

**TEXAS
FOREST STEWARDSHIP
PLAN**

2005–2010

**Texas Forest Service
Forest Resource Development
August 2005**

Acknowledgments

This report was prepared with the assistance of Clay Bales, Tom Boggus, Kim Camilli, Burl Carraway, Jan Davis, Jake Donellan, Robert Fewin, Daniel Lewis, Scotty Parsons, Jim Rooni, Hughes Simpson, Allen Smith, Ernie Smith, Donna Work, Weihuan Xu, and special thanks to Brad Barber and Ron Thill.

John Norris, Editor

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**Texas Forest Service
Texas Forest Stewardship Plan
2005-2010**

PURPOSE STATEMENT

This State Stewardship Plan is designed to guide the State Stewardship Coordinating Committee and the Texas Forest Service and partners as they oversee the Texas Forest Stewardship Program. The Plan is action-oriented within a dynamic framework for the implementation of the Texas Forest Stewardship Program through 2010. The plan will be updated as needed to reflect significant changes in emphasis areas, delivery systems, partnerships, and other factors.

The purpose of the Texas Forest Stewardship Program is to assist private forest landowners who wish to manage their lands according to a multi-purpose approach, including air and water, fish and wildlife, recreation, aesthetics, and forest products.

STATE STEWARDSHIP COORDINATING COMMITTEE

The State Stewardship Coordinating Committee presently consists of the following organizations and individuals:

- ★ U.S. Fish and Wildlife Service (USFWS)
- ★ Texas Parks and Wildlife Department (TPWD)
- ★ U.S. Forest Service/National Forests and Grasslands in Texas (USFS)
- ★ U.S. Forest Service Southern Forest Experiment Station – Nacogdoches (USFES)
- ★ Texas A&M University Department of Forest Science (TAMU-FS)
- ★ Stephen F. Austin State University Arthur Temple College of Forestry (SFASU)
- ★ Texas State Farm Services Agency (FSA)
- ★ Natural Resources Conservation Service (NRCS)
- ★ Texas Cooperative Extension (TCE)
- ★ Texas State Soil and Water Conservation Board (TSSWCB)
- ★ Association of Consulting Foresters (ACF)
- ★ Texas Forestry Association (TFA)
- ★ Texas Forest Landowner's Council (TFLC)
- ★ County Forest Landowner Associations (CFLOA)
- ★ The Nature Conservancy (TNC)
- ★ Conservation Fund (CF)
- ★ Texas Forest Service (TFS)
- ★ Lower Colorado River Authority (LCRA)
- ★ West Texas landowner representatives
- ★ Central Texas landowner representatives
- ★ East Texas landowner representatives

- ★ Audubon Society (AUDUBON)
- ★ Texas A&M University (TAMU)
- ★ Texas and Southwest Cattle Raiser's Association (TSWCRA)
- ★ Forest Industry
- ★ Texas Logging Council (TLC)
- ★ Texas Land Trust Council (TLTC)
- ★ Trust for Public Lands (TPL)

The State Stewardship Coordinating Committee (SSCC) will serve in an advisory role to the Texas Forest Service (TFS) to help the Forest Stewardship Program (Stewardship Program) address the entire forest resource in Texas. Since its members are diverse, active and interested in the Stewardship Program, the SSCC will provide guidance for better implementation and marketing of stewardship concepts. The SSCC will also provide guidance for the Forest Land Enhancement Program (FLEP) in the event that this program is funded beyond FY 2005.

FOREST STEWARDSHIP PROGRAM GUIDELINES

Recognizing that each landowner has his or her own set of objectives, entities implementing the Stewardship Program are expected to blend the following basic standards into resource management plans that address the landowner's objectives: Wildlife, Best Management Practices, Recreation, Aesthetics, Timber, and others.

AGENCY/COOPERATOR ROLES

U.S. Fish and Wildlife Service (USFWS)

This is the lead agency for endangered species enforcement and regulation. USFWS biologists will be heavily involved in RCW management on the state's forests, including translocation participation. This agency will also oversee the RCW Safe Harbor Habitat Conservation Plan (HCP). Forest management guidelines for the Houston toad were also developed through USFWS leadership. www.fws.gov/

Texas Parks and Wildlife Department (TPWD)

TPWD is charged with the responsibility to conserve, preserve and protect the state's natural resources while maximizing the individual's opportunities to enjoy them. The agency administers an extensive state park system, wildlife management areas and fish hatcheries. More specific responsibilities include research on wildlife and fisheries management practices, wildlife technical assistance to private landowners, public hunting opportunities, hunter safety, wetlands protection and enhancement, endangered species programs, and resource law enforcement. TPWD's expertise allows for increased emphasis on wildlife resources by region, which is crucial for a state with the natural resource diversity of Texas. www.tpwd.state.tx.us/

U.S. Forest Service/National Forests and Grasslands in Texas (USFS)

The National Forests and Grasslands in Texas offer excellent opportunities to demonstrate Forest Stewardship activities. USFS foresters and biologists have expertise in management of endangered species, and expertise in combining forest management activities with other non-timber objectives. www.fs.fed.us/r8/texas/

U.S. Forest Service Southern Research Station

Wildlife scientists and ecologists at the Wildlife Habitat and Silviculture Lab in Nacogdoches, Texas, have a wealth of information and knowledge on the impacts of forest management practices (alternative silvicultural systems, fire, fragmentation, roads, streamside management zones and others) on many wildlife species, especially those that are threatened, endangered or sensitive. www.srs.fs.usda.gov/

Texas A&M University Department of Forest Science (TAMU Forest Science)

Located in College Station, the Department of Forest Science strives to meet the education, research and extension needs related to the development and application of knowledge and technology for forestry policy and management, forest regeneration and wood products manufacture and use. forestry.tamu.edu/

Stephen F. Austin State University Arthur Temple College of Forestry (SFASU Forestry)

The College of Forestry is dedicated to meeting teaching, research and service needs encountered in professional management of land and related forest resources. A secondary goal is to make available the knowledge and expertise required to solve problems of resource management and use. www.sfasu.edu/forestry/

Farm Services Agency (FSA)

The Farm Service Agency is charged with providing cost-share and incentive program payments. FSA currently assists with the Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP) and Grassland Reserve Program (GRP). FSA has responsibility for administering the Conservation Reserve Program (CRP) and the Emergency Conservation Program (ECP). www.fsa.usda.gov/

Natural Resources Conservation Service (NRCS)

The NRCS, formerly known as the Soil Conservation Service (SCS), is the lead agency in providing technical assistance to farmers and ranchers in Texas, and also has responsibility for USDA cost-share programs involving certain conservation practices. NRCS soil scientists use soils data to determine opportunities for specific land uses and to aid land managers in conservation practices to protect critical areas. Its engineers

provide technical assistance for installation of water control and management structures. The NRCS has responsibility for administering EQIP and WHIP. www.nrcs.usda.gov/

Texas Cooperative Extension (TCE)

TCE, a sister agency within the Texas A&M University System, is the leader in providing Texans with information and education in the field of agriculture. It facilitates the adoption of technology developed by Texas A&M University researchers by agricultural producers. Various specialists provide a wide range of public services and information related to fruit and nut production, lawn care, gardening, range management, forestry, and 4-H program implementation. The agency also has valuable expertise in agricultural communications. texasextension.tamu.edu/

Texas Agricultural Experiment Station (TAES)

TAES, another sister agency, is charged with conducting scientific research related to agriculture throughout Texas. In Central Texas, much of this research is focused on forage production, Ashe juniper control, rangeland ecology, hydrology, and prescribed burning. agresearch.tamu.edu/

Texas State Soil and Water Conservation Board (TSSWCB)

The TSSWCB is the lead agency in Texas for agricultural and silvicultural nonpoint source pollution control. This agency provides EPA 319(h) funding for the Texas Silvicultural Nonpoint Source Pollution Control Program administered by the Texas Forest Service. Cooperation with TSSWCB also helps reach the milestones in the state NPS Management Plan. www.tsswcb.state.tx.us/

Soil and Water Conservation Districts (SWCDs)

There are 216 SWCDs throughout Texas. SWCDs enable local landowners to organize and develop a long-range program and work plan which guide the district in solving its conservation problems. District programs and work plans are updated regularly to recognize and evaluate changes in natural resources. SWCDs receive technical assistance from the NRCS and work closely with other state and federal agencies to protect soil and water.

Texas Association of Consulting Foresters (ACF)

Consulting foresters represent the interests of non-industrial private landowners. Professional assistance for landowners is crucial, particularly during timber harvest activities to ensure that stewardship practices are implemented. Consultants help spread the stewardship message and implement stewardship practices as they advise their clients. www.acf-foresters.com/contact.cfm

Texas Forestry Association (TFA)

TFA is the voice of the forest community in Texas. Through programs such as the Sustainable Forestry Initiative^[sm], stewardship training is provided for forest landowners, foresters and loggers. TFA is one of the best supporters of the Stewardship Program in East Texas. TFA also provides a mechanism to work collectively with forest industry, forest landowners and others involved in forestry. www.texasforestry.org

County Forest Landowner Associations (CLOA)

CLOAs provide the means for forest landowners to visit with other landowners, learning from and sharing experiences. Meetings provide opportunities to hear from experts on stewardship issues. While CLOAs have typically been in existence in East Texas only, urban associations in Austin and the Dallas/Ft. Worth Metroplex have recently been created or become re-activated. Over 20 active CLOAs exist in Texas.

The Nature Conservancy (TNC)

TNC works to preserve plants, animals and natural communities. It protects land through gifts, exchanges, conservation easements, management agreements, purchases from the Conservancy's revolving Land Preservation Fund, debt-for-nature swaps, and management partnerships. The TNC manages the resulting preserves with the most sophisticated ecological techniques available. A priority of TNC in Texas is enhancement of longleaf pine areas as well as revegetation efforts along the Lower Rio Grande River. nature.org/

Texas Logging Council (TLC)

This organization represents and organizes Texas logging contractors and is a program within the Texas Forestry Association. The TLC participates actively and strongly supports stewardship educational outreach, especially to East Texas private landowners. TLC also provides a mechanism for other groups to work with when logger input is needed.

Lower Colorado River Authority (LCRA)

This Central Texas organization has worked cooperatively with the TFS in establishing a telephone Oak Wilt Information Line to give the latest technical information on oak wilt identification, prevention and control. LCRA also graciously provides much-needed meeting space in Austin for landowner groups. TFS also partners with LCRA on streamside conservation and water and soil management practices. www.lcra.org/

Texas Natural Resources Information System (TNRIS)

TNRIS is the state's clearinghouse and referral center for natural resources data. Its primary purpose is to make data available to data users quickly and reliably. In addition, TNRIS operates a geographic information system (GIS) primarily for support of participating agency mapping requirements, and supplies digital map files to GIS users throughout the state. www.tnr.is.state.tx.us/

The Texas Land Trust Council (TLTC)

The Texas Land Trust Council (TLTC) was formed in 1999 in partnership with Texas Parks and Wildlife to serve as a support association for all land trust organizations in Texas. The Council's mission is to promote and sustain the conservation efforts of Texas' land trusts. TLTC provides educational, organizational and technical support to land trusts, and also acts as a statewide clearinghouse for conservation information. TLTC publishes a newsletter, a land trust directory, a conservation easement handbook, an annual inventory of protected lands in Texas, and a conservation "packet" that can be tailored to meet the needs of land trusts, landowners and professional advisors. www.tpwd.state.tx.us/conserves/tlct/about

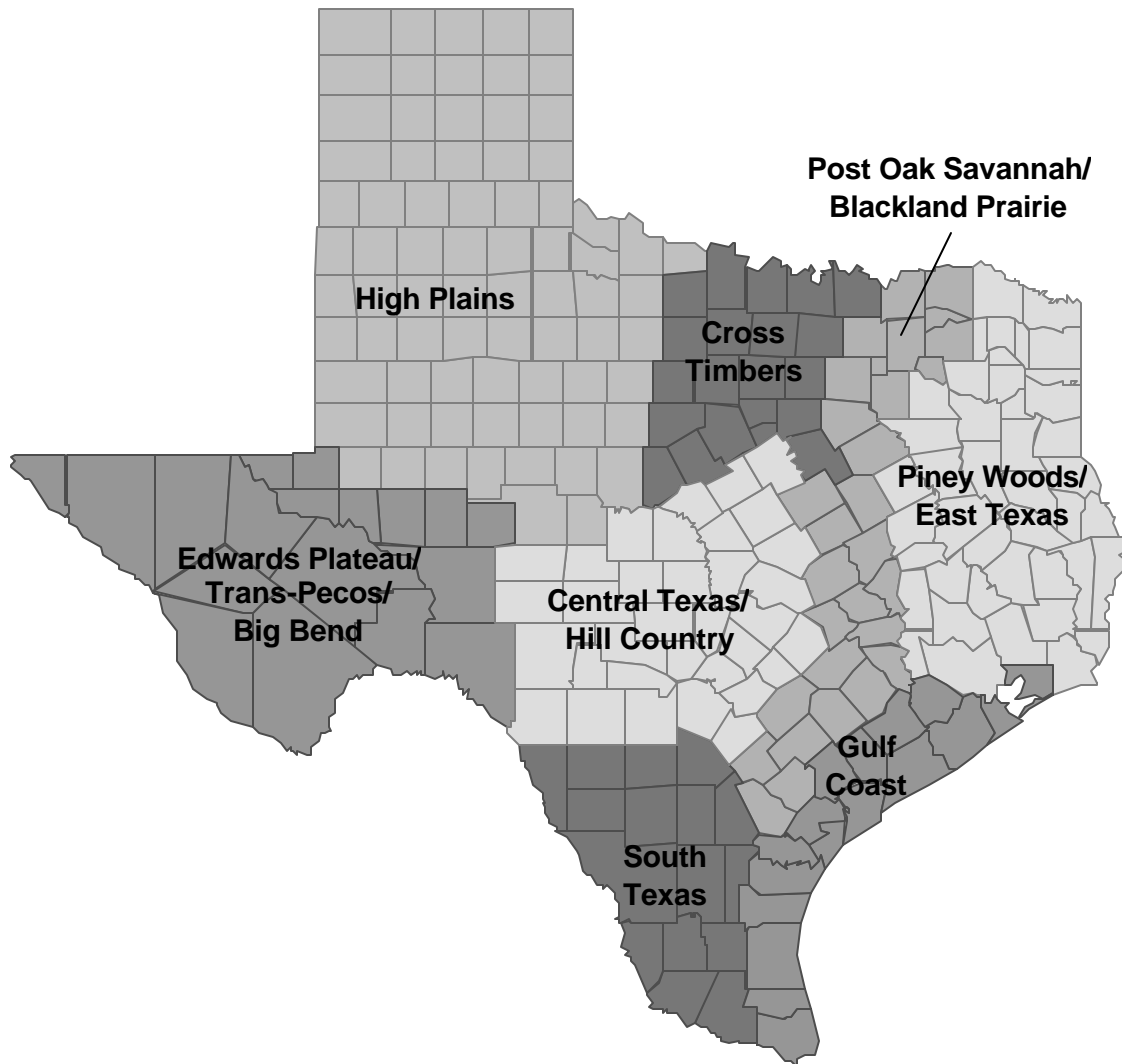
Trust for Public Lands (TPL)

The Trust for Public Land (TPL) is a national, nonprofit, land conservation organization that conserves land for people to enjoy as parks, community gardens, historic sites, rural lands, and other natural places, ensuring livable communities for generations to come. Land conservation is central to the Trust for Public Land's mission. Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 2,700 land conservation projects in 46 states, protecting nearly 2 million acres. www.tpl.org/

The Conservation Fund

The Conservation Fund forges partnerships to preserve our nation's outdoor heritage -- America's legacy of wildlife habitat, working landscapes and community open-space. Pioneering a unique brand of conservation driven by Effectiveness, Efficiency, Environmental, and Economic Balance, the Fund produces unsurpassed results. Balancing environmental principles with economic goals, the Fund creates public and private partnerships to demonstrate sustainable conservation solutions for the 21st Century. www.conservationfund.org/

Stewardship Regions of Texas

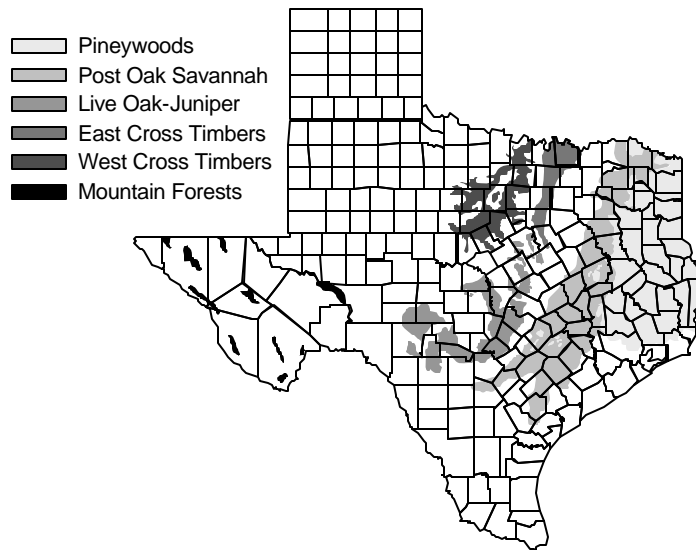


BASELINE DATA ON FOREST RESOURCES

Current Status

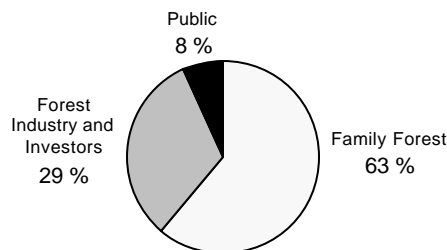
Of the 26 million acres of forestland in Texas, 11.9 million acres are commercially valuable for timber production. This timberland is located in 43 counties in East Texas where the Pineywoods tree region of the state occurs.

Tree Regions of Texas



The largest proportion of timberland is owned by Family Forest landowners (a new term to describe what was formerly “non-industrial private forest landowner (NIPF)”). These landowners own 7.5 million acres of timberland. The forest products industry owns 3.4 million acres, while public forests—primarily four National Forests—account for the remaining 1.0 million acres. Of the 3.4 million acres of timberland owned by the forest products industry, about 1.5 million acres were sold to various investors in 2002. Most of these timberlands owned by investors are now managed by Timberland Investment Management Organizations (TIMOs).

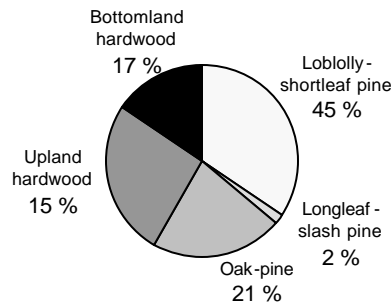
Timberland Ownership in East Texas



The “new” Family Forest owner (see Page 36. The Changing Rural Landscape), perhaps 30 percent of the class, ranks timber 4th or 5th in objectives for their forestlands behind aesthetics, investment and use for primary home or cabin sites, a sharp contrast to our traditional clientele.

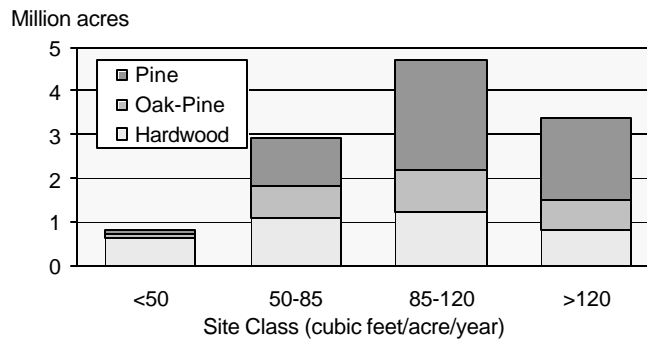
Forty-seven percent of the timberland is classified as pine forest type. Pine and oak-pine together comprise 68 percent of the timberland. The remaining 32 percent of the timberland is in hardwood forest and other types.

Timberland Area by Forest Type



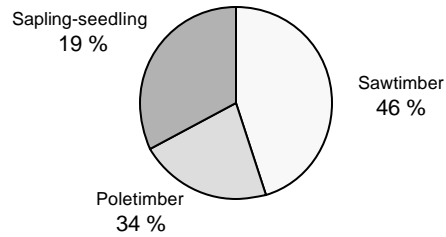
Family Forest pine and oak-pine timberland made up 57 percent of the total in 2002. Most of the pine and oak-pine occurs on sites capable of producing more than 85 cubic feet per acre per year. The poorest sites are dominated by oak-hickory. In 2002, 901,700 acres of family forest ownership were in pine plantations, which is only 12 percent of the total family forest timberland acreage.

Timberland by Site Class and Forest Type



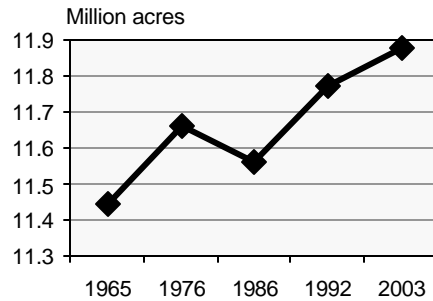
Most of the timber in East Texas is in the larger size classes. Stands composed of sawtimber make up 46 percent of the total timberland, while stands of poletimber and saplings-seedlings make up 34 percent and 19 percent, respectively.

Timberland Area by Stand Size Class



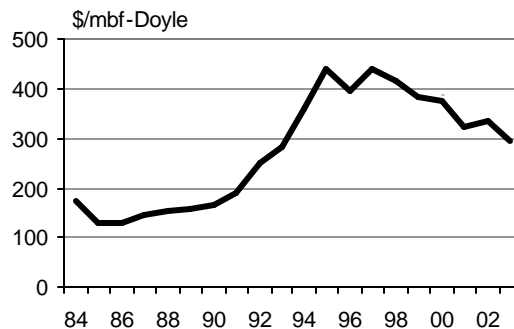
Over the last several decades, there has been a slight increase in the amount of timberland in East Texas. According to the last five Forest Surveys, timberland has increased from 11.4 million acres in 1965 to 11.9 million acres in 2002, with conversion of openland more than offsetting urban sprawl.

Timberland by Forest Survey Year



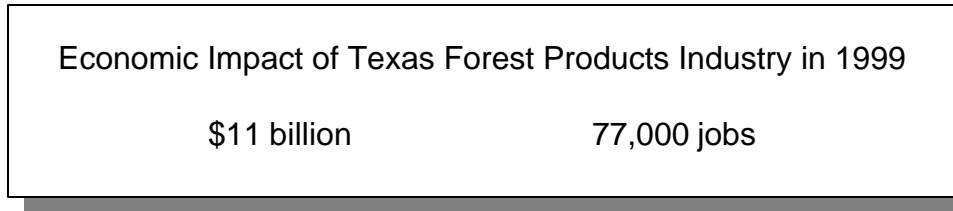
In 1965, the total value of timber harvested in East Texas was \$25 million. By 2003, the value had risen to \$668 million. During this period, harvests tripled and timber prices rose ten-fold.

Pine Sawtimber Stumpage Prices in East Texas
1984-2003



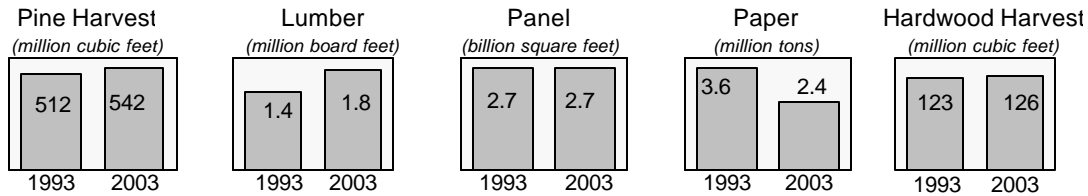
Total impact of the forest products industry on the economy of East Texas in 1999 (the last year figures were available) was \$11 billion including the delivered value of timber,

the value of products produced excluding cost of timber, and the indirect impact of the service industry. The industry supported 77,000 jobs in East Texas.



Harvest of pine increased 5.9 percent during the decade from 1993 to 2003—512 million cubic feet in 1993 compared to 542 million cubic feet in 2003. Pine harvested in 2003 produced 1.8 million board feet of lumber compared to 1.4 million board feet 10 years before. Pine accounted for 88 percent of the total value of all timber harvested in 2003. The production of structural panels was almost unchanged at 2.7 billion square feet in the ten years before 2003. However, during this period of time, the production of oriented strand board (OSB) increased to over 50 percent of the total structural panel production, while substantial downsizing of plywood mills was experienced.

Harvest and Product Production Comparison
1993 vs. 2003



In contrast to the increased production of solid wood products over the 1993-to-2003 decade, production of paper products, which includes paper, paperboard, and market pulp, has decreased substantially—from 3.6 million tons in 1993 to 2.4 million tons in 2003.

Significant changes are occurring in the Texas paper industry. Abitibi Consolidated Inc., based in Canada, recently purchased two paper mills in East Texas, one in Lufkin and one in Sheldon, from Donohue Industries. Abitibi added a new paper machine at the Lufkin mill and shifted the Sheldon mill to 100 percent recycled fiber before indefinitely idling both mills. It is possible that the Lufkin mill will be reopened in the future.

Harvest of hardwood totaled 126 million cubic feet in 2003 compared to 123 million cubic feet in 1993.

Wildlife

All wildlife species need food, cover, water and space. These elements must be furnished by their habitat. Important sources of food for wildlife on forested land include hard mast (e.g. fruit of oak, hickory and beech) and soft mast (e.g. fruit of dogwood, blackgum and blackberry) as well as many other species of woody plants, vines and forbs.

Oaks comprise the majority of nut-bearing tree species in East Texas – 73 percent of 1.7 billion trees. Interestingly, of the sawtimber size nut trees, the oaks total 92.9 million trees and account for 90 percent of the total. The most frequently found trees, in descending order, include post oak, water oak, southern red oak, hickories, beech, ironwood, white oak, blackjack oak, and cherrybark oak.

The fleshy, fruit-bearing species in East Texas total 850 million trees. Those of sawtimber size only account for 2 percent of the total. The primary species, in descending order according to abundance, are blackgum, hawthorn, dogwood, holly, sugarberry, persimmon, and eastern red cedar.

1) Deer Resources of the Pineywoods and Post Oak Regions

The white-tailed deer (*Odocoileus virginianus*) is a very popular game animal in both the Pineywoods and Post Oak Savannah ecological areas of Texas. TPWD estimates that there are more than 445,752 hunters in this state. The deer population has always been an important natural resource, first to the Indians then to settlers as a mainstay for subsistence, and today mainly for sport. Deer populations in many areas of the Pineywoods and the Post Oak Savannah had completely disappeared by the late 1930s.

Following major restocking efforts during the 1940s and 1950s, deer populations increased dramatically in the 1960's in many Pineywoods and Post Oak counties. Today, the deer population in the Pineywoods and Post Oak Savannah stands at approximately 265,035 and 163,520, respectively. A recent, rapid upward trend in deer numbers can be attributed to an increased awareness of the importance of herd management and the popularity of hunting leases.

Estimated deer population densities in the Pineywoods and Post Oak Savannah are 42.8 deer per 1000 acres and 31.8 deer per 1000 acres, respectively. The most important factor that determines the number of deer an area will support is the quality of the natural range and the management of vegetation on that range. The most economical and productive method for improving deer range in forested habitats is through timber harvest and management. Deer and timber management are compatible, but careful planning is necessary if optimum production of both timber and deer is to be realized.

2) Eastern Wild Turkey in Texas

Since 1979, the Texas Parks and Wildlife Department has restocked 7,370 eastern wild turkeys (*Meleagris gallopavo silvestris*) in 57 counties to complete the TPWD Eastern Turkey Restoration Program.

The best habitat for turkeys is a diversity of land use types with, ideally, half in mature timber and interspersed with openings. Good habitat includes a variety of mast-producing hardwood trees and open forest with a variety of mast-producing plants in the ground and brush forest layers. The most significant limiting factor to turkey population expansion in Texas is the availability of early brood range. Early brood range is an area dominated by knee-high grasses and weeds during April, May and June. Early brood range can be scattered “old fields” (areas of native pasture reverting back to forest), native pastureland not overgrazed, and pine plantations that have been thinned and are regularly burned. The more quality early brood range that is available, the more likely a turkey population will grow and expand.

Currently, 41 counties have a spring eastern wild turkey hunting season.

3) Wood Duck

Wood ducks (*Aix sponsa*) live throughout East Texas. They are secretive birds that often seek areas of flooded timber and woody vegetation. A combination of downed timber, woody and herbaceous emergent plants, interspersed with small openings of surface water, provide ideal year round habitat. Vegetative cover should always exceed 50 percent of the surface water area. Loafing sites are required throughout the area for preening and sunning. The sites should be open for good visibility, surrounded by water and near escape cover. A minimum of 10-15 loafing sites per surface acre is needed. Logs, stumps, beaver houses, and tussocks are good examples of loafing sites.

The lack of suitable nest cavities will affect distribution of breeding wood ducks in an area, but nest boxes can offset the lack of natural cavities. Competition for available cavities, predation and food availability will limit wood duck production.

Endangered Species

1) Red-cockaded Woodpecker

The U.S. Department of the Interior identified the red-cockaded woodpecker (RCW), (*Picoides borealis*), as a rare and endangered species in 1968. In 1970, the RCW was officially listed as endangered (Federal Register 35:16047). With passage of the Endangered Species Act (ESA) in 1973, the RCW received the protection afforded listed (endangered) species.

Historically, the RCW occupied a wide range throughout the pine belt of the southern United States. Currently, the range of the RCW is limited and fragmented. The

remaining RCW populations exist primarily on the National Forests extending along the Coastal Plain in Oklahoma, Texas, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina, and Virginia. The RCW populations in the Pineywoods of East Texas occur largely in the southeast portion of the state.

The red-cockaded woodpecker lives in open, mature (usually 80 or more years old) pine forests. It is different from other woodpeckers in that it makes its cavities for roosting and nesting in live pine trees. Most other woodpeckers construct their cavities in dead trees. RCW cavity trees are characterized by a round cavity entrance about 2 inches in diameter and numerous “resin wells” that ooze sap. A “cluster” is the stand of trees containing the RCW cavity trees and surrounding trees. The cavity trees are essential to the RCW because they provide shelter and a place to nest and raise young. Red-cockaded woodpeckers in East Texas can reside in pine forests containing loblolly, shortleaf, longleaf or slash pines.

The RCW has an advanced social system that revolves around family groups. Each group of RCWs occupies and defends a discrete territory consisting of a cluster and adjacent foraging area. An RCW group could include one pair of breeding birds, the current year's offspring (if any) and frequently one or more male offspring from previous years called “helpers.” Helpers assist the breeding pair by incubating eggs, feeding the young, excavating cavities, and defending the territory. Young females usually disperse after fledging. Single bird “groups” can occur as well.

The RCW scales the trunks and limbs of pine trees (living or dead) foraging on insects, spiders, centipedes, etc. that are found on, under and in the bark. Hardwoods are also utilized to some extent for foraging. Small berries and seeds can make up a small portion of their diet.

The foraging area is thought to depend on the quality of the habitat surrounding the cluster. Scientific research indicates the birds generally forage within a one-half mile area of the cluster site. Cluster abandonment may occur as a result of midstory encroachment, displacement by competing cavity dwellers or random events.

Urbanization, agricultural growth and short rotation forestry practices have severely fragmented RCW habitat in East Texas. Habitat fragmentation can result in demographic isolation of cluster sites, resulting in inadequate interchange of birds between clusters and/or subpopulations to maintain demographic and genetic viability. Such demographic isolation usually results in population declines. Abandonment of RCW clusters on private lands has and continues to result in further fragmentation of the East Texas populations.

As of 2004, it is believed that approximately 262 RCW groups inhabit clusters in the National Forests in Texas and 50 or more active clusters are known or suspected on other lands in Texas. Many of the active clusters on other lands are juxtaposed to National Forest boundaries. The best available information suggests that groups on private land are declining, and groups on the National Forests are stable in some subpopulations, may

be increasing in some and declining in others. Population/subpopulation stabilization and increases on National Forests are believed to be a direct result of habitat manipulation involving midstory removal, thinning, artificial cavity provisioning, augmentation, and translocation of pairs to managed habitat.

RCW Management on the National Forests in Texas

The Land and Resource Management Plan for the National Forests and Grasslands in Texas, revised in 1996, delineates RCW habitat management areas of 111,418 acres on the Sam Houston National Forest; 67,263 acres on the Davy Crockett National Forest; 51,164 acres on the Angelina National Forest; and 54,721 acres on the Sabine National Forest. The long-term population objective for the National Forests in Texas is 1,385 active clusters (541 on the Sam Houston, 330 on the Davy Crockett, and 514 on the Angelina and Sabine National Forests). In essence, the Revised Plan provides 277,846 acres of pine/pine hardwood habitat to be managed specifically for RCW habitat management. The desired future condition is a landscape to be managed primarily for the recovery of the RCW with large, older pine trees within longleaf pine/little bluestem, shortleaf pine/oak and loblolly pine/oak dominated communities.

RCW Management on State Forests in Texas

The TFS manages two state forests that have populations of red-cockaded woodpeckers—the W. G. Jones State Forest, south of Conroe in Montgomery County, and the I. D. Fairchild State Forest, west of Maydelle in Cherokee County. In 1986, the Texas Forest Service implemented a forest management plan for the management of the RCW in the state forests. This plan was revised in 1989, 2002, and again in 2005, incorporating recommendations from RCW management experts and the revised U.S. Fish and Wildlife RCW Recovery Plan. The TFS RCW Plan includes management guidelines on protecting cavity trees, management of cluster sites and foraging areas, cavity tree replacement, mapping, record keeping, and censusing.

In 1988, a Texas Parks and Wildlife Department team, led by biologist Brent Ortego, conducted a complete systematic sweep of both the Jones and Fairchild State Forests to locate RCW cavity trees. Cavity tree locations, identification marks, RCW use, RCW presence, and habitat conditions were noted.

Numbers of clusters on the Jones have increased from 5 known in 1970, 8 known in 1980, 12 in 1988 (located by the TPWD survey), 16 (14 active) in 1990, 18 (14 active) in 1999, and 17 (10 active) in 2004. Despite its small size of about 1600 wooded acres, the Jones State Forest has one of the highest population densities of RCW in the state.

The number of active clusters on the isolated Fairchild State Forest has steadily declined. In 1990, there were 11 known clusters, 10 of which were active. In 1994, there were 7 active out of 12 clusters. Four out of 11 clusters have been active from 1997 through 2004.

An intensive trapping/banding survey was conducted on both the Jones and Fairchild in 1997. With help from biologists with the USFS, USFWS, Champion International Corporation, and others, all adult and juvenile RCWs that could be located were banded and sexed. That same year, surplus juvenile RCWs were translocated from the Jones to the Angelina National Forest and to Champion International's Brushy Creek RCW Management Area.

Habitat management that has been practiced in the past includes: midstory removal and control by chainsaw, hand tools, brushhog mowing, prescribed burns, and herbicides. Cavity tree management has included installation of artificial cavities and restrictor plates and placement of snake excluding devices on some cavity trees. All RCW groups have been (and continue to be) monitored to keep track of numbers of birds, nesting activity, cavity construction, and condition of cluster sites and cavity trees.

Midstory encroachment has been a problem on both forests. Implementation of midstory reduction and control is underway in all active and recently inactive clusters on both forests, making the midstory more manageable.

The TFS plans to continue to band all future RCWs (especially nestlings) on the two forests. This will aid in monitoring these birds and give information on the make-up of the groups of birds. Possibly, the TFS can continue to be an active and contributing member of the Translocation Cooperative.

Future plans on the Jones and Fairchild State Forests include:

- ★ Continue monitoring of clusters/groups for activity, nesting, changes, needs, etc.
- ★ Accomplish midstory removal and control on all active clusters and their associated foraging areas.
- ★ Install artificial cavities where needed.
- ★ Document newly completed active cavities and maintain records on all cavity trees, active and inactive.
- ★ Band and determine gender of all nestlings.
- ★ Continue to be an active, contributing member of the Translocation Cooperative.
- ★ Mark boundaries of all active clusters.
- ★ Complete foraging analyses on all active clusters where needed.

2) Houston Toad

The Houston toad (*Bufo houstonensis*), federally listed as endangered in October 1970, is 2 to 3.5 inches long and similar in appearance to Woodhouse's toad (*Bufo woodhousei*), but smaller. This terrestrial amphibian is associated with deep, sandy soils within the Post Oak Savannah area of southeast Central Texas. Since Houston toads are poor burrowers, they require loose friable soils, preferring large areas of predominantly sandy soils greater than 40 inches deep. Plants that are often present in Houston toad habitat include loblolly pine, post oak, bluejack or sandjack oak, yaupon, and little bluestem.

For breeding, including egg and tadpole development, Houston toads require still or slow flowing bodies of water that persist for at least 30 days. The toad's presence is most easily detected during the breeding season, when males may be heard calling their high, clear trill that lasts an average of 14 seconds. The call is much like the American toad (*Bufo americanus*), but usually slightly higher in pitch. While toads may call from December through June, most breeding activity takes place in February and March.

Habitat loss and alteration are the most serious threats facing the Houston toad. Periodic drought is also a threat, particularly through reduction in breeding sites. Extensive clearing of natural vegetation near ponds increases the chance of predation and hybridization. Dense sod, high traffic roads, pipelines, and transmission lines can all create travel barriers. Other factors such as continuous grazing, fire ants, chemicals, and population isolation can all contribute to the toad's decline.

The TFS is currently working with the US Fish and Wildlife Service and Bastrop County to complete the process of approval of a Habitat Conservation Plan for Bastrop County that includes forest management guidelines for the Houston toad which should provide guidance to those wishing to practice forestry in this area of the state.

3) Golden-cheeked Warbler

The golden-cheeked warbler (*Dendroica chrysoparia*) is a small, migratory songbird, 4.5 to 5 inches long, with a wingspan of about 8 inches. The male has a black back, throat and cap, and yellow cheeks with a black stripe through the eye. Females are similar, but less colorful. The lower breast and belly of both sexes are white with black streaks on the flanks.

Typical nesting habitat is found in tall, dense, mature stands of Ashe juniper (blueberry cedar) mixed with trees such as Texas red (Spanish) oak, Lacey oak, shin (scalybark) oak, live oak, post oak, Texas ash, cedar elm, hackberry, bigtooth maple, sycamore, Arizona walnut, escarpment cherry, and pecan. A mix of juniper and deciduous trees on the slopes, along drainage bottoms and in creeks and draws provide an ideal mix of vegetation for these birds.

It is important to note that not all woodlands, such as those described above, are used by golden-cheeked warblers. Warblers need a combination of mature Ashe juniper and hardwood trees in their nesting habitat. Generally, trees required for nesting habitat are at least 20 years old and 15 feet tall. The essential element is that juniper trees have shredding bark, at least near the base of the tree.

The golden-cheeked warbler's entire nesting range is currently confined to about 33 counties in Central Texas. The birds are dependent on Ashe juniper (blueberry juniper or cedar) for fine bark strips used in nest construction. Warblers feed almost entirely on caterpillars, spiders, beetles, and other insects found in foliage.

The most serious problem facing the golden-cheeked warbler today, as in the recent past, is habitat loss and fragmentation. Recently, serious losses in nesting habitat have occurred in counties such as Travis, Williamson and Bexar, where rapid urban development has spread into oak-juniper woodlands. Flood control structures and other impoundments have also reduced habitat for the warbler by inundating the juniper-oak woodlands.

Nest parasitism by brown-headed cowbirds (*Molothrus ater*) may threaten successful reproduction of golden-cheeked warblers, although the degree of impact is not fully understood. The cowbird is usually associated with livestock, farms and grain fields, where it benefits from waste grain and insects. Cowbirds lay their eggs in other birds' nests, leaving the host bird to raise their young. A cowbird chick can expel or out-compete the host birds' eggs and young, leaving only the cowbird chick to be fed by the host.

Habitat management and protection in Texas and in Mexico and Central America, responsible land stewardship, and incentives for landowners to maintain and develop habitat are keys to the survival and recovery of the golden-cheeked warbler. Research is underway to better understand the life history, habitat requirements, limiting factors, and land management practices affecting the golden-cheeked warbler. Efforts to provide information and educational opportunities to landowners and the public regarding life history and habitat requirements of the warbler are also a vital part of the recovery effort.

4) Black-capped Vireo

The black-capped vireo (*Vireo atricapillus*) is a 4.5-inch, insect-eating songbird. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and upper half of the male's head is black with a partial white eye-ring. The iris is brownish-red and the bill black. The plumage of the female is duller than the male. Females have a dark slate gray head.

Black-capped vireos breed locally in Central Texas, a few counties in Central Oklahoma, and central Coahuila, Mexico and winter along the western coast of Mexico. In Texas, vireo habitat is generally found on rocky limestone soils of the Edwards Plateau, Cross Timbers and Prairies, and eastern Trans-Pecos. Although black-capped vireo habitat throughout Texas is highly variable with regard to plant species, soils, temperature, and rainfall, all habitat types are similar in vegetation structure.

In the Edwards Plateau and Cross-Timbers Regions, vireo habitat occurs where soils, topography and land use produce scattered hardwoods with abundant low cover. Although Ashe juniper is often part of the plant composition in vireo habitat, preferred areas usually have a low density and cover of juniper.

The black-capped vireo is vulnerable to changes in the relative abundance of its habitat. Active, well-planned land management is often required to maintain good vireo habitat. Poorly planned brush management practices on rangeland may remove too much low

growing woody cover, especially when large acreages are treated at one time. This eliminates or reduces habitat value for vireos and for other wildlife, such as white-tailed deer, quail, small mammals, and various songbirds.

The role of fire in maintaining, improving or creating vireo habitat is also an important consideration. The rangelands of Central Texas, and the various plant communities these lands support, evolved under the influence of periodic fires. Fire stimulated shrubs to sprout at the base, thus providing areas of dense foliage at the 2- to 4-foot level, required by vireos. In the past, fire was responsible for maintaining or periodically returning some areas to vireo habitat. While prescribed burning does occur on many ranches, the combination of overgrazing and lack of fire in the recent past has reduced vireo habitat in many areas.

Human activities have provided favorable habitat for the brown-headed cowbird, which parasitizes vireo nests. While some birds remove cowbird eggs from their nest, the vireo does not. When nest parasitism occurs, vireos tend to abandon their nest, and often attempt to re-nest. The amount of nest parasitism varies greatly from one population to another throughout the state, ranging from 10 to 90 percent of the nests.

Research is underway to better understand the life history, habitat requirements and land management practices affecting the black-capped vireo. Research is also in progress regarding the impact of cowbirds on vireo populations in Texas. Research efforts in Mexico are planned to gather information concerning life history and habitat requirements on the wintering range.

Habitat conservation planning is underway in counties such as Travis and Bexar to direct urban expansion and development away from endangered species habitat. Finally, efforts to provide information, technical assistance and incentives for private landowners to incorporate management for black-capped vireos into their livestock and wildlife operations are an essential part of the recovery process.

5) Other Endangered, Threatened, and Rare Species

Both the bald eagle and the Louisiana black bear are currently designated as threatened on the federal and state lists.

The Texas Parks and Wildlife Department released the final draft of the East Texas Black Bear Conservation and Management Plan in November of 2004. The Executive Summary of this document reads:

“Specific strategies addressed in this plan strive to promote public awareness through outreach while providing public and private biologists and willing landowners with the technical knowledge to increase and/or enhance suitable black bear habitat throughout East Texas. Research activities are directed at evaluating habitat availability and distribution, encouraging habitat restoration and management, and determining the

survivability and reproductive capacity of black bears should they be introduced to East Texas.”

The Louisiana pine snake has been identified as a candidate since June of 2002 for possible listing as a federally endangered or threatened species and is listed as threatened by the State of Texas. This snake is associated with sandy, well-drained soils and a rich, herbaceous ground cover. The presence of pocket gophers is essential, both for their burrows and as food. Although its range originally included 12 Texas counties (and 7 Louisiana parishes), it has been reported recently from only Angelina, Jasper, Newton, Sabine, and Tyler counties (and Vernon, Winn, Bienville and Natchitoches Parishes in Louisiana). The U.S. Fish & Wildlife Service has prepared a Candidate Conservation Agreement for the Louisiana Pine Snake.

The USFWS is investigating the potential for conservation agreements that will avoid the need to list candidate species such as the Louisiana pine snake. Further, for species to be recovered and removed from the list of endangered and threatened species, the help of private landowners is needed.

The Navasota ladies'-tress (listed as endangered), an orchid, occurs in small openings within the post oak savannah woodlands of Brazos, Burleson, Grimes, Leon, Madison, and Robertson counties. It inhabits moist, sandy soils at sites associated with the Navasota and Brazos River drainages. One population is also known from northern Jasper County (within the Neches-Angelina river watershed.)

The Texas trailing phlox (listed as endangered), found on uplands of sandy or sandy-loam soils within longleaf pine or mixed pine/hardwood forests, prefers areas with relatively open canopy and minimal understory. It responds well to spring burns, and is likely dependent upon intermittent fire. It is known to occur only in Hardin, Polk, and Tyler counties of southeast Texas.

The Neches River rose-mallow (a candidate species) is found along the edges of open wetlands, usually within the floodplain of a permanent river or stream. Its habitat includes forest openings or the edges of a forest. It requires standing water early in the growing season, but soils must remain moist throughout the growing season. Five natural locations (Houston (2), Trinity (2), and Cherokee counties) are known to exist, and it has been reintroduced into three locations (Houston County) in the Davy Crockett National Forest.

Threatened and endangered plant species are not protected by law on private lands, but landowners are encouraged to incorporate these species where possible into their management plans.

Forest Wetlands

Wetlands are among the most productive ecosystems in the world. As a valuable natural resources component of the Texas landscape, forest wetlands can improve water quality

by filtering sediment and other pollutants and by controlling floods during periods of heavy rain. Bottomland hardwoods, riparian corridors, coastal wetlands, and playa lakes are vital to maintaining fish, water and wildlife resources. Wetlands can also produce timber, while providing for wildlife, recreation and aesthetic values.

Wetlands in East Texas are dominated by bottomland hardwoods or forest wetlands. These forests are characterized by oak, elm, ash, and cypress. However, bottomlands contain a great variety of trees, supporting over 180 different species.

In 1995, the TFS, in conjunction with the TFA, recognized the need and produced a set of *Best Management Practices for Forest Wetlands*. These guidelines are actively distributed to logging contractors and land managers through cooperative training workshops with the TFA and the TLC.

Hardwood Resource

The hardwood resource of Texas is among the most diverse and valuable natural resources that the state has to offer. Of the 11.9 million acres of commercial forestland in Texas, 6.2 million of those acres are growing some type of hardwood forest.

In East Texas, about one-third (1.9 million acres) of the resource is located inside the many miles of meandering river and creek bottom systems that make their way through the landscape. These systems, while extremely complex and productive because of the many different species and sites, offer a variety of different functions and benefits. They provide a filtering mechanism for sediment loaded floodwaters that surge through in the winter and early spring along with reducing the destructive capabilities of those floodwaters. Conversely, it's the "recharging" of these systems by the floodwaters that make them so productive and suitable for such a rich mixture of plant and animal life. Included in these bottomland acres are also the areas that lie in close proximity to the Gulf of Mexico known as the "coastal flatwoods." While not as productive, these areas also provide us with a network of hardwood stands that are interspersed throughout that region.

The other two-thirds (3.2 million acres) of the hardwood resource can be found on scattered upland terrain throughout East Texas, and to a larger extent the Post Oak Savannah that lies just to the west. These areas tend to be less productive than the bottoms and are known for a predominance of upland species such as post oak and southern red oak. Nonetheless, their contribution to the Texas hardwood timber base is significant.

From a historical perspective, much of the hardwood forest was affected by the past cutting practices of the early part of the century when many stands were "high-graded" for the most valuable products in the stand, with little or no consideration given to the establishment of the next stand. As a testimony to the resilience of these forests, many of these stands that we have today originated because of the sunlight that penetrated the forest floor following these early harvests. Though poorly stocked with desirable species in many cases, these stands still contain a certain amount of desirable stocking such as

oak and gum that, with the right management approach, can be enhanced to provide all the benefits of a well managed stand.

Another factor that influenced the resource that we have today was the conversion of hardwood stands to pine plantations. Because of the relative value difference in the past between hardwood and pine, many acres have been converted to pine plantations. However, as the value gap closes between the two timber types, less conversion is occurring and a move toward managing the existing stands is taking place.

Traditionally, the demand in Texas for hardwood has either been for pulpwood to be processed into chips and then into paper products, or for sawlogs that were converted into construction grade lumber such as railroad ties and pallets. Only in recent years has there been a significant increase in Texas in the amount of “grade” hardwood sawlog material being procured. While there are a number of mills in Texas that convert sawlogs to ties and pallets, there are a relatively small number of mills that can convert these logs into higher value, clear lumber products. Consequently, there has been and will continue to be a presence by out-of-state hardwood lumber producers that are here to purchase “grade” hardwood sawlogs and ship them back to their mills. In relation to this increase in demand, it is important to note that during 1992 - 2002, Texas has harvested only 77 percent of its hardwood growth.

Since 1985, hardwood stumpage prices have more than doubled with most of the increase occurring in the last three years. This value shift has precipitated a growing interest in hardwood forest management not only for the monetary value, but also for the concern many landowners have over the health and sustainability of their forests. Because of the complexities of a hardwood stand with all of the various sites and species, management appears overwhelming when first considering what to do with one of these areas. However, there is order in this diversity, with certain species requiring certain conditions to develop and grow to their fullest potential, and management becomes a blend of art and science.

To successfully implement a management program, the steps are fairly straightforward. Normally the first step is to inventory current stands and then plan a course of action. Based on the species composition, age and condition of the stand along with the landowner’s objectives, a management program can be readily implemented. Probably the number one mistake made in hardwood management is removing the wrong trees from a stand, usually with the good intentions of leaving the smaller stems to grow and make up the next stand. All too often these smaller trees are not younger, but in fact are the same age as the larger trees being removed. They do not respond to thinning and because of the shade that they create on the forest floor, shade-intolerant species such as oak and gum cannot become established. This leads to the development of stands of shade-tolerant species such as ironwood, holly and elm, which are often undesirable, both from an economic and wildlife diversity point of view.

To sustain the hardwood resource in Texas, then, landowners with an interest in managing their hardwood forests must understand this complex management and

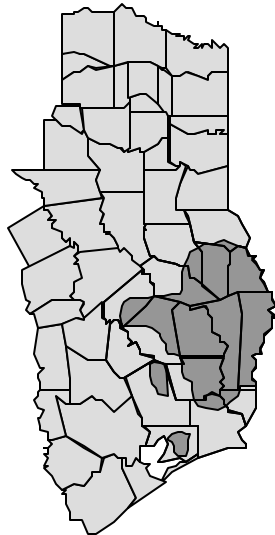
implement harvests in such a way that the integrity of the sites are maintained and the condition of the future stand can be secured. The demand will continue to grow for the products (both commercial and non-commercial) that come from these forests.

Hardwood lumber production increased from 172 million board feet in 1993 to 287 million board feet in 2003. Texas is fortunate to be home to this abundant resource and, with a conscientious approach in managing these forests, we should be able to enjoy the benefits indefinitely.

Longleaf Pine

In pre-settlement times, towering stands of longleaf pine dominated a landscape of over 5,000 square miles in southeast Texas. Early travelers often described the upland forests as open and park-like with little woody understory vegetation except along the streams. The open character of these forests was due primarily to the frequent occurrence of lightning-caused fires, as well as burns started by native Indians, which prevented the establishment of dense hardwood and shrub thickets and resulted in an incredibly diverse mix of grasses and wildflowers. Today, these fire-maintained habitats are considered to be one of the richest and most biologically diverse habitats in North America.

Historic Range of Longleaf Pine



The great logging era of the early 1900s brought widespread changes to the East Texas landscape and, by 1930, virtually all virgin longleaf pine had been cut. Over the years, human development, fire suppression and modern forestry practices have resulted in a continued decline in the longleaf pine type. It is estimated that less than 4 percent of the original longleaf pine forest of the Southeast remains today, and many consider the longleaf pine ecosystem to be one of the most endangered ecosystems in North America.

The largest contiguous acreage of longleaf pine in East Texas is found in the southern half of the Angelina National Forest in an area called Longleaf Ridge. Encompassing about 30,000 acres, Longleaf Ridge has been designated by the USFS as a special use area to maintain the longleaf ecosystem and to protect a number of unique ecological habitats. Smaller remnants of longleaf pine are also found on other public lands, including Big Thicket National Preserve. Although these public lands are significant, they do not represent the full spectrum of ecological variability of this important natural ecosystem. More importantly, they do not provide the long-range viability of longleaf pine as an important economic species for the private landowner.

The future of longleaf pine will rest in large measure with private landowners interested in the unique advantages and challenges of multiple-use longleaf pine forestry. Well-managed longleaf pine forests can be economically profitable and still provide excellent wildlife habitat, biodiversity and a host of recreational opportunities. They are also perhaps one of the most aesthetically pleasing forests of the southern landscape.

Longleaf pine has many desirable characteristics that make this species attractive for long rotation, multiple-use management. Longleaf pine is highly resistant to most insects and diseases, and it is the most fire resistant pine species in the South. Longleaf lumber is dense and strong and resistant to rot and decay. It has an excellent growth form and produces a higher proportion of highly valued products, such as poles and pilings.

Longleaf has suffered from its reputation for being hard to regenerate and slow growing in its early years. However, research has shown that through proper care and planting of seedlings, longleaf growth and survival is comparable to other southern pines on most sites. Once established, longleaf pine lends itself well to both even-aged and uneven-aged natural regeneration systems, allowing the landowner to avoid the expense of site preparation and replanting and to maintain an aesthetically pleasing habitat for wildlife and recreation.

Prescribed burning is a necessary tool in the management of longleaf pine. Frequent fire eliminates competing hardwoods and controls brown spot disease infections in young grass stage seedlings. Fire also benefits a number of plant and animal species which occur in the longleaf forest. Although many landowners are reluctant to use fire because of liability issues, it remains a fact that when used in a judicious manner, fire can be a safe and inexpensive tool for the private landowner. A new legislative bill will hopefully provide some liability protection for prescribed burners who participate in an approved certification process.

There are now several important efforts underway to promote longleaf pine management in East Texas. The TFS is seeking to increase the awareness level among landowners about the options for growing longleaf pine and is trying to make it a financially viable option. Container longleaf seedlings have replaced bare root longleaf as the seedling of choice. The TFS nursery produces about 500,000 container longleaf per year. The TFS is two to three years away from having a reliable supply of genetically improved longleaf seed. Seedlings produced with this seed should exhibit improved survival, brown spot resistance, grass stage emergence and growth rate.

The Nature Conservancy, a private, international conservation organization, has established longleaf pine conservation as a high priority in the Pineywoods and is actively seeking partnerships with both the forest industry and non-industrial forest landowners to establish sustainable longleaf pine forestry programs. One of these is a cooperative program with Temple-Inland Forest Products Corporation at the 5,600-acre Roy E. Larsen Sandyland Sanctuary in Hardin County. Here, The Nature Conservancy and Temple-Inland are jointly restoring and managing longleaf pine in a way that will provide ongoing economic returns while protecting a number of rare and endangered

species. Champion International Corporation also worked with The Nature Conservancy to identify and establish sustainable longleaf pine forestry sites on its lands. To assist the private non-industrial landowner, The Nature Conservancy will utilize its resources to provide information, consultation and at times direct assistance in developing and implementing management plans for ecologically-sensitive longleaf pine forestry sites.

Another important source of information about longleaf pine is the Longleaf Alliance. It is a partnership of private landowners, forest product companies, public agencies, conservation groups, university researchers, and others interested in promoting a region-wide recovery of longleaf pine. The Longleaf Alliance (<http://longleafalliance.org/>) is affiliated with Auburn University School of Forestry and serves as a clearinghouse for longleaf information and helps to facilitate communication between researchers, managers and landowners.

When the original longleaf pine forests were being cut at the turn of the century, there was little thought given to the future of forestry in East Texas. The attitude today has changed significantly and the forestry community has embarked on a new, innovative path of sustainable forestry that seeks to meet the needs of the present without compromising the ability of future generations to meet their needs. Surely, this new stewardship ethic will create a place for longleaf pine in the East Texas forests of tomorrow.

THREATS TO TEXAS NATURAL RESOURCES

FACTORS AFFECTING FUTURE FOREST RESOURCE

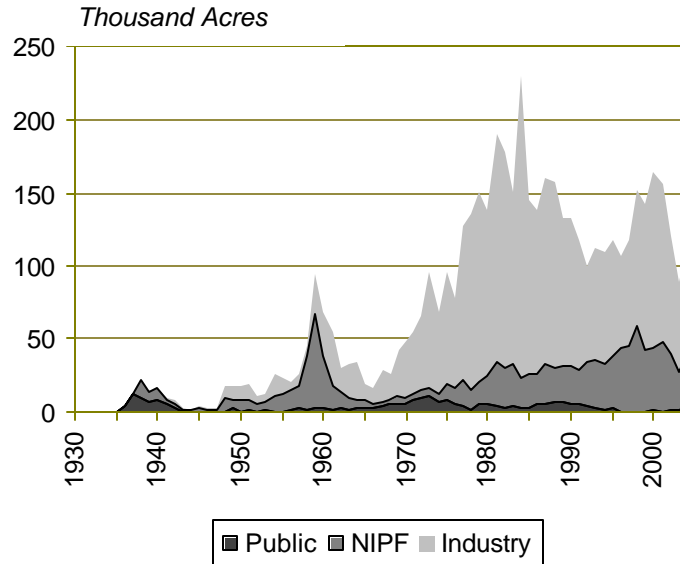
Total tree planting in Texas in 2004 was the lowest in more than 20 years. From 1977 to 2002, the average annual tree planting in East Texas was 142,109 acres. It decreased to 90,193 acres in 2003, the lowest level since 1977. In 2004, the total tree planting acres rebounded to 113,684 acres, still among the lowest annual tree planting acres since 1977.

Family forest owners have been growing less volume than they cut. According to the 2002 Texas Forest Inventory data, family forest owners grew 394 million cubic feet of timber annually from 1992 to 2001. In the same period, they cut 411 million cubic feet of timber a year, a 17 million cubic feet annual deficit.

Tree planting by large corporate landowners is slowing down. Since 1977, industrial landowners planted an average of 108,700 acres of trees per year, accounting for 76 percent of the average annual tree planting by all landowners in Texas. From its high of 120,000 acres in 2000, tree planting by industrial landowners has been decreasing. In year 2003, industrial tree planting was reduced to 62,600 acres, and it accounted for 70 percent of the total tree planting acres. Although the tree planting acres in 2004 rebounded to 74,500 acres, industry's share of total tree planting continued to decline, accounting for only 66 percent of the total tree planting acres by all owners. In the last few years, about 1.5 million acres of timberland were sold by industrial landowners to

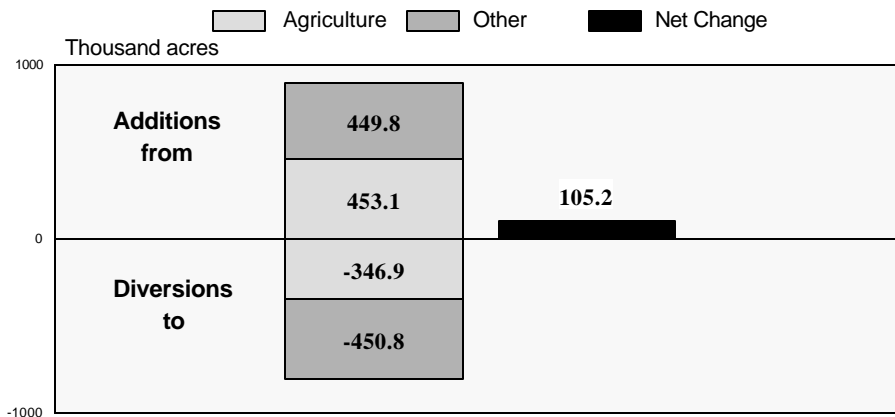
various private landowners. From the tree planting statistics, such ownership changes seemed to have had a negative impact on tree planting efforts in Texas.

Historical Reforestation in East Texas



One major factor influencing whether future supply will meet demand (growth vs. harvest) is the amount of land expected to be available for timber production. There has been a net gain of 105,200 timberland acres during the period from 1992 to 2002, mainly due to reversions from agriculture. The 15-year tax abatement for reversion of agricultural land to timber, which became law in September 1997, should have a positive impact.

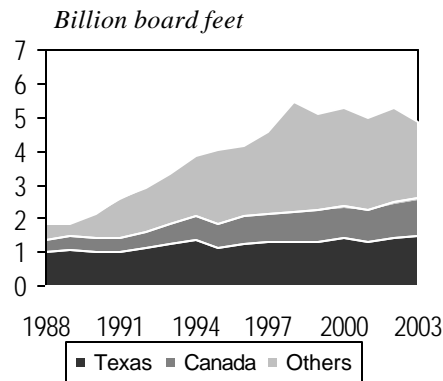
**Changes in Timberland in East Texas
1992-2002 Period**



However, several factors will potentially negatively impact the land base available for timber production in the future. First, urban sprawl will continue to convert timberland to development and other non-forest uses, possibly at an accelerated rate in the future. Second, as development radiates out from the cities, land classified as timberland is becoming increasingly unavailable for timber production. As recreational demand rises with a rapidly urbanized population, more timberland will be used for multiple-use instead of timber production only, which reduces timberland productivity for timber. The divestiture of timberland by forest product companies will likely accelerate the pace of fragmentation as well. The purchasers of these divested lands, in many cases, are not interested in growing timber but will be demanding technical assistance from resource professionals to manage for other forestland uses. Lastly, the intensive reforestation efforts in the last two decades on industrial timberland have converted most of the eligible lands into pine plantations. The percentage of pine forest in plantations on industrial timberland has increased from 69 percent in 1992 to 83 percent in 2002, which is probably approaching the maximum potential, given the need for preserving environmentally sensitive areas such as streamside management zones.

The demand for forest products has outpaced their production in Texas due to the fast population and economic growth in the state. In 1988, Texas produced 54 percent of the lumber consumed in Texas. In 2003, Texas only produced 30 percent of the lumber consumed in Texas. From 1988 to 2003, the production of forest products in Texas grew at an annual rate of 2.8 percent, while the consumption of forest products in Texas grew at an annual rate of 6.8 percent.

Source of Lumber Utilized in Texas



The demand for forest resources and forest products in Texas will continue to be strong in the future. The population of Texas is expected to grow from 20.9 million in 2000 to 40.5 million by 2030, according to the Texas Office of State Demographer. The Texas Gross State Domestic Product (GDP) is projected to grow at an annual rate of 3.3 percent for the next 25 years. Assuming that people will continue to build houses from wood, and continue to use products made from wood such as paper towels and toilet paper, then demand for wood products, and thus timber, will continue to have a positive effect on forested land.

Demand for non-timber products and services from forests will also increase in the future. The rapidly increasing, urbanized population will demand more land for recreational activities such as hunting, bird watching, camping and hiking. There are strong pressures for building new reservoirs in East Texas that will submerge quality bottomland hardwood resources and require even more land for mitigation. With carbon credit trading gaining steam, demand for obtaining carbon offset credits from forestland should increase as well.

Are the forest resources in Texas sustainable? New survey data from FIA 2002 showed increased inventory and available resources for additional wood conversion capacities in southeast Texas. However, the long-term supply potential of forest resources for growing population and economy is questionable. We are facing a potentially shrinking land base for timber production, and reduced reforestation efforts from industrial landowners. At the same time, the demand for forest products and non-timber products and services in Texas is growing rapidly. *Building an adequate forest resource base to meet future needs is an extremely important issue that must be addressed today*

Various programs and policies need to be implemented to encourage the growth of forest resources in Texas. One option is to implement a program to convert more marginal agricultural land and pastureland to tree farms in East Texas. Such a program should increase timber supply as well as increase forest resources for non-timber products and services in the region, and in turn increase wood-based manufacturing activities and other related economic development in the region.

The following analysis summarizes the potential economic impact of such a land conversion program and the subsequent increase of economic activities. Five possible levels of available funding and land conversion in East Texas are analyzed, labeled here as Cases I through V. In each case, the per acre funding will be \$200, a one-time government incentive for the land conversion. The program will last for 10 years. With the total annual funding ranges from \$10 million to \$50 million for each of the five cases, the annual land conversion for the five cases ranges from 50,000 acres to 250,000 acres, and the total land conversion in 10 years ranges from 500,000 acres to 2.5 million acres.

The summary of the economic impact analysis is presented in the following table. The economic impact of the land conversion was based on the annual sustainable timber supply that can be provided from the tree farms for all trees planted in the 10 years. The base industry size used in the analysis was based on the forest product industry in East Texas in 1999. The economic multipliers derived from the IMPLAN system for the same region and same year were also used to analyze the economic impact of the land conversion.

Economic Impacts on Converting Marginal Agricultural Land and Pastureland to Tree Farms in East Texas

	Case I	Case II	Case III	Case IV	Case V
Annual Land Conversion (acres)	50,000	100,000	150,000	200,000	250,000
Funding Per Acre (\$)	200	200	200	200	200
Total Annual Funding (million \$)	10	20	30	40	50
Number of Years	10	10	10	10	10
Total Land Conversion (acres)	500,000	1,000,000	1,500,000	2,000,000	2,500,000
Industrial Output (million \$)	839	1,678	2,517	3,356	4,194
Jobs	5,171	10,343	15,514	20,685	25,856
Total Economic Impact (million \$)	1,510	3,020	4,530	6,040	7,550
Total Employment Impact (jobs)	12,256	24,512	36,768	49,023	61,279

For Case I, the increased timber supply from the land conversion in 10 years will be able to support enough wood-based economic activities to produce \$839 million industrial output annually with 5,171 additional people employed in the forest sector. These economic activities in the forest sector will spur additional economic development in related sectors and increase consumption and the need for services. The total annual economic impact for Case I, for all related economic activities, thus becomes \$1.51 billion. The total increased employment will be 12,256. The explanation of economic impact for Cases II to V is the same, only with different figures.

Although the planted trees will not contribute to timber supply physically until their first thinning at year 10 to 15, the economic impact is likely to occur earlier than that. In anticipation of the increased timber supply from the converted lands, the harvest of existing timber is likely to be accelerated, resulting in increased timber conversion activities and expanded timber conversion facilities. Although it is difficult to tell exactly how early such effect may take place, we would not be surprised if it is 5 to 10 years ahead of the availability of the actual timber supply from the converted lands. With existing pasturelands and agricultural lands available in East Texas, and other resources needed for reforestation such as seedlings, we believe that Case II represents the most plausible scenario.

Oak Wilt

Oak wilt can impact stewardship or land management decisions in many ways. The most obvious impact has been the loss of a million oaks in Texas over the past two decades. This devastating disease of oaks is caused by the fungus *Ceratocystis fagacearum*, a vascular fungus that infects the water-conducting tissues in trees. In Texas, the pathogen was initially discovered in 1961 in Dallas. It is now known to occur in 59 Central Texas counties and 6 West Texas counties with a distribution that extends from Fort Worth southward to San Antonio and west to Midland, including most of the counties in

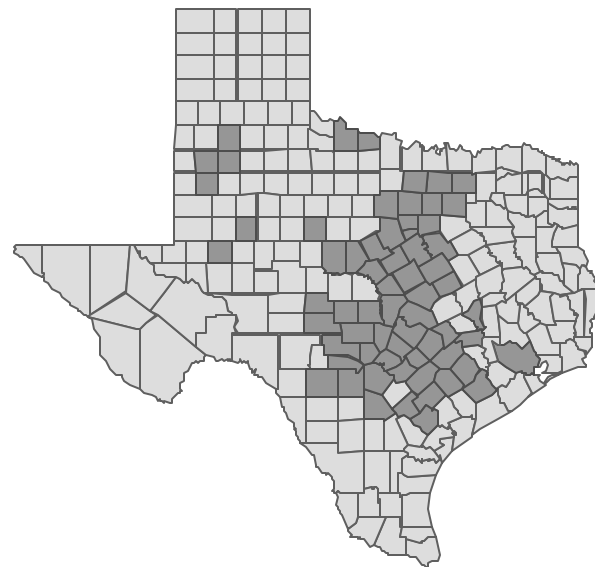
between. Most seriously affected are those where the predominant trees in the landscape are oaks, specifically live oaks. Oak wilt greatly affects the composition of Central Texas forests, not only by killing trees, but also by influencing what is planted afterwards. In an effort to prevent the devastation from oak wilt, species diversity should be a major consideration in tree plantings to prevent a single disease or problem from occurring. Non-oak species or more resistant white oak species such as bur and chinquapin oak should be planted.

New oak wilt infections centers are started when sap feeding beetles, called Nitidulids, carry fungal spores of *C. fagacearum* into direct contact with fresh wounds on healthy oak trees. These beetles obtain *C. fagacearum* spores from a fungal mat that is produced only on red oaks that died from the oak wilt pathogen in the fall, and still have a green cambium layer going into the winter months. In an effort to prevent this mode of disease transmission, pruning and other wounds on all oak trees should be painted immediately with a pruning paint. Removing and disposing of red oaks as soon as they are diagnosed will prevent fungal mat formation. Proper pruning techniques and precautions to avoid wounding the trees during the period from February 1 to May 1 should be incorporated into stewardship plans.

During the early 1980's, researchers experimented with different control techniques to prevent further spread. In 1988, specific management recommendations were developed and a federally-funded cooperative oak wilt suppression project was undertaken throughout Central Texas. During the past 17 years, millions of dollars have been spent on researching and treating oak wilt in Central Texas. Over 3.09 million feet of trench (585 miles) have been installed with federal cost share dollars to contain nearly 2,126 oak wilt disease centers. Thousands of trees have been saved by being injected with the fungicide Alamo[®]. Oak Wilt still can not be cured, but much has been learned about how to reduce the disease's impact in our valuable forest resource.

For further information on oak wilt view the Oak Wilt Partnership website at www.texasoakwilt.org

Occurrence of Oak Wilt in Texas
as of January 2003



Cedar Encroachment in the Central Texas Hill Country

Over the past 200 years, the forest and range conditions in the southeastern region of the Edwards Plateau in Texas (Hill Country) have changed dramatically. The mid- and tallgrass prairies have been greatly altered. In many places, overgrazing has caused

severe erosion and diminished rangeland productivity. Overgrazing and the exclusion of wildfire have allowed Ashe juniper (*Juniperus ashei*) (or “cedar,” as it is known locally) and Plateau live oak (*Quercus fusiformis*) to become more dense and expand their range into the prairies and savannas. Oak wilt disease, invasion of Ashe juniper, importation of exotic plants, exotic big game animals, livestock, and increased white-tailed deer populations have contributed significantly to the decline of the native Hill Country hardwood forest.

Present conditions reflect man’s past land management practices. Even though these conditions present tremendous challenges, great opportunities exist for managers to restore some of the benefits and productivity the land once sustained. These opportunities are even available to those with wide-ranging stewardship objectives, like the cattle rancher interested in increasing pasture productivity while restoring the diversity of plant and wildlife habitats for hunting or bird watching. With proper management, all can be accomplished on the same property.

A typical landowner in the Hill Country might own a 100-acre parcel with a primary or secondary home. Usually, the principal goals of owning the land are for residential and recreational purposes. Many raise livestock in order to qualify for a lower tax rate (for “agriculture” purposes.) However, changes in state law in 1995 allowed Texas landowners to focus on wildlife management but maintain their agriculture exemption. In general, landowners are interested in being good land stewards, involving the sustainable management of grass, trees, livestock, wildlife, soil, and water resources. In order to achieve specific landowner-defined objectives, conservation or stewardship plans will be written for individual properties. A multidisciplinary team of natural resource management professionals from the NRCS, TPWD, TFS, and TCE is available, upon request, to assist landowners in reaching specific forest and range management/restoration objectives.

Restoration of grasslands may require introducing prescribed fire (where practical), using sound livestock grazing management principles, seeding with native grasses, and controlling brush. Prescribed fire can be used to reduce hazardous fuels, prepare sites for seeding, improve wildlife habitat, dispose of woody debris, manage competing vegetation, control disease, improve forage for grazing, enhance appearance, open access, perpetuate fire dependent species, recycle nutrients, and manage endangered species. Sound grazing management includes keeping pastures stocked at or below carrying capacity and practicing rotational grazing systems (i.e., HILF – high intensity low frequency). Reintroducing native grasses which have good to excellent forage values (such as big bluestem, little bluestem, Indian grass, and switch grass) into pastures can be highly productive. Controlling brush generally involves clearing or sculpting second-growth Ashe juniper. This can be accomplished by hand cutting, herbicide sprays, mechanical means (bulldozer), or prescribed fire.

Restoration of native hardwood forests may involve managing oak wilt through prevention and control methods, reducing deer populations through increased hunting, reintroducing locally-grown native hardwoods, releasing desirable trees from Ashe

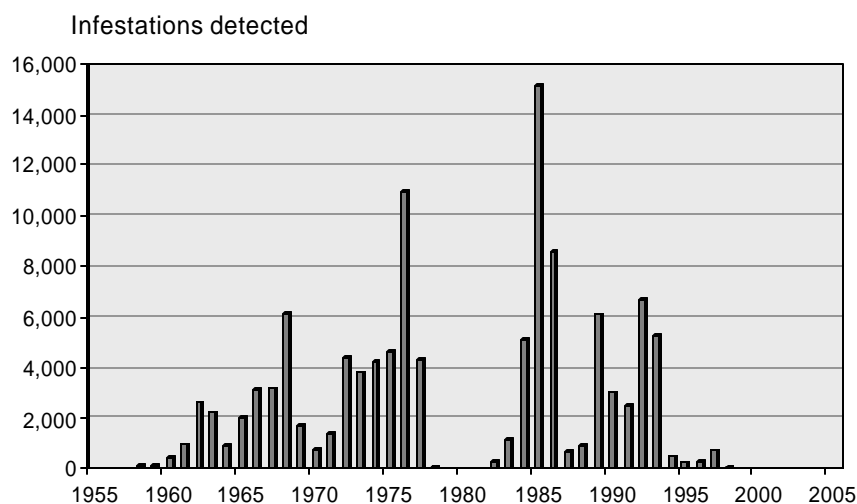
juniper competition, and protecting seedlings and natural regeneration from animal damage with appropriate fencing. Oak wilt is managed preventively by painting wounds on oak trees immediately after they occur, by eliminating or girdling infected red oaks in-place, by abstaining from using or storing unseasoned red oak firewood, and by treating live oaks with Alamo[®] fungicide. Methods to control oak wilt spread are generally limited to trenching around expanding oak wilt centers to sever common root systems.

Since new outbreaks of oak wilt are common (especially in areas with high numbers of diseased red oaks), control measures may only be temporary. Appropriate management might include enrichment plantings of native hardwoods, particularly those resistant or immune to oak wilt and able to tolerate drought and highly alkaline soils. Individual cages around hardwood regeneration or planted trees will allow them to grow beyond browsing heights. Larger fenced areas to exclude livestock from springs, riparian zones or critical habitats of endangered species can preserve selected plants, and also prevent excessive soil erosion, maintain high water quality, and protect feeding and breeding grounds of targeted wildlife.

Southern Pine Beetle

The southern pine beetle (SPB), *Dendroctonus frontalis*, is the most destructive insect pest in the pine forests of Texas. Although major outbreaks tend to be cyclical in nature, the impact of this insect pest can be devastating. In 1985, the worst outbreak on record, over 15,000 infestations were detected, killing an estimated 500 million board feet of timber valued at \$55 million. The TFS has long been a leader across the South in research and suppression of SPB infestations. The goal of the SPB program is to reduce losses to SPB and thereby expand the timber resource by increasing net timber growth.

Southern Pine Beetle Infestations Detected in East Texas
1958-2004



Southern Pine Beetle Prevention Project

In 2001, the Texas Forest Service (TFS), with financial support from the USDA Forest Service, initiated the Southern Pine Beetle Prevention Project. Objectives of this on-going project are to evaluate the current hazard for SPB in East Texas, increase public awareness of SPB prevention practices, and provide incentives to forest landowners to “beetle-proof” their pine stands while SPB populations are at low levels. Dense, unthinned pine stands, particularly those on poorly-drained, bottomland sites, are known to be most susceptible to the occurrence and spread of SPB infestations. Thus, pine forests in East Texas are overdue for another outbreak and thinning is the most effective prevention measure for commercial pine stands.

According to the latest SPB hazard map, the 23 most beetle-prone counties, listed in decreasing order of susceptibility, currently are: Jasper, Tyler, Hardin, Panola, Trinity, Sabine, Marion, Nacogdoches, Angelina, Newton, Harrison, San Jacinto, Cass, San Augustine, Shelby, Polk, Walker, Gregg, Montgomery, Rusk, Cherokee, Liberty and Houston counties.

Private landowners with pulpwood stands in these 23 beetle-prone counties qualify for cost shares if their pine stands meet the criterion of moderate or high hazard for SPB (see TFS Circular 249 entitled “*Southern Pine Beetle: Field Guide for Hazard Rating, Prevention, and Control*” available from the Texas Forest Service). A pine stand located outside these specific counties would qualify only if it rates as moderate or high stand hazard **and** occurs in a TFS grid block (18,000 acre unit) rated as moderate, high, or extreme hazard to SPB, according to the SPB hazard map. When in doubt, the landowner should check with a TFS forester.

Cost shares consist of reimbursing 50 percent of the costs for precommercial thinning up to \$75/acre, plus up to \$10/acre for consulting forester fees (if one is involved). For the first thinning of merchantable pulpwood stands, landowners with an approved application receive a flat \$50/acre and up to \$10/acre for consulting forester fees. In the case of first merchantable thinnings, the federal cost shares are in addition to any profits made on the sale of extracted pulpwood. The maximum amount of cost shares any single landowner may receive is \$8,500/year. The maximum is \$17,000 for partnerships or trusts with 2 or more members.

The TFS has employed two prevention specialists to help deliver the SPB Prevention Project. One, in Longview, works with TFS district foresters in northeast Texas and the second, in Lufkin, assists TFS foresters with the project in southeast Texas.

Water Quality

1) Silvicultural Nonpoint Source Pollution

An important function of Texas forests is producing high quality water. This major benefit to Texas and Texans is often taken for granted. Texans from Texarkana to

Houston depend on water that originates from East Texas forests. Therefore, there is some concern with the potential effects forest management (silviculture) may have on water quality. Nonpoint source (NPS) pollution is water pollution that is created from an activity that has no particular permanent location. NPS pollution comes from a broad, diffuse source resulting from man's activities and is carried over and through the soil by rainfall runoff. Agriculture, mining, urban development, and silviculture can all generate NPS pollution. Types of possible silvicultural nonpoint source pollution include sedimentation, nutrients, organic material, thermal pollution, and silvicultural chemicals. Texas Forestry Best Management Practices have been developed and implemented to better protect water quality during silvicultural operations.

In forested wetland situations, forest road construction has the potential to disrupt normal drainage patterns and produce sediment that may reach streams and sloughs. Tree tops or other logging debris left in streams can obstruct water flow, increase erosion of stream banks and decrease amounts of dissolved oxygen in the water. Normal wetland drainage patterns can be altered by severe rutting or by improperly constructed windrows. Excessive soil compaction caused by careless logging can reduce water infiltration, reduce soil moisture available to tree roots and decrease site quality.

2) Total Maximum Daily Load

In simple terms, Total Maximum Daily Load (TMDL) is an estimate of the maximum amount of a specific pollutant a body of water can receive and still meet water quality standards for a designated use. Typically, TMDLs are established for individual pollutants within specific watersheds. Following preliminary assessments and data analyses, one or more specific pollutants may be identified. For example, a goal of a TMDL assessment could be to assess how much phosphorus is flowing into and through a watershed, identifying and quantifying the various point and nonpoint sources that are contributing to the problem, and developing management practices that will reduce the level of that pollutant. Even though a TMDL has been developed for one contaminant, it does not necessarily mean that all the water quality problems in that watershed have been corrected or that the TMDL process has been completed. It may well be that TMDLs have to be created and implemented for different water quality problems in the same watershed. To address pollutants identified as a result of the TMDL process, a wide variety of programs can be utilized to reduce nonpoint source pollutants.

The complexity and cost of developing TMDLs will vary within each watershed, but will be influenced by such factors as the geographic area being studied, the number and complexity of pollutants, the distribution of pollution sources, and the extent to which the public becomes involved in and supports the process.

Historically, the TMDL process has utilized water quality models to develop the maximum amount of a pollutant that can be discharged to a stream, over a given time period, until the use of those water supplies for specific purposes is impaired. Lately, the concept of TMDLs is being broadened to suggest that the process should include a

comprehensive assessment of water quality problems, resulting in the creation of a plan that can be implemented to reduce pollution and restore and protect water quality.

The Texas Commission on Environmental Quality (TCEQ) and the Texas State Soil and Water Conservation Board (TSSWCB) anticipate that TMDLs will become a tool the agencies can use to make key decisions about how water quality can be improved in waters that do not meet their designated uses--known as the CWA Section 303(d) list.

The creation of TMDLs can be traced to the Clean Water Act (CWA), which requires that loading estimates be developed for watersheds where water quality is not high enough to meet designated uses. For example, a TDML may have to be developed for a stream segment designated for contact recreation, but exhibits large numbers of fecal coliform bacteria, a serious pollutant.

TMDLs have recently become such an important issue because the EPA is accentuating this process as a way to address improving water quality on a watershed basis. Another factor is that several environmental groups have filed lawsuits against the EPA in at least 25 states where the TMDL process has not yet been implemented. They charged that EPA has neglected its duty to force states to comply with the CWA.

The TCEQ is suggesting that TMDLs be developed using a 5-step method. First, priority issues are identified and plans for data collection are developed. Then, baseline data are collected and studies that focus on specific problem areas are conducted or reviewed. Third, based on the data that has been collected and the use of computer models and geographic information systems, individual watersheds are assessed to quantify the impacts and sources of pollution and to compare the need for TMDLs in specific areas. Fourth, management strategies that may reduce pollutants are evaluated and watershed action plans are developed. A Watershed Action Plan assesses water quality problems and pollutant sources and includes a strategy to implement efforts to restore and protect water bodies. TCEQ and TSSWCB plan to use "targeting" activities to determine which management efforts should be included in TMDLs. Targeting consists of determining the scale of the problem, quantifying the severity of the contamination and the risk it poses, evaluating actions that could be taken to improve water quality, identifying key stakeholders, inventorying resources to attack the problem, and determining how feasible it may be to implement specific strategies. The action plans are submitted to the EPA for federal approval and, if approved, are implemented. Once a TMDL is approved, stream segments can be removed from the CWA 303(d) list.

Another similar threat is the possibility of certain traditional sources of Non-Point Source (NPS) pollution being categorically converted to point source pollution which is regulated and requires a permit. For example, forest roads, traditionally known as potential sources of NPS, could, through federal mandate, be considered as point source pollution and thus become regulated and require a permit.

Soil Conservation

1) High Plains Wind Erosion

The High Plains of Texas is a very productive agricultural area. The southern region historically has been farmed intensively for cotton and the northern region supports livestock, corn, wheat, and sorghum production.

The NRCS reported in the 1982 Natural Resource Inventory that annual wind erosion in Texas totaled 535 million tons. A large percentage of the annual soil loss occurred on the High Plains. Approximately 3 million acres of the highly erosive cropland was enrolled in the Conservation Reserve Program (CRP) beginning in 1987, but there is still significant acreage exposed to the droughts and high winds characteristic of the region.

Trees have always been a component of agriculture. Homestead windbreaks have been the most popular type of tree planting, but producers are becoming much more aware of the multi-use value of tree and shrub plantings. During the 15th and 16th CRP sign ups, some landowners agreed to plant trees and shrubs under the enduring practice to add diversity to a monoculture of grasses that will ultimately benefit wildlife.

The regional expansion of center pivot irrigation systems has created new opportunities for tree plantings. The four “dry corners” associated with center pivot irrigation systems, approximately seven acres each, when planted to trees, provide numerous conservation benefits. The systematic planting of trees and shrubs create habitat for wildlife, protect crops from damaging winds, reduce evapo-transpiration from adjacent cropland, and provide winter protection for feeder calves grazing winter wheat.

Snow drifting across roads in the northern region creates a driving hazard and economic problems each year. Vehicle traffic on east-west highways can be halted and emergency services delayed or cancelled. The Texas Department of Transportation (TxDOT) spends up to \$2 million annually to clear major highways of snow and ice. There are literally hundreds of miles of highways in the Texas Panhandle where living snow fences are needed. Landowners have been encouraged to plant living snow fences utilizing hardwoods and conifers grown in the TFS West Texas Nursery. Specific and fairly costly cultural practices must be followed to ensure survival in this harsh environment.

The TFS recently relocated its West Texas Nursery in Lubbock to a location with more adequate land and much better water. This new nursery will be able to produce more and better quality seedlings as well as help supply seedlings needed for planting in Central Texas.

2) East Texas Soil and Water

Many soils that are suitable for growing trees in East Texas are acidic sandy soils and may occur on sloped terrain. The average annual rainfall in East Texas is approximately 45 inches. These two factors create opportunity for soil erosion in forestlands, especially

when soil is disturbed. Logging, road construction, and site preparation are common activities that have the potential to cause soil erosion. Forest stewardship includes taking preventative actions such as providing proper road design and construction, seeding disturbed areas, and installing water control structures. Land managers should consider the capability and limitations of the individual soil types when planning management activities. Nearly all East Texas counties have been soils-mapped and maps and soils information are available either as a published soil survey, on-line, or at local offices of the NRCS.

Timber Theft

Timber theft can occur in a variety of ways. Absentee landowners are especially vulnerable to blatant theft, where the timber from an entire tract is stolen. Timber theft can also occur from boundary line encroachment when an adjacent tract is being logged. This can happen whether or not the line is clearly marked. Landowners also can “allow” their timber to be “stolen” by agreeing to sell their timber at a price that is well below market value.

The TFS is fighting timber theft through an increase in its law enforcement staff. The maximum number of law enforcement officers allowed by the legislature has been increased from 12 to 25. A series of three timber theft articles was run in *Texas Forestry*, the monthly publication of TFA. The TFS also fights timber theft with educational efforts to landowners on the value of timber, and through other programs. The TFS has a bi-monthly timber price report that is available to the public as a subscription or on the Internet at www.texasforestservicetamu.edu.

Landowner Apathy

Texas has many highly knowledgeable, pro-active forest landowners. These landowners are active participants and form the backbone of county landowner associations, many forestry committees and volunteer groups. Unfortunately, the interest of most other landowners does not rise to this level. In fact, many landowners may be only vaguely aware of their property and its potential, and may have no interest in an increased understanding of their property. This apathy is a substantial challenge that can be best met with the combined synergy of all Stewardship participants.

CURRENT AND FUTURE STEWARDSHIP OPPORTUNITIES

Following each section is a *Stewardship Vision* which outlines the actions to be taken to address each opportunity.

The Changing Rural Landscape

Together, the divestiture of several million acres of industry lands in East Texas and urban “sprawl” have led to land fragmentation and a “new” forest landowner. Most of

the divested industry lands have been purchased by forest land investment groups, but the higher value lands and smaller tracts, usually nearer large population centers, are being broken up and sold as small tracts to non-traditional owners.

These new owners, as a general rule, place less emphasis on commercial wood production than the landowners we have dealt with over the past many years, even on tracts that are large enough for conventional harvesting. They own land for privacy, attractive scenery, wildlife, escaping the rat race, preserving nature, etc. Like our traditional clientele, they want information on how to manage for their interests and we're often unprepared and untrained to meet their needs for these new disciplines which might include landscape design, wildlife habitat analysis, Urban-Wildland Interface related issues, and so forth. We have recently piloted a set of training modules from the Southern Urban Wildland Interface Council and the SGSF that address these new disciplines and will train our work force to meet the needs of these new landowners and the values and the political implications associated with them.

Urban sprawl is a familiar concept, and one that we have been dealing with for years, but the new "sprawl" is reaching out into areas within a drive of an hour or two of the larger cities and gobbling up smaller tracts of timberland at "astronomical" prices. The purchasers are usually affluent, well educated and politically astute. They are impressed with high-tech, and value professional credentials but have little trust in natural resource managers. Most are city-folk and have little knowledge of resource management or life in the woods, but they are seeking peace and a healthier, safer environment. They may or may not be moving to the property to live, but will be active in using the property.

As new landowners they are only somewhat interested in learning more about managing their property. Usually they want information on alternative uses for their property, wildlife habitat evaluation and enhancement, forest health analysis, fire prevention and protection information, and recreation opportunities among others. Where we once dealt with one owner for this tract of 200 acres we now may have 5 to 10 owners wanting much different information. Thus the need for retooling as well as a shift in emphasis towards cultivating relationships with the more urban components of government—community leadership, educators, developers, media representatives, etc. Assisting homeowner associations, individual property owners and community forest programs are becoming an important clientele in our more urban districts and have led to establishing two Urban District Forester positions in addition to the three Urban-Wildland Interface (UWI) coordinators already addressing fire protection issues. Both groups are being cross-trained to facilitate information transfer to landowners.

Based on the needs of this new ownership we feel that our foresters will need training to address landscape design, wildlife habitat on small acreage, arboriculture/horticulture, GIS/GPS technology, real estate, relationship building, hydrology, endangered species/environmental issues, forest entomology/pathology, recreation Urban forestry/shade tree management and fire protection/UWI. Given this is a new client, surveys will also be needed to get a better handle on their needs. Resources will need to

- ★ Support Texas rural communities, traditional land uses, and cultural heritage by maintaining large privately-owned working forest landscapes managed according to sustainable best management practices.
- ★ Promote conservation of biological diversity by protecting habitat connectivity, unique ecosystems, and endangered species.
- ★ Promote watershed protection to enhance water quality and quantity and to protect aquatic habitats.
- ★ Support open space initiatives to decrease forest fragmentation, protect unique habitats or ecological features, and reduce negative effects of urban sprawl.

While forests in all areas of Texas possess some of the attributes and threats mentioned, no other area provides all of the benefits or faces all of the threats as does East Texas. Most notably, when compared to the rest of the state, the eastern quarter of the state, containing 59 counties, and encompassing 30,163,400 acres are most reliant on the timber industry and face the gravest threat of fragmentation--two of the driving forces behind the FLP. The boundary lines for the Texas FLP are defined using county lines, state borders, and coastal borders.

Federal funding through the USFS FLP is highly competitive and states have a maximum level of requests that can be submitted in any given year as determined by the USFS on an annual basis. Therefore, Texas FLP projects will be prioritized using the following criteria:

- ★ **Degree of threat:** Priority will be given to projects on properties that have proof of a high degree of threat of development or parcelization.
- ★ **Forest resource economic benefits:** Priority will be given to properties that are likely to have significant forest resource economic benefits.
- ★ **Public benefits:** Priority will be given to properties that are likely to have direct and indirect scenic and/or outdoor recreation benefits.
- ★ **Water quality and watershed protection:** Priority will be given to properties that are likely to have significant water quality and watershed protection benefits.
- ★ **Ecological/Cultural benefits:** Priority will be given to properties that are likely to have significant ecological, cultural, and environmental education benefits.
- ★ **Proof of Readiness:** Priority will be given to projects that have community support, identified matching funds and partnership involvement.
- ★ **Strategic Initiative:** Priority will be given to projects that fit within a larger conservation plan, strategy, or initiative, and connect to or lead to additional conservation investments in the region.

Projects may be submitted to the Texas Forest Service from January 1 until August 31. Projects will be selected by the TFLC and submitted to the USFS in Washington, DC, in November of each year. The USFS list of approved projects is released in February for congressional financial consideration the following fiscal year.

For further information you may contact the Forest Legacy Coordinator at the Texas Forest Service at 979-458-6630 or view the USFS Forest Legacy Program Website at <http://www.fs.fed.us/spf/coop/programs/loa/flp.shtml>.

Stewardship Vision: To provide technical assistance to private landowners so they can protect environmentally and economically important forestlands that are threatened by conversion to non-forest uses.

Texas Forest Service Best Management Practices Project

With cooperative funding from the Environmental Protection Agency and the Texas State Soil and Water Conservation Board, the TFS has implemented an educational project encouraging forest landowners, loggers and foresters to voluntarily implement forestry BMPs. Texas forestry BMPs deal with Planning, Road Construction and Maintenance, Harvesting, Site Preparation and Planting, Prescribed Burning, Silvicultural Chemicals, and Streamside Management Zones (SMZs).

Major educational components of the BMP Project currently include a program on Continuing Education for Logging Professionals on Best Management Practices. This program, while initiated by the TFS BMP Project, now works cooperatively with the TFA and the Sustainable Forestry Initiative (SFI). Nearly 110 day-long workshops all across East Texas have provided in-depth BMP training both in the field and in the classroom to nearly 2800 logging contractors and crew foremen. Workshop participants have given the workshop a 98 percent recommendation rate for others to attend. An online BMP refresher course was developed in 2005 to provide additional training for logging professionals. Participants have valued the added information along with the flexibility the Internet course has provided.

A Wetland/BMP Coordinating Committee, chaired by the BMP Project Leader, meets annually and consists of representatives from all major agencies and entities involved in forestry and water quality in Texas. This group ensures that communication channels among various agencies remain open and information can be readily exchanged.

BMP demonstration forests are located on state lands in East Texas and are available for loggers, landowners or land managers to see side-by-side demonstrations of various BMPs. To accommodate those who are unable to visit a state forest, virtual tours of these demonstration areas can be found on the TFS homepage (<http://texasforestservation.tamu.edu>).

Educational efforts have included extensive use of radio, television, billboards, and newspapers to reach forest landowners and the general public. Thirty-second television commercials on BMPs, paid for with funding from SFI, have aired extensively in East Texas. A cooperative billboard, funded by the TFS and TFA, was installed along U.S. Highway 59 in Northeast Texas. It can be viewed by occupants of 11,000 vehicles per day. Radio public service announcements have also been utilized to target a greater audience.

Recognizing that unpaved county roads can have a major water quality impact, the BMP Project has provided water quality awareness training to county road crews and county commissioners. This newly formed relationship is expected to be mutually beneficial due to the natural linkages between forest industry and county roads.

In cooperation with SFI and TFA, landowner workshops have been conducted in areas of the state where county landowner associations have been lacking. These workshops provided informational resources for landowners on not just water quality, but also other stewardship issues like tree planting, wildlife and sustainable forestry.

In 1998, the TFS BMP Project received the Governor's Environmental Excellence Award for its outstanding educational efforts.

Past legislation created tax incentives, encouraging private landowners to leave streamside management zones (SMZs). The 50 percent reduction in property taxes for the acres landowners leave in SMZs is an attractive way for landowners to help offset any monetary losses they might incur by leaving an SMZ.

The TFS BMP Project has expanded its concentration of educational efforts in East Texas, primarily focusing on the Cypress Basin, Lake Livingston, Sam Rayburn Reservoir, and Toledo Bend Reservoir watersheds through 2008. These highly sensitive watersheds are great locations to target educational efforts, though a statewide presence will still be maintained. BMP compliance monitoring will continue to evaluate the effectiveness of the non-regulatory TFS BMP program.

A new monitoring program, the Texas BMP Effectiveness Project, was implemented in 2003 to determine if the state-recommended BMPs are effective in protecting water quality. This project measures the biological and physiochemical properties in selected streams before and after a harvest operation. The results from this project will be used to encourage greater implementation of BMPs and provide an opportunity to revise the current BMP guidelines so that they will better protect water quality.

Stewardship Vision: To continue with cutting edge educational efforts towards landowners, loggers and foresters and increase voluntary compliance with BMPs to 95 percent among non-industrial, private landowners.

Forest Stewardship Plans

Professionally written Forest Stewardship Plans, one of the most important practices of the Forest Stewardship Program, provide the needed basics of land management for some landowners. To help promote plan writing, training workshops covering multi-resource topics have been held for TFS foresters, consultants and NRCS personnel. A Forest Stewardship plan template, showing the basic requirements, has helped increase the quality of written plans.

Forest Stewardship Plans, which by nature are developed after meaningful conversation with the landowner about landowner objectives and land stewardship opportunities, can

help overcome some landowners' fears of government interference and control over private property. These discussions can also help explain to landowners the opportunities as well as the complexities of the Stewardship Program.

Stewardship Vision: To provide high quality and meaningful Stewardship Plans for all landowners who want them.

Cultural Resources

In 1995, the TFS implemented an ongoing program for protecting cultural resources during ground-disturbing activities involving federal cost-share funds. This program is a product of a Programmatic Agreement among the TFS, the USFS, the Texas Historical Commission (State Historic Preservation Officer), and the Advisory Council on Historic Preservation. As a part of this agreement, approximately 65 TFS foresters were trained by the Center for Ecological Archaeology (CEA) at Texas A&M University in the recognition and recording of cultural resources. Annual refresher training is also done.

The TFS has hired a part-time archeologist. Under the agreement, TFS personnel conduct field surveys with landowner cooperation to determine if cultural resources are present within the areas of potential impact for ground-disturbing activities. In addition, records are checked at the Texas Archaeological Research Laboratory in Austin to determine if known cultural resources are present on project sites. Completed survey forms are then reviewed by the TFS archaeologist before a case is approved.

Stewardship Vision: To identify and protect cultural resources in cooperation with landowner objectives.

Central Texas Tree Planting

With passage of time, oak wilt will restructure the forest cover type throughout much of the Texas Hill Country. The stands of native live oaks will not totally disappear, but in many areas they may no longer be the predominant species.

Management of Ashe juniper, absent periodic fire events, will continue to be the main focus of intensive management efforts. All other land practices such as reforestation and habitat enhancement will be delayed until the juniper issue is cleared—literally. These issues, combined with generally unforgiving soil conditions, extreme summer temperatures and sporadic seasonal rainfall, make initiatives for large-scale hardwood reforestation challenging and expensive, but not impossible.

Because of these inherent problems, it will be the challenge of the TFS (and other land management agencies) to work closely with Central Texas landowners. Heavy emphasis must be put on teaching landowners to adhere to proper planting schedules and rigid watering and maintenance programs. TFS nurseries will need to produce larger, container-grown hardwood nursery stock for these areas. The larger root systems, synonymous with container-grown stock, are critical in getting the trees through the first

season and help ensure adequate survival percentages and thus long-term benefits. Selecting and growing only those hardwood species that can best survive and naturally regenerate in the harsh Hill Country conditions is crucial. These trees must be able to provide a long-term benefit to the region for future generations if we are truly to leave a stewardship legacy.

While large-scale reforestation projects are possible in more amenable locations of the state, Central Texans are faced with certain natural obstacles that make reforestation initiatives difficult, expensive, but again, not impossible. Some minor retooling of current East Texas reforestation techniques to fit Central Texas conditions is a good start. Landowner education programs, development of landowner associations such as the Travis County Forest Landowner Association, on-site technical assists, and development of ample, container-grown seedlings at affordable prices are all opportunities for converting and enhancing existing acreage.

Stewardship Vision: To generate the market and the seedling supply sufficient for hardwood tree planting to become the Stewardship Program legacy in Central Texas.

South Texas Tree Planting

South Texas has a unique vegetation cover, with many plant and animal species found nowhere else in the United States. Countless opportunities exist for land stewardship to improve habitat for these unique species. Much of the land is suffering from years of overgrazing and intense agricultural practices. However, many landowners who have not cleared their land for agricultural practices are interested in managing their land to maximize numbers of game species, catering to the needs of hunters or to capitalize on the recent upsurge in birding.

While opportunities exist for different types of stewardship to be implemented, awareness by landowners of potential uses of their land is limited. People often do not know that it is possible to manage for wildlife while improving the overall quality of the land. For example, using strategic tree plantings to control and direct runoff can stabilize watersheds. Windbreaks can reduce wind erosion, and riparian forest habitats can be improved by planting native species.

Agro-forestry has tremendous potential in South Texas. (In fact, agro-forestry may have potential in East Texas, as well. It may be possible to raise the same amount of forage as open pasture with the same amount of fiber as a loblolly plantation.) Instead of clearing land completely for rangeland, ranchers could combine grazing with fiber production from native species, providing food and cover for both livestock and wildlife.

Stewardship Vision: To fully develop the awareness of the tremendous potential of South Texas lands.

Prescribed Burning

The benefits of prescribed burning are many. Prescribed fire is used to remove unwanted vegetation and logging debris before planting operations or to control hardwood brush in pine stands. Habitat diversity can be increased, increasing the quality of food, inhibiting non-native grasses, and allowing light to reach the forest floor to increase forbs and browse. Fire removes thick undergrowth making travel and feeding easier for many species, such as wild turkey, and many people like the open “park-like” appearance after a burn. Many plants and animal species depend on periodic fire to maintain their “ideal” habitat. Prescribed fire can also be used to reduce fuel loads under controlled conditions, reducing fuels that might otherwise feed wildfires.

Prescribed Burning is not currently as effective a management tool as it could be due to landowner concerns with liability and the limited number of contractors offering this service. One possible solution to these issues is the Texas Prescribed Burn Manager Certification program administered by the Texas Department of Agriculture that limits a landowner’s liability if a Certified Burn Manager is hired. Several prescribed burning associations have been formed in Central Texas where ranchers assist each other by pooling their resources to conduct prescribed burns. With limited liability and continued development of burning vendors, prescribed burning can continue to be a valuable land management tool.

Stewardship Vision: To continue to allow for and encourage prescribed burning as a valuable land management tool.

Regional Habitat Conservation Plan for the Red-cockaded Woodpecker on Private Lands in the East Texas Pineywoods (“Safe Harbor”)

The U.S. Fish and Wildlife Service issued an incidental take permit to the State of Texas through the Texas Parks and Wildlife Department and the Texas Forest Service pursuant to section 10(a)(1)(B) of the Endangered Species Act (the Act) of 1973, as amended.

The permit allows the State of Texas to enter into Safe Harbor Cooperative Agreements authorizing future take of the endangered red-cockaded woodpecker incidental to other lawful land-use activities on private and other public land (excluding state and federal land) in East Texas. The permit only authorizes incidental take on specific lands enrolled in this program for which a cooperative agreement has been signed and management actions implemented with a net result of additional RCW groups on the property. This permit does not involve incidental take of existing endangered species habitat and it is considered a recovery action since it encourages beneficial habitat management activities on a volunteer basis.

The objectives of this permit are to allow private landowners to assist in recovery of the RCW in East Texas by providing them protection from Section 9 liabilities under the Act. By encouraging voluntary habitat restoration and enhancement of RCW habitat on private lands through Safe Harbor Cooperative Agreements, the focal objective may be

achieved within recovery and support populations in East Texas through additional RCW habitat creation and management and successful breeding group establishment. Through juvenile translocation and additional habitat creation, improvement, maintenance, and management, recovery of the RCW on federal lands in East Texas may thus be possible.

The State of Texas, through TPWD/TFS, has taken this action because the RCW populations on private lands in East Texas have experienced an overall population decline and much of the decline on private lands can be attributed to the lack of habitat management. The overall goals of the State of Texas are to contribute to the recovery of the East Texas RCW population, to provide economic certainty to private landowners with current or future RCW habitat and to contribute to the overall conservation efforts of southern pine habitat in East Texas.

The Texas RCW “Safe Harbor” HCP is based upon an adaptive management concept that allows changes in the program based upon new scientific information including, but not limited to, biological needs and management actions proven to benefit the species or their habitat. Currently acceptable management activities may be modified or eliminated based upon new research findings and/or evaluation of the biological costs versus the conservation benefits. The 1985 RCW Recovery Plan was revised and was approved in January of 2003. This document reflects advances made in RCW management over the past several years. Adaptive management allows the Texas RCW HCP to tie to the revised recovery plan.

It is anticipated that 31 RCW groups could be included under Safe Harbor Cooperative Agreements during the life of this 99-year permit. TFS and the TPWD expect to actively identify landowners who may have interest and thus benefit from this program.

Stewardship Vision: To enroll all interested landowners who may have otherwise have changed their management objectives because of potential RCW attraction, and to increase RCW habitat by offering management alternatives to landowners.

Forestry Water Quality Management Plans

Texas Senate Bill 503 of the 73rd Legislature created a program that provides landowners involved in agriculture and silviculture an opportunity to comply with state water quality laws through traditional voluntary, incentive-based programs. Site specific water quality management plans, developed in cooperation with local SWCDs, ensure that forestry operations are carried out in a manner consistent with state water quality goals. Once the water quality plan is developed and approved by TSSWCB, it becomes certified and the landowner must implement the plan as specified. To remain in compliance under the authority of TSSWCB’s voluntary alternative to state water quality regulatory processes, the water quality management plan must continue to be in effect in accordance with the implementation schedules agreed to in the plan. A landowner operating under a certified water quality plan has essentially the same legal status for NPS pollution as an entity operating under a Texas Commission on Environmental Quality point source pollution permit.

Stewardship Vision: To enroll one million acres of forestland in forestry water quality management plans, which will be a major component of the TFS BMP Project.

Certified Forest Stewards

The Certified Forest Steward Program, created in FY 1999, identifies and rewards landowners who have followed their written Forest Stewardship Plans by installing the recommended on-the-ground practices. While the goal of the Forest Stewardship Program is to write multiple-use management plans for landowners, this *recognition program* is designed to reward people who are following the recommendations in their plans.

Once their plan has been implemented for a few years, the landowner can request certification or can be nominated by a local resource professional, consultant or agent. Nominators are asked to list the practices that have been installed in the last five years that help meet the plan's objectives. Each accomplishment listed on the nominating form will be awarded up to 10 points, based on the relative importance of each practice to proper land management. Activities have more value if they were recommended in the Forest Stewardship Plan. Eligible landowners will be notified of their selection and will be presented a certificate and a Forest Stewardship metal sign at a public ceremony of their choosing.

The TFS also participates in TPWD's Lone Star Land Steward Award Program through nominations and judging.

Stewardship Vision: To appropriately recognize Certified Forest Stewards each year. To create an overall annual award program for certified forest stewards in East Texas, Central Texas and West Texas.

Sustainable Forestry Initiativesm in Texas

The Sustainable Forestry Initiative[®] (SFI) in Texas operates under the umbrella of the Texas Forestry Association. SFI[®] is a forest industry program designed to ensure that future generations of Americans will have the same abundant forests that exist today.

Associated with SFI are performance measures to gauge the industry's progress in achieving the SFI objectives, which include annual reports to the public. SFI is essentially a land stewardship ethic which integrates the growing, nurturing and harvesting of trees for products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics. SFI was developed nationally through the American Forest and Paper Association, whose members produce 90 percent of the paper and 60 percent of the lumber used in North America today. Compliance with the SFI guidelines is mandatory for AF&PA companies and is required to retain AF&PA membership.

One way SFI promotes forest stewardship is through logger education. This comprehensive program includes the following workshop training: BMP (conducted through the TFS BMP Project), OSHA/Safety, Wetland BMP/Silviculture/ Wildlife and Endangered Species, Aesthetics and Business Management. Upon completion of all five courses, a Professional Logger certificate is issued to show completion of the Texas Logger SFI educational programs. SFI also promotes forest stewardship through landowner outreach and public awareness. During the timber sale process, AF&PA members in Texas will encourage private, family forest owners who sell timber to reforest following final harvest and to use BMPs.

SFI also helps promote forest stewardship through financial support of forest landowner meetings, as well as support for creation of forest landowner associations.

Stewardship Vision: To work with SFI in its implementation of stewardship educational efforts and to provide input for the best methods in reaching landowners with the stewardship message.

Aesthetics

In East Texas, aesthetics have become more of a concern for silvicultural operations. Forest products companies now regularly implement roadside buffer zones along busy highways. Clearcut size is also being limited. Wildlife travel corridors are being implemented. Most major timber companies have an average clearcut size of 120 acres or less. Also, some effort at cutting or lopping down tops, whips, slash, and other logging debris is now being made. These actions help make a clearcut look more like a meadow and a thinned area look more like a park. Aesthetics are also listed by smaller landowners as a high priority for their property.

Stewardship Vision: To encourage landowners operate with aesthetics in mind when conducting management activities.

Financial Incentive Programs

Texas tax law contains a timberland productivity value alternative, whereby timbered property can be taxed at a lesser rate than full real estate value. Even though this value is currently much higher than the value assessed on agricultural lands, it is a major incentive for property owners to have their acres assessed as “timberland.”

In 1997, an incentive to convert agricultural lands to forest land was added. Previously, land that had been taxed at the lower-rate agricultural value was taxed at the higher timber valuation as soon as it was planted. The new legislation creates a fifteen-year tax abatement maintained at the agricultural value. The TFS has noticed a significant increase in the amount of pastureland planted to pine as a result of this legislation.

Other tax incentive programs include laws to reduce property taxes in environmental areas such as streamside management zones, aesthetic management zones and wildlife

management zones by 50 percent, and to reduce property taxes on any reforested land by 50 percent for a period of 10 years. This legislation brings the taxes levied on forestry and other agriculture closer to parity.

Cost-share programs can also provide some financial incentive for landowners for a variety of landowners. Examples include the Landowner Incentive Program (LIP), operated by TPWD, for activities related to threatened or endangered species; the Texas Reforestation Foundation (TRe), operated by the TFA and supported entirely by voluntary contributions from forest products industries, for activities related to tree planting (this program is currently being revised with a emphasis placed on providing education/information on reforestation); the Conservation Reserve Program (CRP), Continuous CRP for Riparian Buffers (CP22), Wetland Restoration in Non-floodplain, and Bottomland Timber Establishment on Wetlands (CP31) all operated by the FSA, for reduction of soil erosion on highly erodible land; the Environmental Quality Incentives Program (EQIP), operated by the NRCS, for technical, educational and financial assistance to eligible landowners to address soil, water and related natural resource concerns on a contract basis—all East Texas counties offer tree planting as one of their conservation practices; the Wetlands Reserve Program (WRP), operated by the NRCS, for restoring wetlands; the Wildlife Habitat Incentives Program (WHIP), operated by the NRCS, to develop habitat for fish and wildlife; and the Forested Wetlands Incentive Program, operated by TPWD, for sustainable forestry practices of sawtimber management and improved wildlife habitat; the Texas Oak Wilt Suppression Project, administered by the TFS, for implementing approved oak wilt suppression plans; and the Southern Pine Beetle Prevention Program, administered by the TFS, to assist landowners with pre-commercial and sub-commercial thinning in susceptible pine stands.

The Forest Lands Enhancement Program (FLEP) is another federal cost share assistance program, and one that has been popular with Texas landowners. However, future funding is unlikely.

Stewardship Vision: To encourage the implementation of current and future state and federal financial incentive programs for landowners practicing forest stewardship.

Tree Farm Program

The American Tree Farm System® (ATFS), a program of the American Forest Foundation, is committed to sustaining forests, watershed and healthy habitats through the power of private stewardship.

Tree Farmers share a unique commitment to protect wildlife habitat and watersheds, to conserve soil and to provide recreation for their communities while producing wood for America. These individuals hold the key to the kinds of forests, forest activities and forest resources future generations of Americans will enjoy.

ATFS has established standards and guidelines for property owners to meet to become a certified Tree Farm. Under these standards and guidelines, private forest owners must

develop a management plan based on strict environmental standards and pass an inspection by an ATFS volunteer forester every five years.

Certification of Tree Farms through the American Tree Farm System (ATFS), under the oversight of the American Forest Foundation (AFF), is the oldest and largest voluntary, third party verification process in the United States. Since 1941, ATFS has been certifying the practice of sustainable forestry.

The American Forest Foundation is a national nonprofit organization that works for healthy forests, quality environmental education and to help people make informed decisions about our communities and our world.

Stewardship Vision: To encourage landowner participation in the Tree Farm Program thereby gaining information and certification providing for harvest flexibility while practicing forest stewardship.

County Forest Landowner Associations

Over 20 active County Forest Landowner Associations (CLOAs) exist in East Texas. These associations typically meet quarterly, and usually include a forestry presentation in their meetings. Most associations also have newsletters, with the TFS supplying generic forestry newsletter material on a quarterly basis. To provide for absentee landowners, associations have been created in urban areas such as Austin (Travis County Forest Landowner Association) and Dallas/Ft. Worth (Metroplex Timber and Forestry Association). A goal of TFS is to have a landowner association in every East Texas County and in all major metropolitan areas where absentee landowners reside.

CLOAs give landowners the opportunity for learning and fellowship. Experiences and ideas are shared among members. CLOA meetings also provide the opportunity for education and technology transfer from one expert to many landowners. They provide an excellent forum to effectively spread the forest stewardship message. Professionally conducted and well-advertised meetings held regularly are one key to delivering the total stewardship message.

Stewardship Vision: All forest landowners in every East Texas county and in major metropolitan areas of the state will have the opportunity to join and participate in a CLOA

SUMMARY--THE TFS AND THE FOREST STEWARDSHIP PROGRAM

Recently completed Forest Inventory and Analysis (FIA) plots across East Texas, along with early findings from associated landowner surveys, reveal that forestlands are becoming more and more fragmented and that the new owners of Texas' forests have vastly different values and objectives for their lands than the previous, more traditional forest landowners. The Forest Stewardship Program was established for just this purpose—to encourage and educate forest landowners to more actively manage their forests and

related resources—whatever their objectives. Central to the Stewardship Program is the recognition of private property rights. The success of the Stewardship Program depends on voluntary participation by private landowners. The strength of the program is that it can accommodate, assist, and encourage landowners to achieve diverse, long-term management goals for their property. However, landowners have a right to expect a fair economic return from their property if they desire, and the Stewardship Program is just as effective in this area as well.

The TFS strongly believes in and practices a multi-program delivery system. TFS foresters are cross-trained to deliver multiple programs, which, combined with the Stewardship Program, allows foresters to offer more assistance to landowners and groups. This multi-resource program emphasis offers TFS foresters a broader vision of the resources they help to manage and enables them to have more flexibility when making recommendations.

The Forest Stewardship Program has allowed the TFS to increase its staff in Central Texas as well as strengthen relationships with other natural resource agencies in the region. A Stewardship biologist with Texas Parks and Wildlife Department has also been added to work with TFS foresters and other resource professionals delivering the Stewardship Program.

TFS has hired three professionals to assist the agency with marketing, publicity and conservation education efforts to improve our effectiveness in reaching and assisting our new landowners. Active participation in the USDA Outreach Program has helped raise awareness and emphasized the need to support traditionally underserved landowners.

Our vision for Forest Stewardship in Texas is to shape an environment supportive of private landowners' pursuit of goals and objectives on their forestland. We will strive to empower landowners with knowledge, technical assistance, and resources to implement forestry practices to produce healthy and sustainable forest ecosystems. We will encourage collective individuals and organized forestry efforts that will yield improved public benefits in water quality, biodiversity, enhanced wildlife habitats, grazing and range, and properly protected cultural resources. We will intensify the renewal of forest ecosystems in Central Texas that are more resistant to oak wilt and fire and are richer in species diversity. We will expand windbreak and environmental tree plantings in the High Plains, including replacing the existing nursery with one of adequate size and better water quality. Texas is blessed with an abundance of natural resources, of which 98 percent are privately owned. Forest Stewardship offers these valued landowners the professional technical assistance to keep their land and resources healthy and productive.
