

Texas Statewide Assessment of Forest Ecosystem Services



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Objectives

- Quantify and assess cultural and regulating ecosystem services provided by Texas forests
- Create a web based application to display custom results www.texasforestinfo.com
- Raise awareness of the overall value of Texas forests

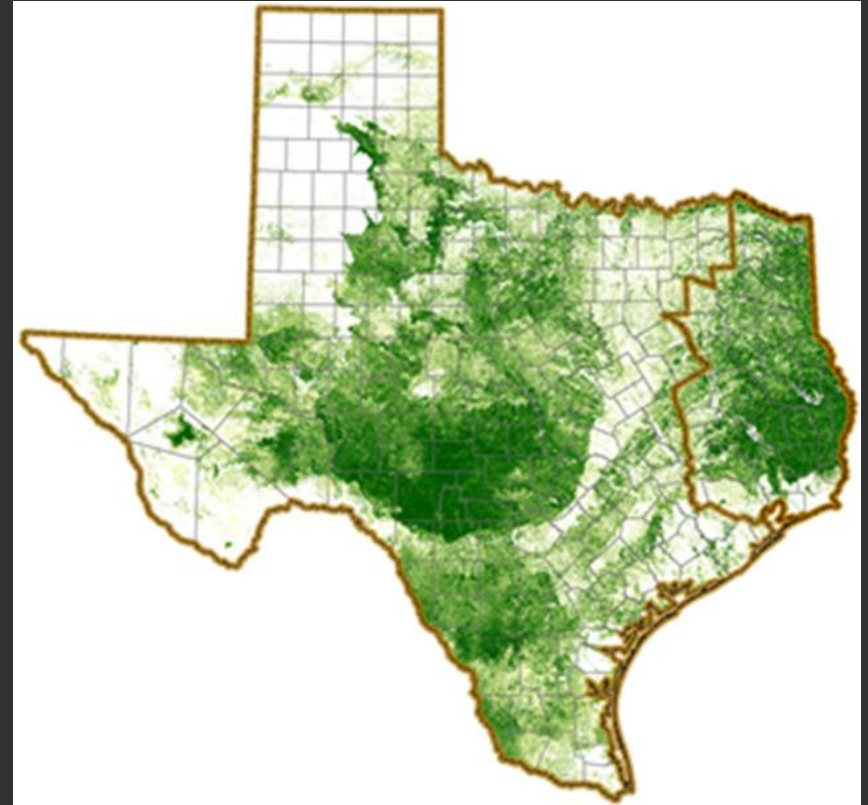
Other State Forest Assessments

State	Value	Scope
Virginia	\$261.15/ac	Recreation Only
Georgia	\$1,712.90/ac	Private Forests Only
Florida	\$4,726.03/ac	Stewardship Forests Includes Timber No Cultural Value

Scope – Forest in Texas

60 million acres

- FIA Forest
- Public and private ownership
- Forests in urban areas
- 7 major ecoregions



Scope – Ecosystem Services

Air Quality - Air pollutant removal

Biodiversity - Supporting essential biological diversity

Climate - Carbon storage and accumulation

Cultural - Non material benefits (aesthetic, spiritual, leisure)

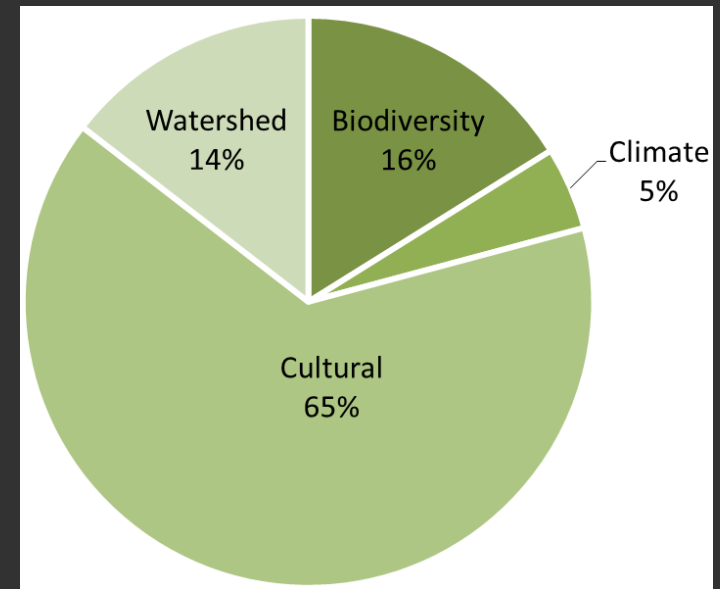
Watershed - Continuous supply of clean water, flood
attenuation

Methodology

- Benefit transfer (literature review)
 - Convert estimates to constant 2011 USD
- Public survey & econometric modeling
- Sensitivity analysis – compared impact to service value and total value by adjusting benefit transfer values

Assessment Results (\$/year)

Biodiversity	\$14.8 billion
Climate	\$ 4.4 billion
Cultural	\$60.4 billion
<u>Watershed</u>	<u>\$13.2 billion</u>
Total	\$92.9 billion





ECOSYSTEM SERVICES

Forests provide numerous benefits, such as clean air, clean water, wildlife habitat, flood control, and aesthetics. Estimating the economic value of these services helps show how valuable Texas forests are.

[LEARN MORE](#)

Discover & Explore an array of maps depicting forest conditions

Query & Download data and reports on a variety of forest interests

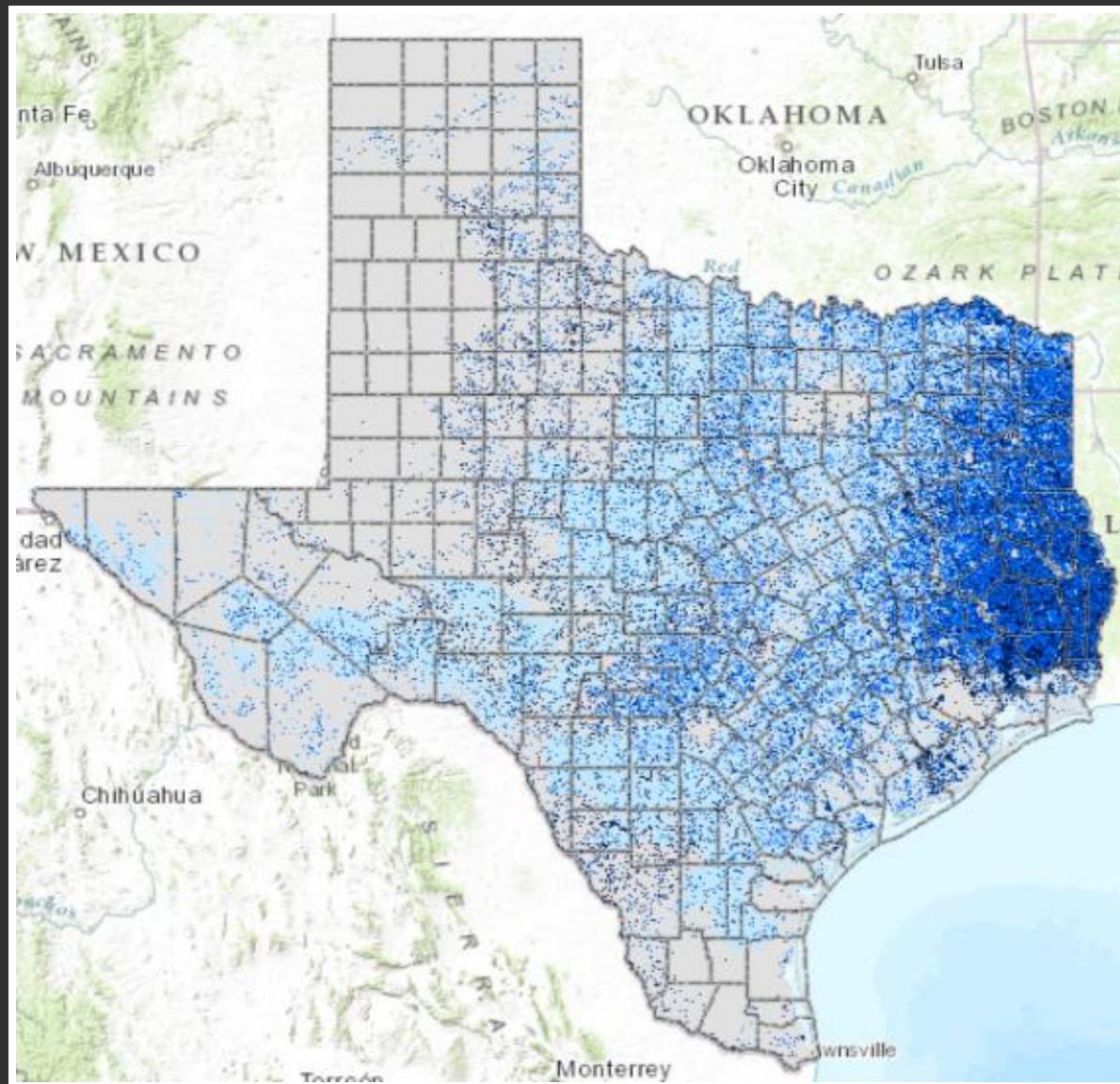
Applications

[Timber Supply Analysis](#)[Forest Distribution](#)[Forest Ecosystem Values](#)[Economic Impact](#)[Timber Decision Simulator](#)[Forest Action Plan](#)[Forest Products Directory](#)[Map My Property](#)[Tree Trails](#)

About this Portal

Through Texas Forest Info, Texas A&M Forest Service provides landowners, managers, government officials, local community groups, and the public state-of-the-art access to information about trees and forest lands across the state.

Results – Watershed Services




☐ Hide Tools

[Getting Started](#) ?

[View Map Themes](#) ?

[Ecosystem Services](#) ?

Step 1: Define Area of Interest

☐ Select County or Urban Area

☐ Select county

☐ Draw polygon on map

Step 2:

Transparency: 0

Step 3:

[Standard Reports](#) ?

[Print Map](#) ?

[Share](#)
[Layers](#)


Ecosystem Services



Value of ecosystem services provided by forested acres only



Ecosystem Service	Rural Average Value (\$/acre/year)	Rural Total Value (thousand \$/year)	Urban Average Value (\$/acre/year)	Urban Total Value (thousand \$/year)	Average Value (\$/acre/year)	Total Value (thousand \$/year)
Air Quality	-	-	0.0	0.0	0.0	0.0
Biodiversity	235.7	9,392.4	0.0	0.0	235.7	9,392.4
Carbon	91.4	3,644.1	0.0	0.0	91.4	3,644.1
Cultural	1,137.2	45,320.3	0.0	0.0	1,137.2	45,320.3
Watershed	540.7	21,547.5	0.0	0.0	540.7	21,547.5
Total	2,005.0	79,904.3	0.0	0.0	2,005.0	79,904.3



Forest Ecosystem Values

An Estimation of Economic Values of Forest Ecosystem Services

Healthy forests and woodlands provide a full suite of goods and services, including climate regulation, watershed regulation, wildlife habitat, biodiversity, recreation, and various cultural services. These ecosystem services are crucial to human well-being; however, most of these services do not have established market values like forest products.

The estimates shown are based on an analysis of forest resources in the area, results of existing literature, and non-market valuation techniques. The results should be viewed as conservative estimates, and are only part of a larger suite of ecosystem services provided by the forest within the area of interest. All values are reported in 2011 constant United States dollar.

Forestland

There are 18,859 acres of forestland within the area of interest. Of this amount, 18,859 acres occur within rural areas, while 0 acres are found within urban and community areas.

Value of Forest Air Quality Regulation within the Area of Interest

Forests in urban areas have the ability to purify the air by removing various pollutants. Based on estimates from the Urban Forest Effects (UFORE) model, the value of forest air quality regulation within the area of interest is estimated to be \$0.0 per acre for a total value of \$0 annually.

Value of Forest Biodiversity Services within the Area of Interest

Forest biodiversity services are critical for species presence, abundance, and longevity. This service was valued at a base rate of \$232 per acre. In addition, "hotspots" of ecologically significant areas were valued at an additional \$51.75 per acre. The value of forest biodiversity services within the area of interest is \$239.9 per acre per year for a total value of \$4.5 million annually.

Value of Forest Carbon Sequestration within the Area of Interest

Forests have the ability to remove and store carbon from the atmosphere through the process of photosynthesis. This service was estimated using a carbon value of \$22 per metric ton. Carbon storage was amortized over 20 years using a 3% discount rate to determine an annual value. The total value of

Results Could Be Used to:

- Raise awareness of the importance of Texas forests
- Support forest conservation efforts
- Inform forest policy
- Evaluate changes in ecosystem service values following natural disasters and conservation programs
- Encourage enhanced forest management

Next Steps

- Texas urban forest ecosystem service assessment
- Regional template for Southern state forestry agencies



Conclusion

Recognizing the value of forest ecosystem services is paramount to smart land use planning and the long-term sustainability of Texas forests.