The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

State of Public Lands

Prescribed Fire Lag & Habitat Degradation

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Florida's Fire Regime

Our native landscape is fire-prone and fire-dependent and characterized by having:

1) a high frequency of fires (the majority of which requires a 2- to 4-year interval);

2) a low to moderate fire intensity;

3) a predominance of terrestrial upland habitats adapted and dependent on fire for ecological health; and

4) a predominance of imperiled upland species that require frequent fire for optimum habitat condition.

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Common Fire-Prone/Dependent Community Types

Habitat Type	Burn Interval
• Pine savannah	1 – 4 years
• Sandhill or longleaf pine/turkey oak	1 – 4 years
• Dry prairie	1 – 3 years
• Scrubby flatwoods	8 – 12 years
• Sand pine scrub	15 – 30 years
• FW marsh and wet prairies	1 – 5 years

The Problem

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

We are **only** burning **1/3 – 1/2** of the **required acres** per year needed to sustain **good** ecological health.

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Florida Fire Statistics

- **Nature Conservancy scientists estimate there are more than 15 million acres of fire-prone plant communities in Florida.**
- **To maintain safe fuel levels, an average of 3.9 million acres should be burned each year.**
- **The current level of prescribed burning in Florida totals 2 million acres.**

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Agency Fire Statistics

- **The are more than 9 million acres of public conservation lands in the state.**

- **Depending on the agency with management responsibility, Florida is only burning 40 to 60 percent of the required annual acreage.**

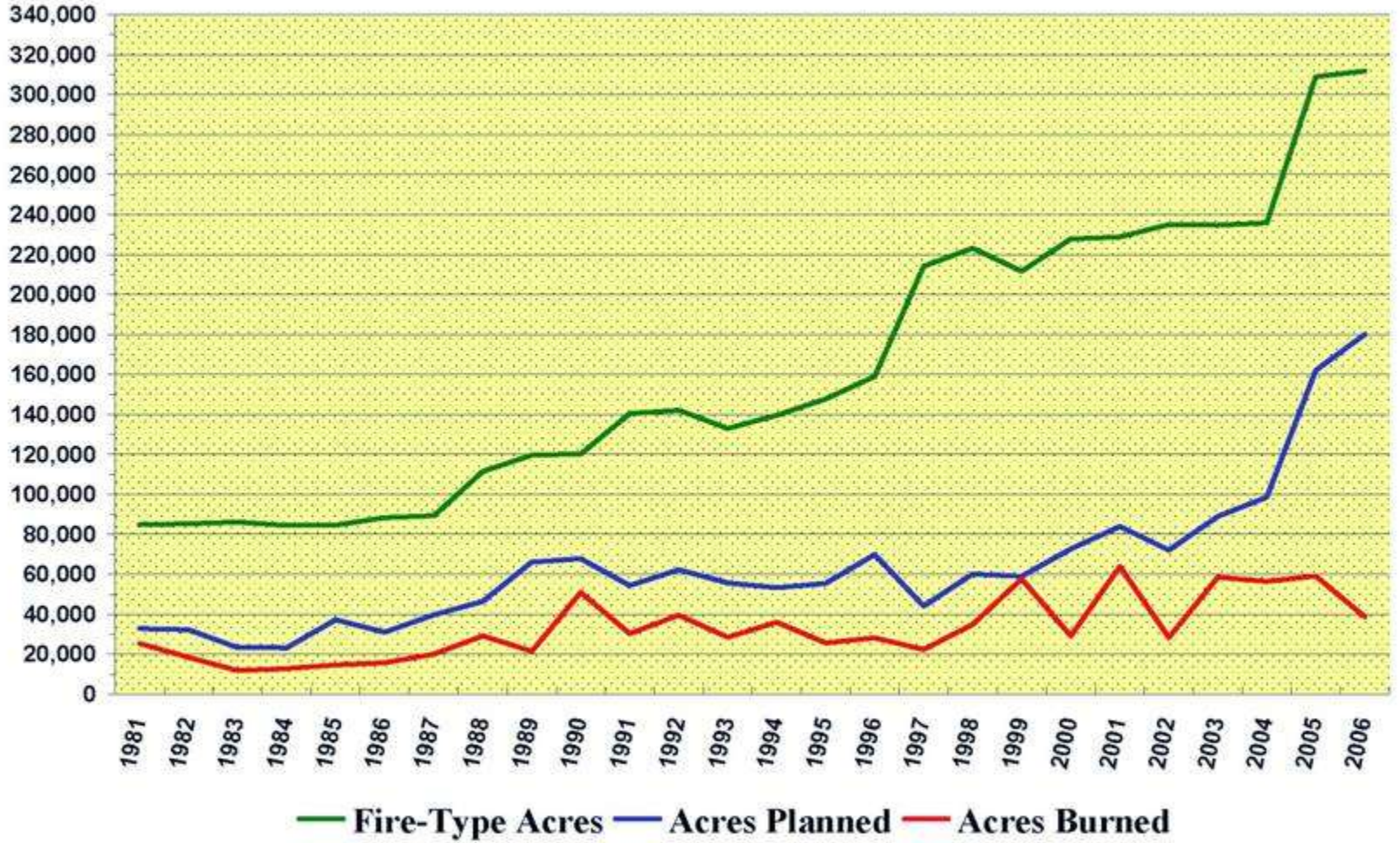
The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Prescribed Fire Statistics by State Agency

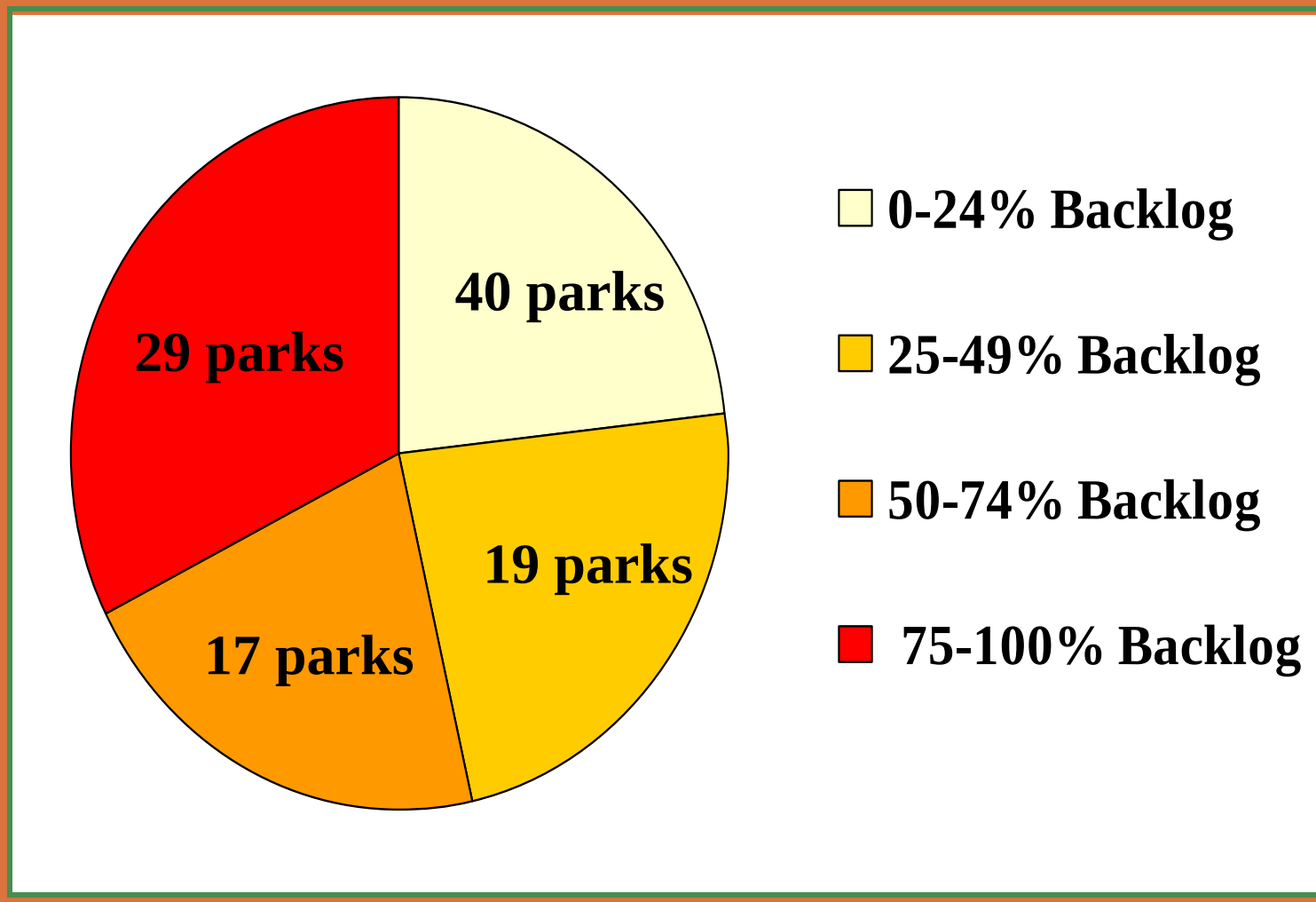
Agency	Fire-Type	Should Burn	Rx Burning/Yr
FPS/DEP	240,000 acres	50,000 – 80,000	Avg. 30,000
FDOF	601,000 acres	120,000 – 200,000	Avg. 80,000
FFWCC	1,015,000 acres	300,000 – 400,000	FY07 135,000

Florida Park Service

Florida State Parks Prescribed Burning History 1981-2006

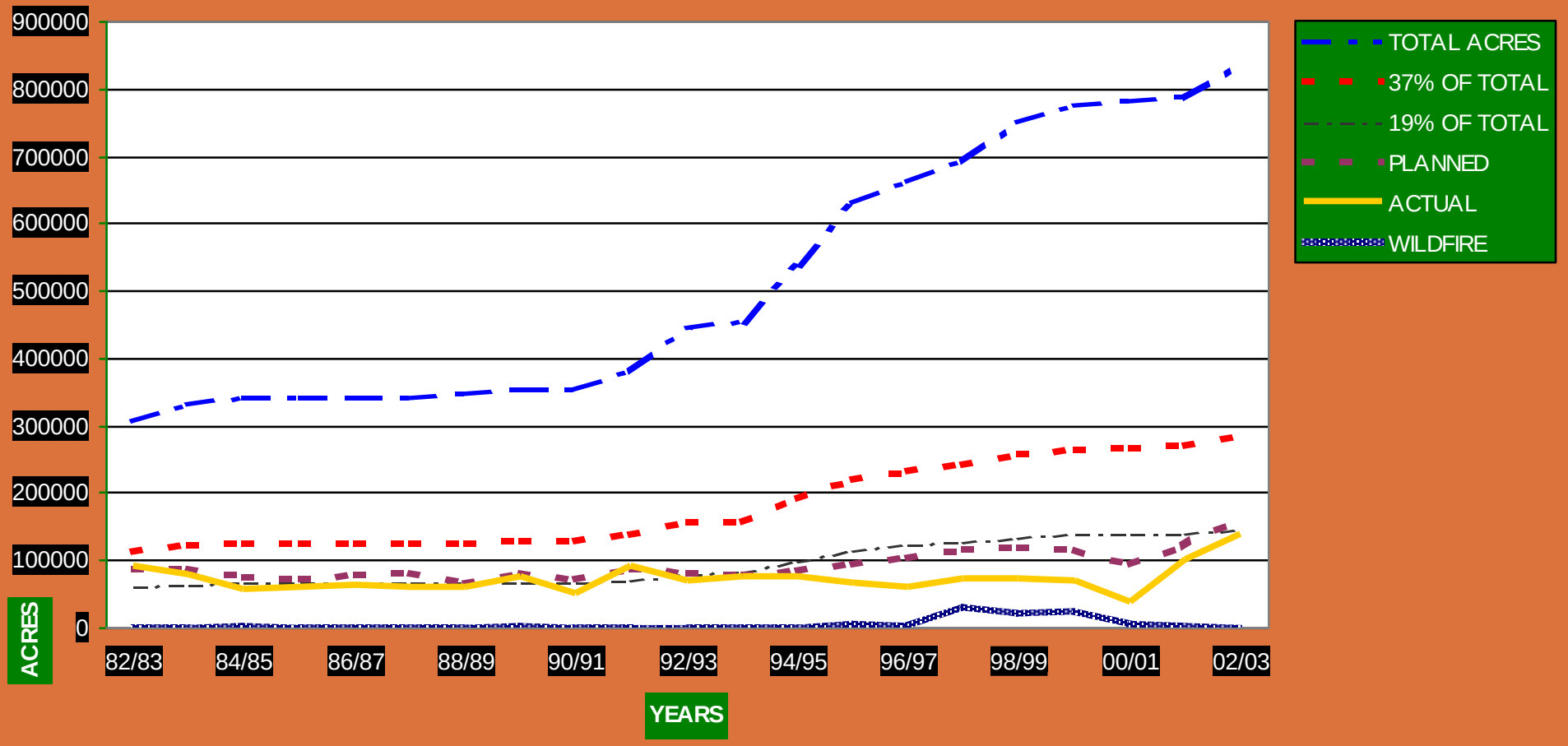


Parks Within Ranges of Burn Backlog (Acres)



Florida Division of Forestry

Fire History Summary for 17 State Forests



Lack of Resources: State Agencies

Year Reviewed	# Plans Reviewed	Reports Showing Inadequate Staff	Reports Showing Inadequate Funding	Reports Showing Inadequate Equipment
1998	36	71%	31%	31%
1999	32	81%	72%	47%
2000	31	23%	26%	13%
2001	10	60%	40%	10%
2002	24	62%	50%	8%
2003	21	89%	55%	35%
2004	23	70%	39%	26%
2005	31	48%	39%	10%

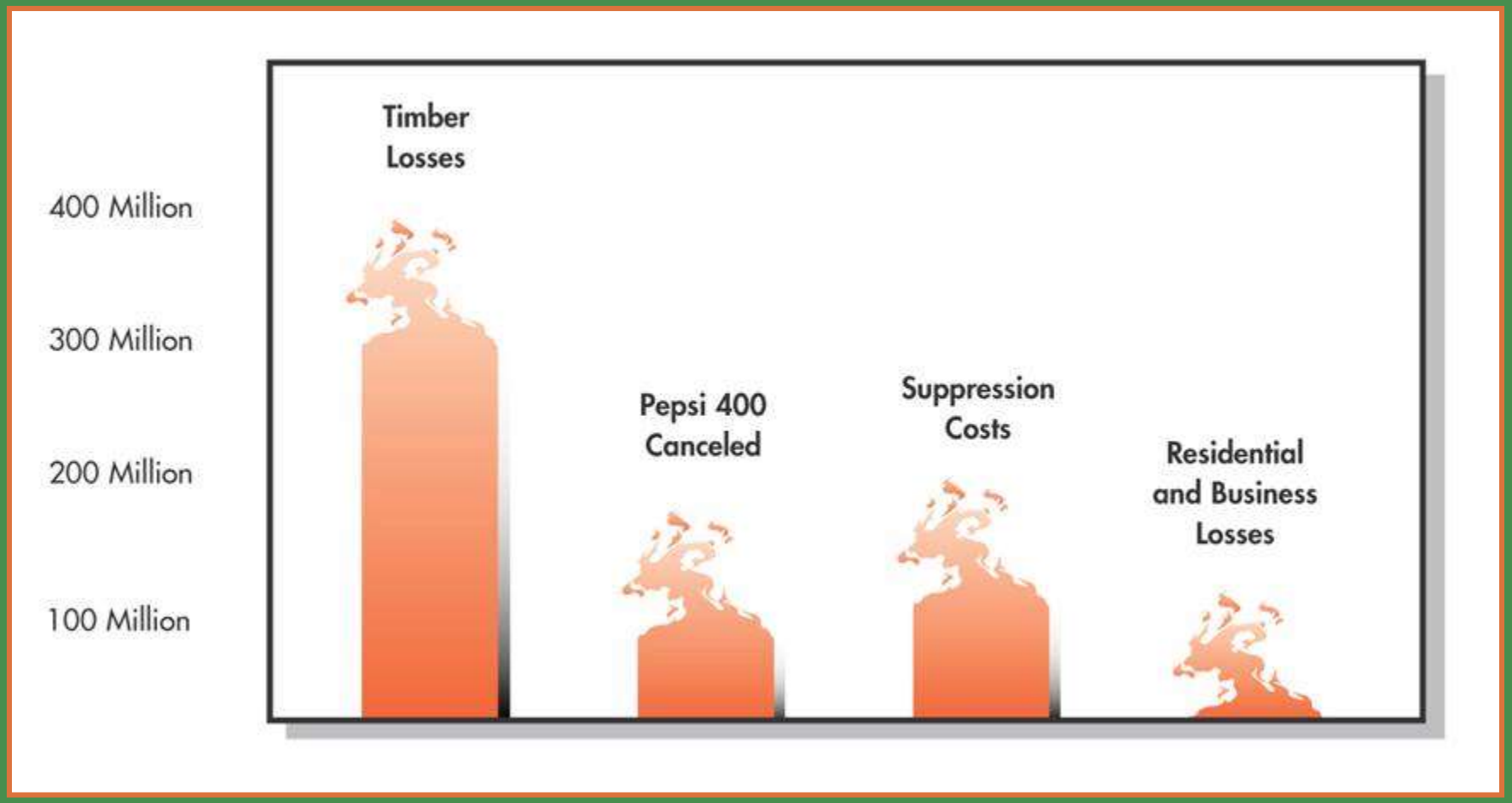
What are the Impacts?


© The Nature Conservancy

Habitat Degradation Through Composition Change

High Severity Wildfire

Economic Impacts of 1998 Wildfires



Excessive Buildup of Fuels

This leads to a high intensity and severity of fires that threaten or destroy:

- **the habitat's condition;**
- **public safety; and**
- **the site's aesthetic quality.**

© The Nature Conservancy

Threats to Rare Species

Florida scrub-jay

gopher tortoise

red-cockaded woodpecker

pitcher plant

grasshopper sparrow

What are the Impediments to Success?

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

How the Survey was Done

- **Interviews with Nature Conservancy fire management staff**
- **Interviews with NGO fire managers/partners**
- **Interviews with state agency fire managers**

***All interviewees were those with records of high achievement regarding prescribed fire implementation**

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Questions Asked

- What are the characteristics that make you a successful fire manager?
- What are the impediments to your success and that of others?
  - What are the institutional impediments?
  - What are the regulatory impediments?
  - What are the social impediments?
- What are the solutions/strategies for success?

The Results:

Primary Impediments

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

– **Implementing prescribed fire for habitat quality and health is not always seen as a top agency priority: Certain levels of leadership do not recognize its importance relative to other institutional priorities.**

– **There is an inadequate system of accountability for implementing prescribed fire: Fire goals are often not tied to ecosystem needs, only number of acres burned.**

– **Inadequate staff, equipment and fiscal resources to get the prescribed fire job done: Real resources not budgeted for in budget request process**

The Results:

Secondary Impediments

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Regulatory

- Increased planning and authorization complexity requirements.
- Less flexibility of authorizing agency.
- Less logistical support from state fire agency (lack of or diversion of resources.
- Punitive (what you can't do) system: air quality and smoke are seen as one of the biggest future impediments.

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Social

– As Florida's population continues to grow, new residents are less knowledgeable about prescribed fire.

– Rapid urbanization: (WUI) great increases in risk and complexity.

– Smoke conflicts and liability regarding roads, air quality and public perception.

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Institutional

– **Agencies lack training and have inadequate staff/leadership experience standards.** Too many burners trained only to the lowest expertise level, especially in non-fire agencies. Lack of up-to-date knowledge is an institutional problem, particularly managing fire in complex landscapes.

– **Conflict with recreation/multiple use mission.**

– **Lack of databases or monitoring programs** to provide an adequate picture of trends with prescribed fire and habitat quality.

– **Site management Budgeting/funding is not tied to resource management needs — particularly fire management.**

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Institutional (continued)

– ARC is not able to take meaningful action on resource management lag issues: Planning and management reviews may be too seem cursory or superficial.

– Lack of personnel and resources: No system to reward or retain trained, productive personnel.

– Fire management ability is not an important evaluation criteria for staff, especially in non-fire agencies.

– Senior leadership is not held accountable for fire as a priority activity. Little institutional reward for resource management successes.

Solutions for Success

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Fire management and the implementation of appropriate prescribed fire needs to be elevated as a top agency priority.

- **Senior leadership needs to understand its importance, as well as impress this importance institution-wide.**

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Fire management functions must to be "professionalized" within land management agencies.

- **Hire prescribed fire professionals to implement prescribed fire programs at the district or regional level.**
- **Increase professional standards and training.**
- **Provide appropriate resources during high burning periods.**
- **Provide better planning, data management, trend monitoring and analysis capabilities.**

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Through budgeting process request appropriate funding for dedicated staff, equipment and expenses.

- **Burn teams (TS/ST) level — seasonal with FTE leadership, e.g. interagency coop teams**

- **FDOF to provide better logistical support — heavy equipment, aerial support and overhead support.**

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Create new strategies that incorporate interagency resources, unpaid staff, seasonal and contracted professionals.

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Have access to and full use of available revenues.

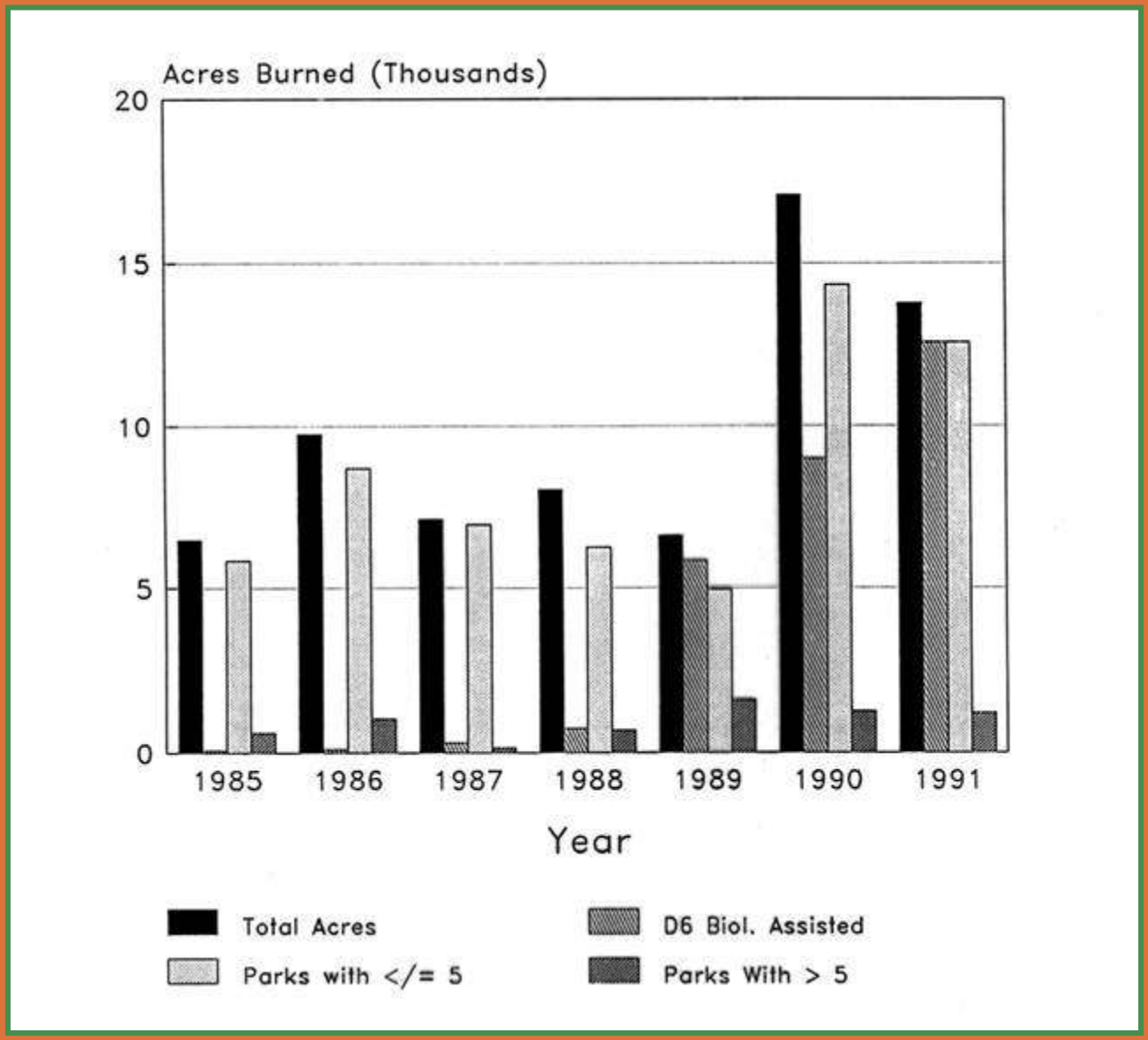
- Aggressively seek available federal funding
- Diversify pass-down process

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Develop a system of accountability for meeting fire management goals. These goals must be tied to ecosystem need and job performance.

District 6: Prescribed Burning

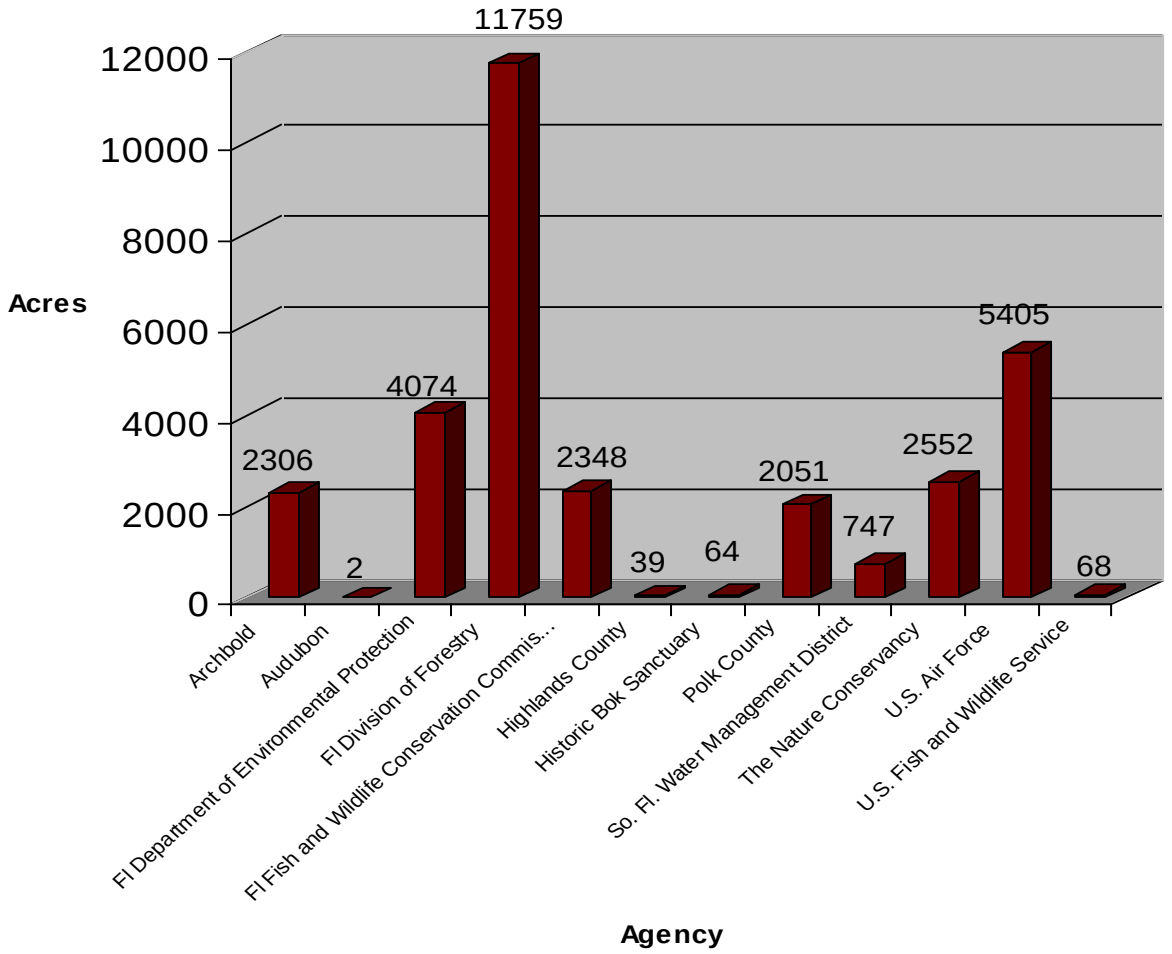


The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Lake Wales Ridge Prescribed Fire Strike Team

2000 - 2007 # of acres burned (total = 31,415 acres)




Well? - What's The Cost???
© The Nature Conservancy

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

GT Stake-Holders Group: FNAI State Lands Uplands Data

Gopher Tortoise Habitat Acreage Summary for TNC								
State Land Managing Agencies	**Total MA**	**Total Habitat**	**Sandhill**	**Scrub**	**Flatwoods* (mesic/scrubby) & Upland Pine**	**Dry Prairie**	**Pine Plantation***	**Rangeland**
Division of Recreation and Parks	586,521	164,868	17,146	17,116	70,637	35,435	13,597	10,937
Coastal and Aquatic Managed Areas	54,936	4,532	0	1,661	1,032	0	1,839	0
Florida Fish and Wildlife Conservation Commission	1,452,672	233,665	7,688	9,560	123,595	31,226	51,277	10,319
Division of Forestry	1,010,183	525,508	68,376	11,159	154,253	0	290,475	1,244
Water Management Districts Combined	1,743,861	340,430	7,590	7,494	69,366	14,103	231,471	10,405
Northwest Florida WMD	212,543	50,573	2,864	0	1,864	0	45,844	1
South Florida WMD	409,318	19,553	26	591	11,882	1,061	115	5,878
Southwest Florida WMD	338,208	76,784	3,144	6,428	42,379	13,042	8,930	2,862
St Johns River WMD	529,042	88,089	1,133	476	11,433	0	73,465	1,581
Suwannee River WMD	254,751	105,431	423	0	1,808	0	103,117	83

*Note: Poorly drained mesic flatwoods and pine plantation may be unsuitable for gopher tortoises. Few or no gopher tortoises were observed in mesic flatwoods mapped as part of the FNAI NC Mapping Projects.

Method: Habitat was derived from best available land cover datasets. The most precise data were used where available.

Habitat Type	Data Sources		
Sandhill & Upland Pine	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. FWC 2003 landsat vegetation data
Scrub	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. Florida Forever NC map (version 2.1)
Flatwoods	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. Florida Forever NC map (May 07 version)
Dry Prairie	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. Florida Forever NC map (May 07 version)
Pine Plantation	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. Century Commission CLIP data based on WMD FLUCCS
Rangeland	1. FNAI NC Mapping Project- primarily FWC and SWFWMD lands	2.DRP NC Maps	3. FWC 2003 landsat vegetation data

Analysis by Florida Natural Areas Inventory, May 2007

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

GT Stake-Holders Group: FNAI State Lands Uplands Data

•The core cost element to calculate prescribed fire was the Burn Unit Crew Day (BUCD) which is the cost to field a 6 – 8 person prescribed fire crew on one work day period for one burn unit, regardless of acreage size. This base cost includes personnel, equipment/fuel, planning, basic control line prep etc. or the entire unsubsidized cost. The base rate is $3,500.00 per BUCD. The rate is the market rate average for private non-profit and for profit organizations doing contract fire management.

•The consensus average market rates for mechanical treatments are as follows: 1) Roller chopping/Tree cutting $45.00 per acre. 2) Heavy mechanical shredding $400.00 per acre. These costs are used only as an initial single treatment for burn units of habitat types selected.

•These were the analysis general assumptions: All habitats types on all agency lands follow the general trend data of FDOF and FPS analysis, that 40 percent of all habitat types are severely degraded due to lack of fire and are in need of intensive fire/mechanical restoration.

•The average burn unit size reflective across agency for ground burning was determined through review of historic data to be: 1) 250 acres in maintenance phase (fire regime/vegetative structure) sites. 2) 100 acres in urban interface or restoration fire phase (heavy fuel laden sites).

•The mean fire interval for short interval (high frequency) habitat types (e.g. sandhill, prairie, flatwoods) was chosen by unanimous consensus to be 3 years. The mean fire interval selected for scrubby flatwood habitats was 7 years. The mean fire interval selected for scrub habitats was 12 years.

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

Prescribed Fire Cost Estimate Table:

GT Stake-Holders Group: FNAI State Lands Uplands Data

Habitat Type:	Total Acreage:	FRI:	Acres Per Year :	Units per year (First 10 years, @ 100acres)	Cost Per Year (First 10 years):	Units Per Year (Last 5 Years, @ 250 Acres)	Cost Per Year (Last Five Years):	Total Cost, Recover Period:
Scrub	46,991(.4) 18,796	12	1,566	15.7	$54,950	6.2	$21,700	$658,000
Scrubby FW	75,000(.4) 30,000	7	4,286	42.9	$150,150	17.1	$59,850	$1,800,750
Sandhill	100,800(.4) 40,320	3	13,440	134.4	$470,400	53.8	$188,300	$5,645,500
Flatwoods	343,883(.4) 137,553	3	45,851	458.5	$1,699,250	183.4	$641,900	$20,202,000
Dry Prairie	80,764(.4) 32,306	3	10,769	107.7	$376,950	43.1	$150,850	$4,523,750
Rangeland	32,905(.4) 13,163	3	4,388	43.9	$153,650	17.6	$61,600	$1,844,500
Pine Plantation	588,659(.4) 235,464	3	78,488	784.9	$2,747,150	314.0	$1,099,000	$32,966,500
TLs:	**643,776**		**158,788**	**1588**	**$5,652,500**	**635.2**	**$2,223,200**	**$67,641,000**

*Scrubby FW acreage was an estimate and was subtracted from the flatwoods matrix total

**1588 units a year at 55 units per team would require 25 - 30 prescribed fire “Strike Team” crews or, 200-240 FTE

**824 units a year at 55 Units per team would require 12 prescribed fire “Strike Team” crews or, 96 FTE

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

GT Stake-Holders Group: FNAI State Lands Uplands Data

Mechanical Treatment Cost Estimate Table:

Habitat Type Total Acreage:	**Treatment Type:**	**Treatment Cost/Acre:**	**Total:**
Scrub/Scrubby Flatwoods	48,796	$400.00	$19,518,400
Flatwoods/Pine Plantation	373,017	$45*	$16,785,765
Totals			**$36,304,165**

*Some of the team felt that roller chopping current rates were closer to the $65/$75 range per acre

The Nature Conservancy

SAVING THE LAST GREAT PLACES ON EARTH

GT Stake-Holders Group: FNAI State Lands Uplands Data

Results:

The total fire/mechanical restoration cost for the 15 year recovery period recommended in the draft Gopher Tortoise management plan is **$103,945,165.00** ***($156,000,000.00)**. Annual fire cost are about 5.7 million dollars per year during the first 10 years restoration phase fire, but decrease significantly to as low as 2.2 million dollars per year for the remaining five years (maintenance phase) of the recovery period (and possibly less into future years, assuming fire regimes are sustained in maintenance phase and optimum low fuel load condition). It is important to understand that regardless of the strategy (hiring state line positions or contracting) that **100 to 200 FTE** *(12 - 28 PFSTs) are needed.