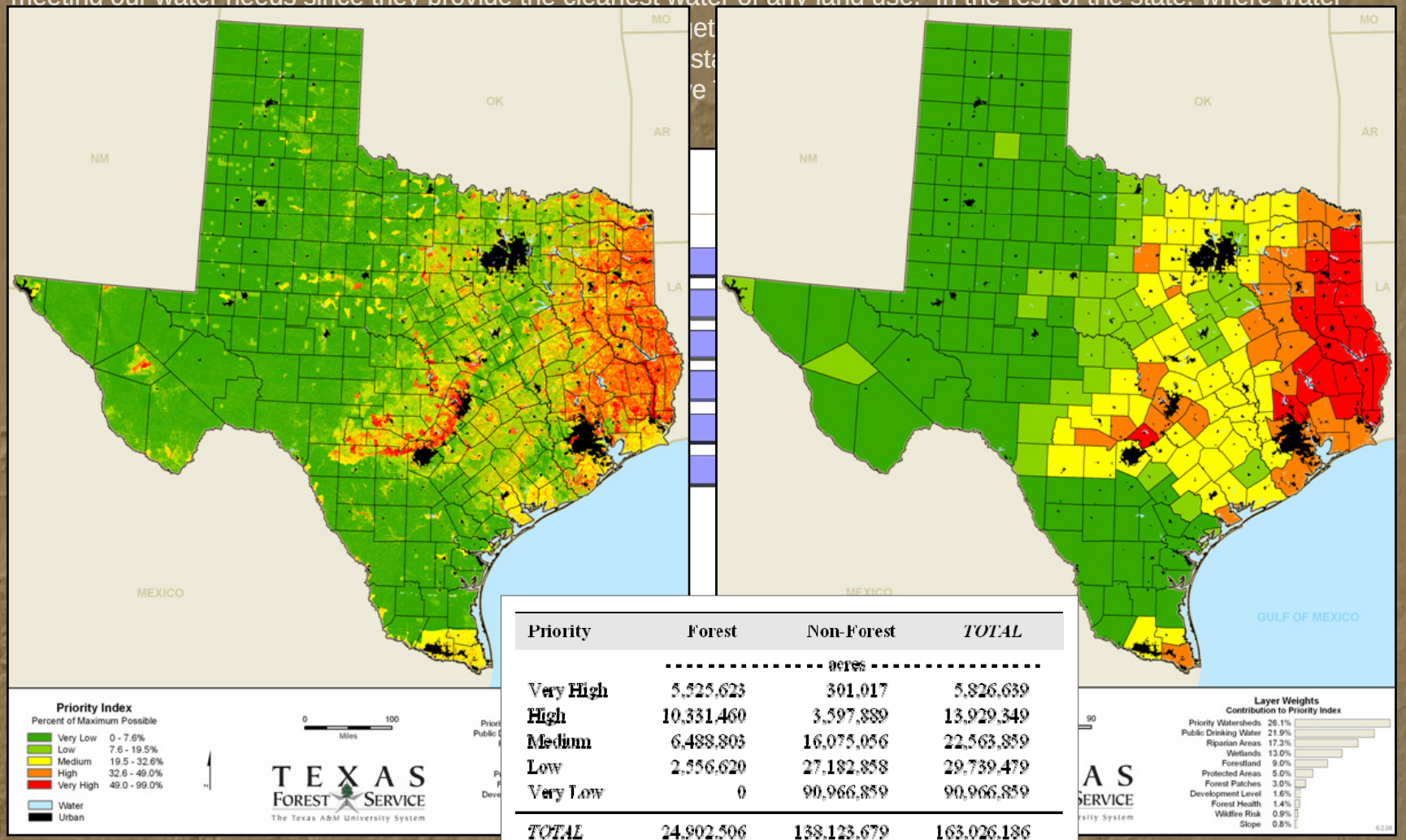


Priority	Forest	Non-Forest	*TOTAL*
		acres	
Very High	2,850,833	0	2,850,833
High	5,323,134	766	5,323,900
Medium	3,775,005	278,092	4,053,097
Low	402,462	3,953,357	4,355,820
Very Low	0	3,786,993	3,786,993
TOTAL	12,351,434	8,019,209	20,370,643

Texas Statewide Assessment

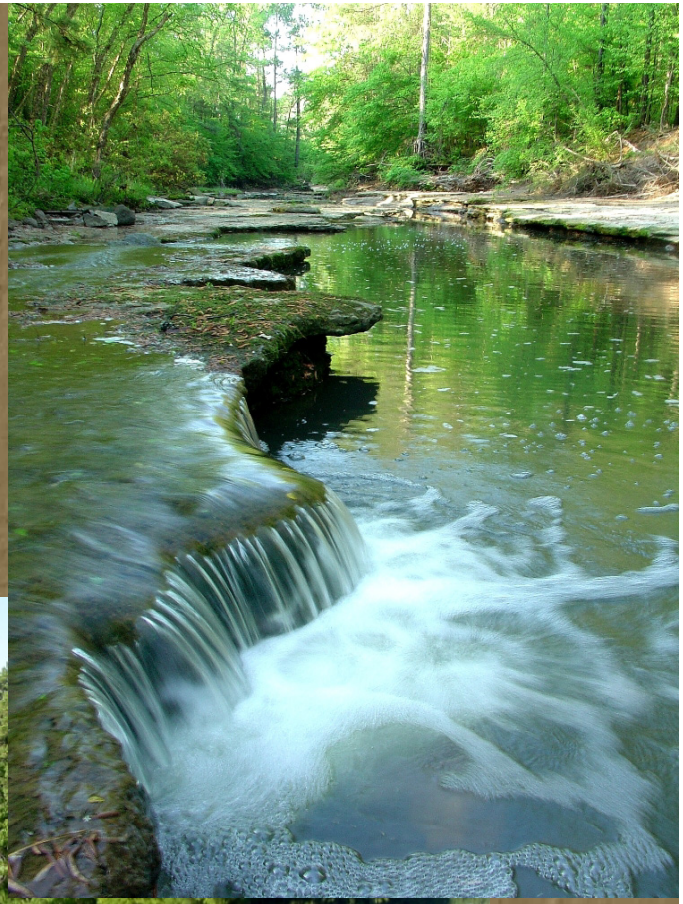
Issue 4: Water Quality and Quantity

In Texas, most freshwater resources originate in the eastern portion of the state, making forestland a critical factor in meeting our water needs since they provide the cleanest water of any land use. In the rest of the state, where water



Priority	Forest	Non-Forest	*TOTAL*
		acres	
Very High	5,525,623	301,017	5,826,639
High	10,331,460	3,597,889	13,929,349
Medium	6,488,803	16,075,056	22,563,859
Low	2,556,620	27,182,858	29,739,479
Very Low	0	90,966,859	90,966,859
TOTAL	24,902,506	138,123,679	163,026,186

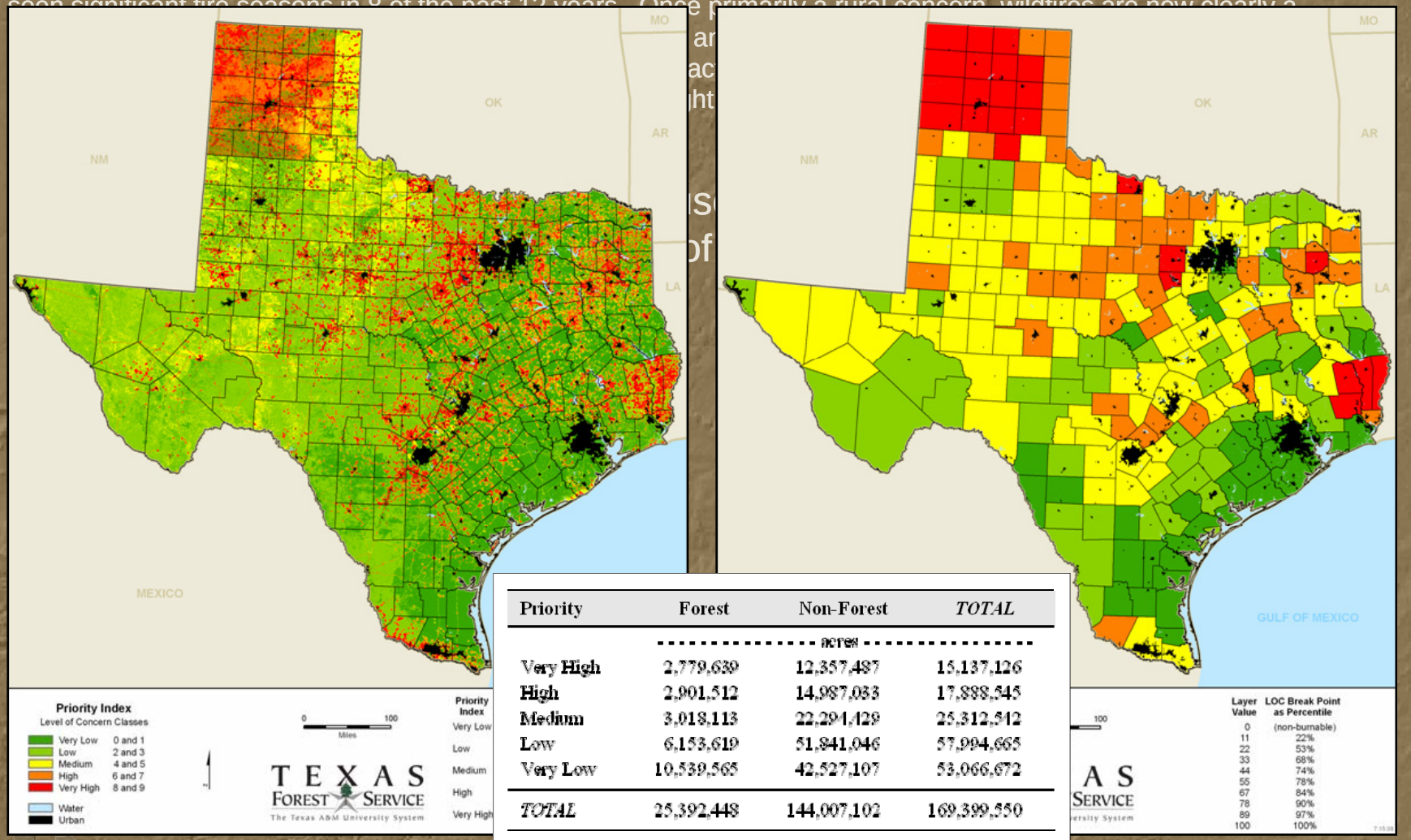
Water Resources



Texas Statewide Assessment

Issue 5: Wildfire and Public Safety

Since its inception in 1915, Texas Forest Service has been tasked with the responsibility of wildfire suppression, defending both the property and lives of Texas citizens. This is a growing issue for Texas. Since 1996, the state has seen significant fire seasons in 8 of the past 12 years. Once primarily a rural concern, wildfires are now clearly a



Priority	Forest	Non-Forest	*TOTAL*
	---------- acres ----------		
Very High	2,779,639	12,357,487	15,137,126
High	2,901,512	14,987,033	17,888,545
Medium	3,018,113	22,294,429	25,312,542
Low	6,153,619	51,841,046	57,994,665
Very Low	10,539,565	42,527,107	53,066,672
TOTAL	25,392,448	144,007,102	169,399,550

Texas Statewide Assessment

Issue 6: Urban Forest Sustainability

With the addition of nearly 7 million residents since 1990, rapid urbanization is creating intense pressure on the sustainability of the trees and forests in Texas communities. Trees provide economic, health, and environmental benefits that are important to the quality of life in Texas communities. It is critical to plant, care for, and conserve the trees in communities where Texans live, work, and play.

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  - *Sub-Issue 6*: Build U&CF Program Capacity at Local Level 104
  - Overall Urban Forest Priority 107

Texas Statewide Assessment

Issue 6: Urban Forest Sustainability

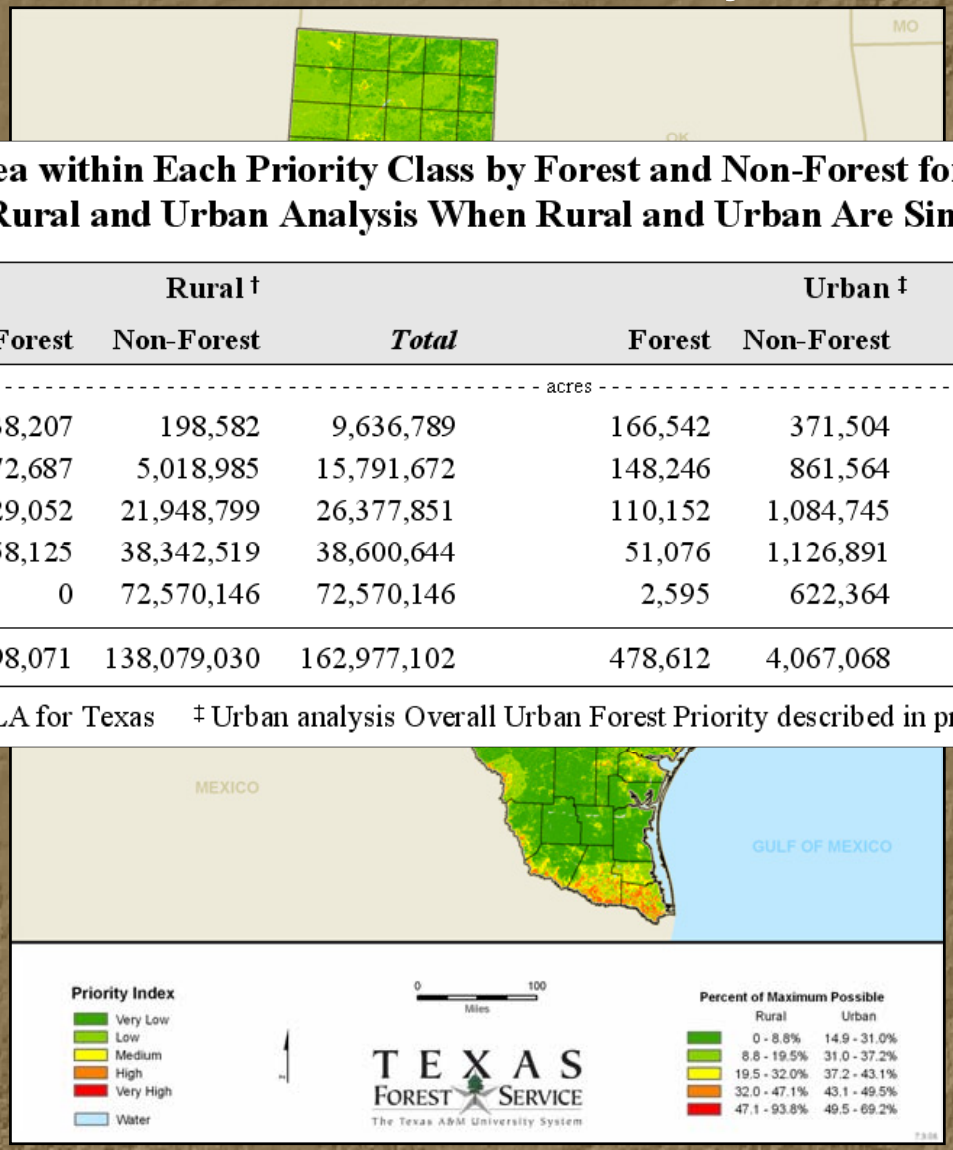
Texas Statewide Assessment

Combined Rural and Urban Priority

- Statewide Assessment required to include entire state—both rural and urban
- Results of urban analysis were overlaid on the rural results thus filling void left in rural analysis
- Urban results were those from Overall Urban Forest Priority
- Results were those from an updated SFLA-for-Texas analysis

Texas Statewide Assessment

Combined Rural and Urban Priority—Simple Overlay



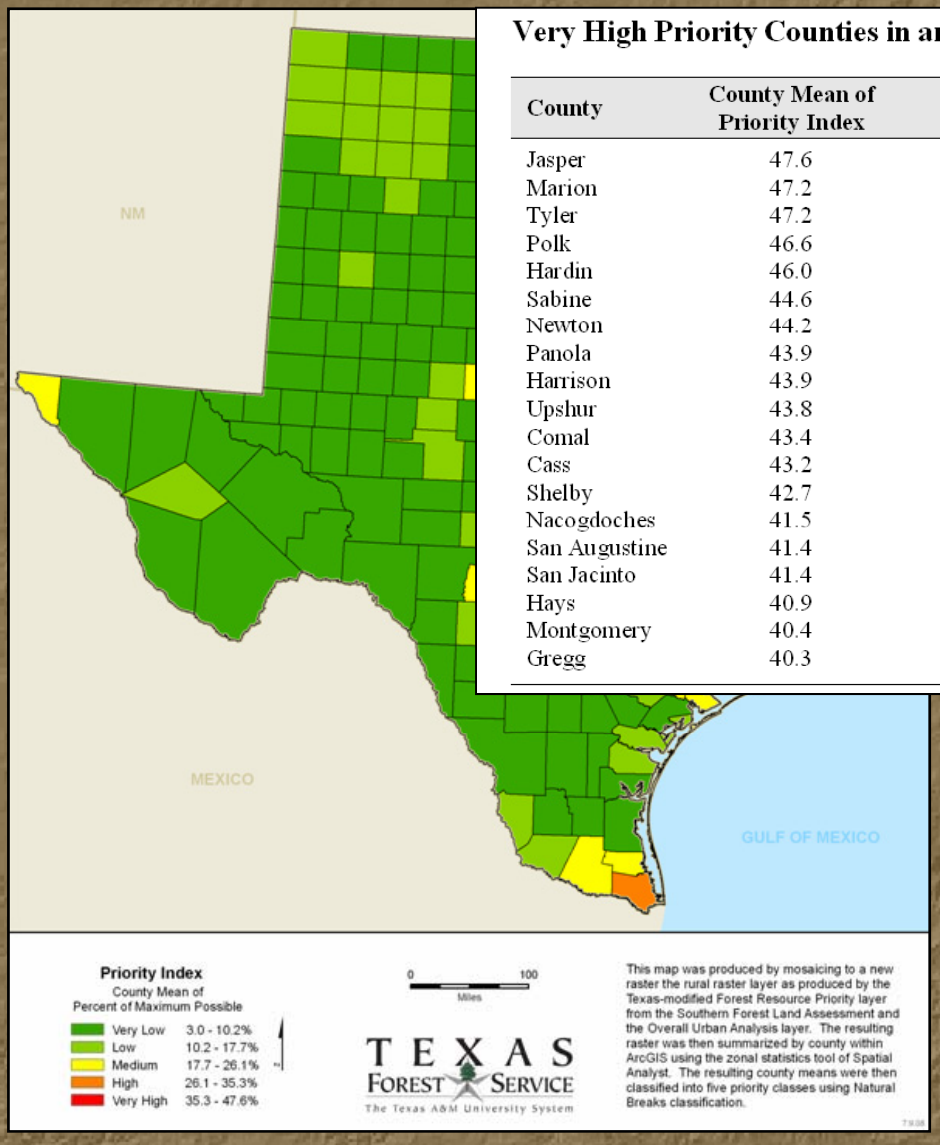
Area within Each Priority Class by Forest and Non-Forest for the Combined Rural and Urban Analysis When Rural and Urban Are Simply Overlain

Priority	Rural †			Urban ‡			*Grand Total*
	Forest	Non-Forest	*Total*	Forest	Non-Forest	*Total*	
	acres						
Very High	9,438,207	198,582	9,636,789	166,542	371,504	583,046	10,174,835
High	10,772,687	5,018,985	15,791,672	148,246	861,564	1,009,811	16,801,483
Medium	4,429,052	21,948,799	26,377,851	110,152	1,084,745	1,194,897	27,572,748
Low	258,125	38,342,519	38,600,644	51,076	1,126,891	1,177,967	39,778,611
Very Low	0	72,570,146	72,570,146	2,595	622,364	624,959	73,195,105
Total	24,898,071	138,079,030	162,977,102	478,612	4,067,068	4,545,680	167,522,782

† Rural analysis is updated SFLA for Texas ‡ Urban analysis Overall Urban Forest Priority described in previous section

Texas Statewide Assessment

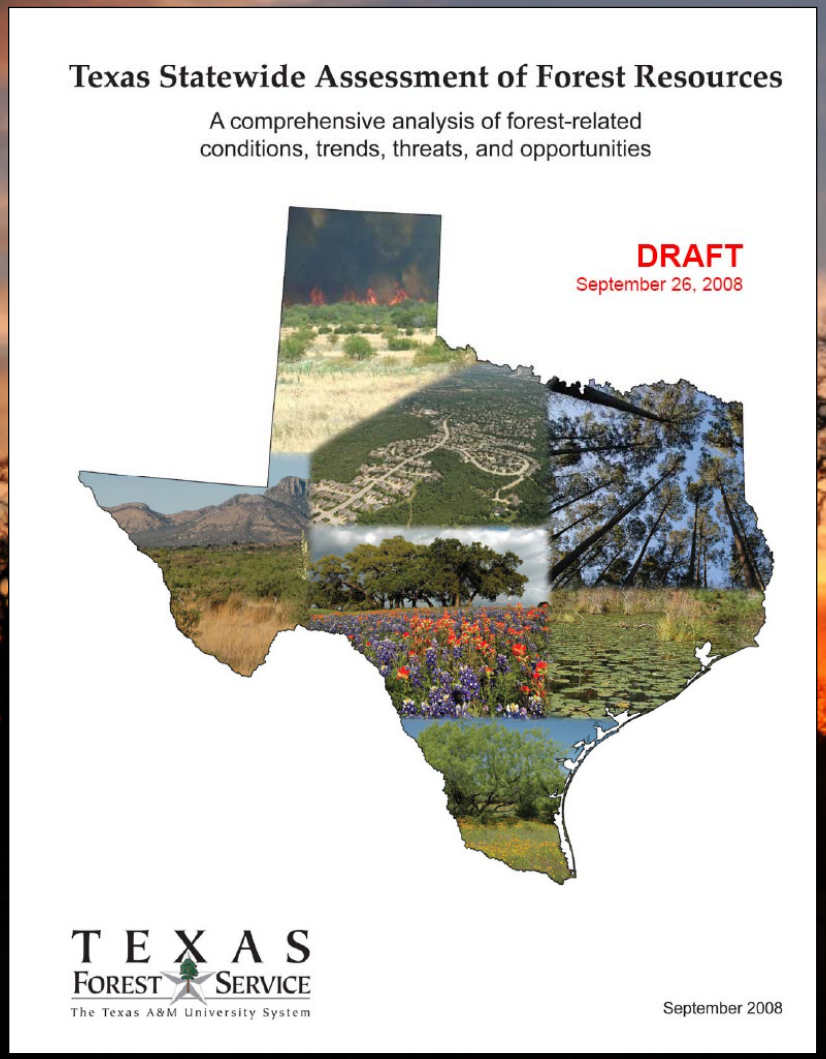
Combined Rural and Urban Priority—Merged Datasets

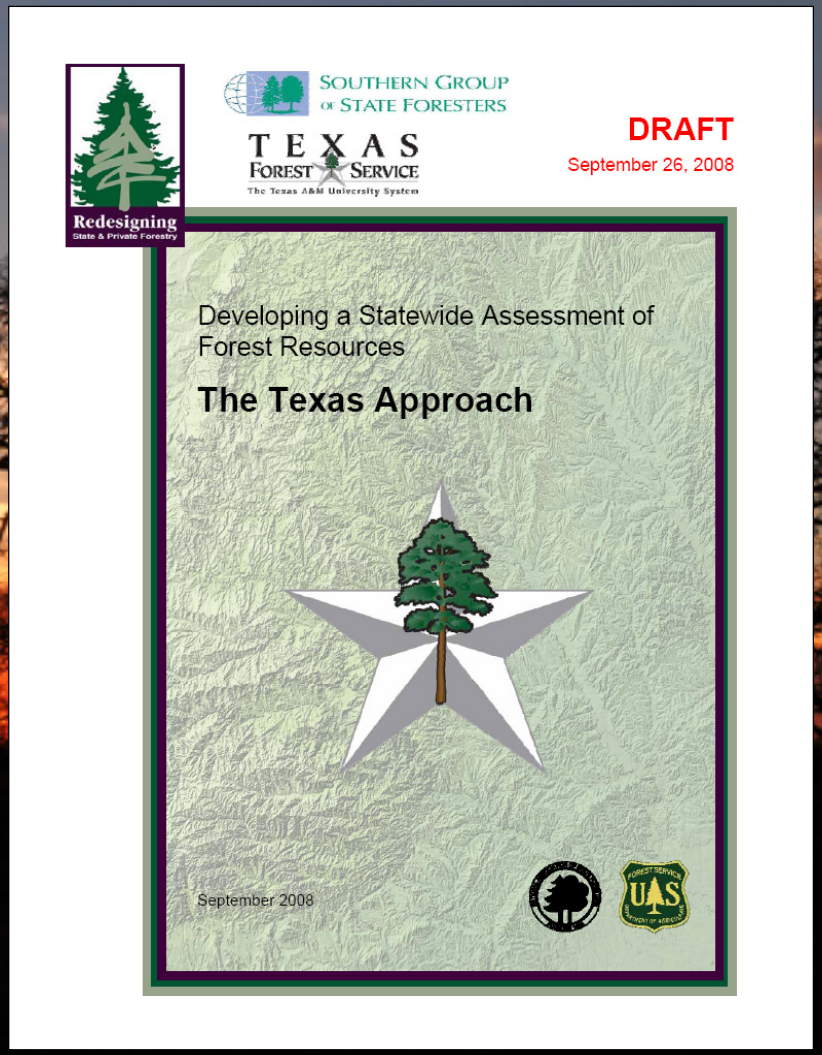


Very High Priority Counties in and County Means of Priority Index

County	County Mean of Priority Index	County	County Mean of Priority Index
Jasper	47.6	Rusk	40.2
Marion	47.2	Angelina	40.1
Tyler	47.2	Somervell	40.0
Polk	46.6	Cherokee	39.8
Hardin	46.0	Orange	39.8
Sabine	44.6	Anderson	39.4
Newton	44.2	Harris	39.3
Panola	43.9	Camp	39.3
Harrison	43.9	Wood	38.8
Upshur	43.8	Bandera	38.8
Comal	43.4	Smith	38.5
Cass	43.2	Liberty	38.0
Shelby	42.7	Kendall	37.9
Nacogdoches	41.5	Travis	37.9
San Augustine	41.4	Tarrant	37.6
San Jacinto	41.4	Trinity	37.5
Hays	40.9	Dallas	36.9
Montgomery	40.4	Hood	36.3
Gregg	40.3	Franklin	35.3

http://tfsweb.tamu.edu/main/popup.aspx?id=5610





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