

**Evaluation and Monitoring Protocol  
for the  
Woody Biomass  
Grants Program**

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# Overview

- The Problem
- The Woody Biomass Grants Program
- The First Round
- Evaluating the Effectiveness

# The Problem

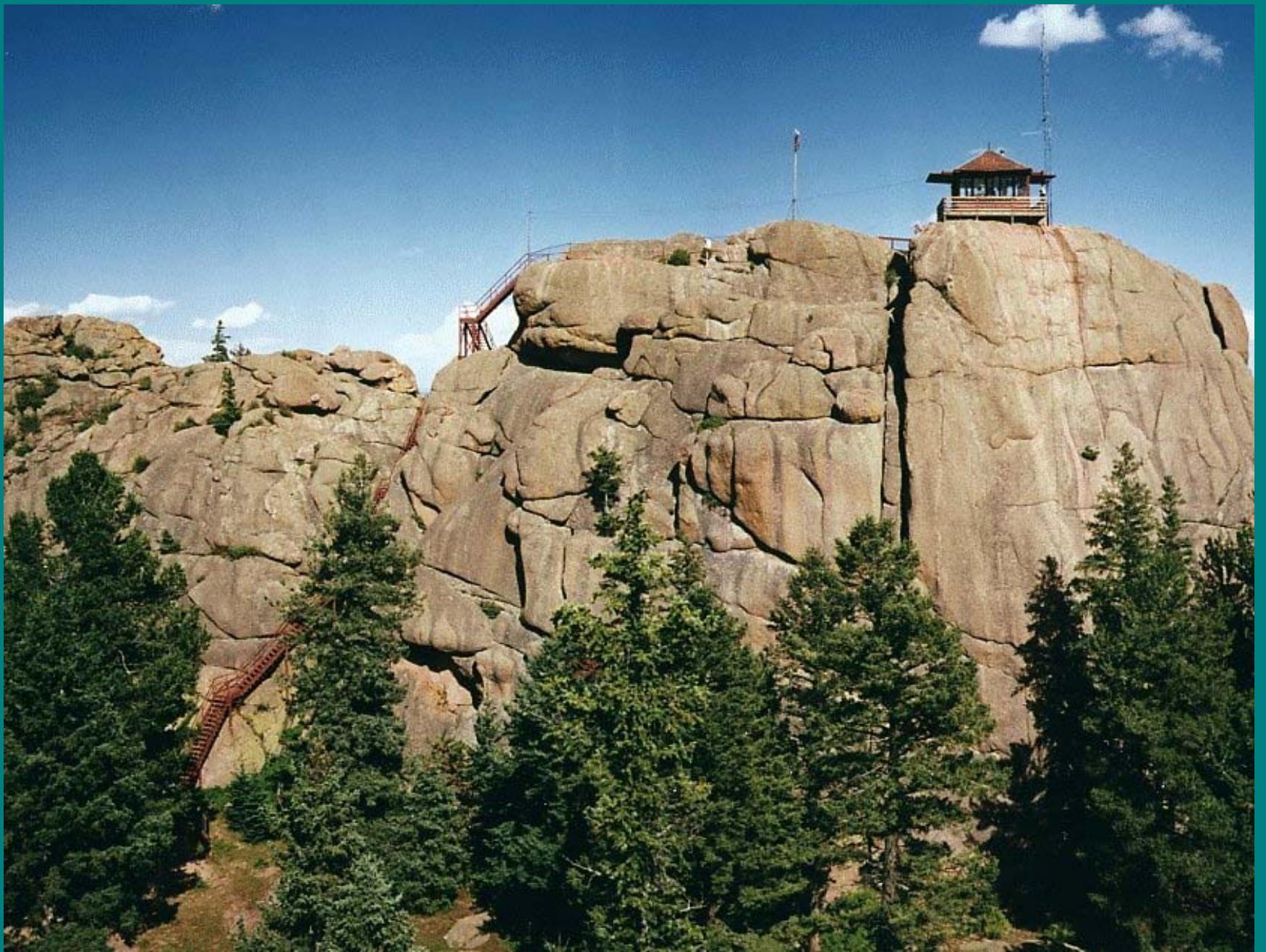
- Background
  - Sheep and cattle grazing
  - Selective timber harvests
  - Fire suppression
  - Changed forest conditions
- Magnitude
  - Graph of acres burned and wildfire expense
  - Treatment costs
- Complications



*Sheep grazing in ponderosa pine forests and grasslands near Flagstaff, AZ, ca. 1899. Image 21a by F.H. Maude courtesy of Cline Library Special Collections, Northern Arizona University.*



*Cutting the big pines near Flagstaff, Arizona, ca. 1904. Image 15a courtesy of Cline Library Special Collections, Northern Arizona University..*



# Forest Impacts



1909. Photo by W.R. Mattoon, Courtesy of Franco Biondi  
Source: <http://www.ispe.arizona.edu/climas/learn/fire/figures/gpna.html>



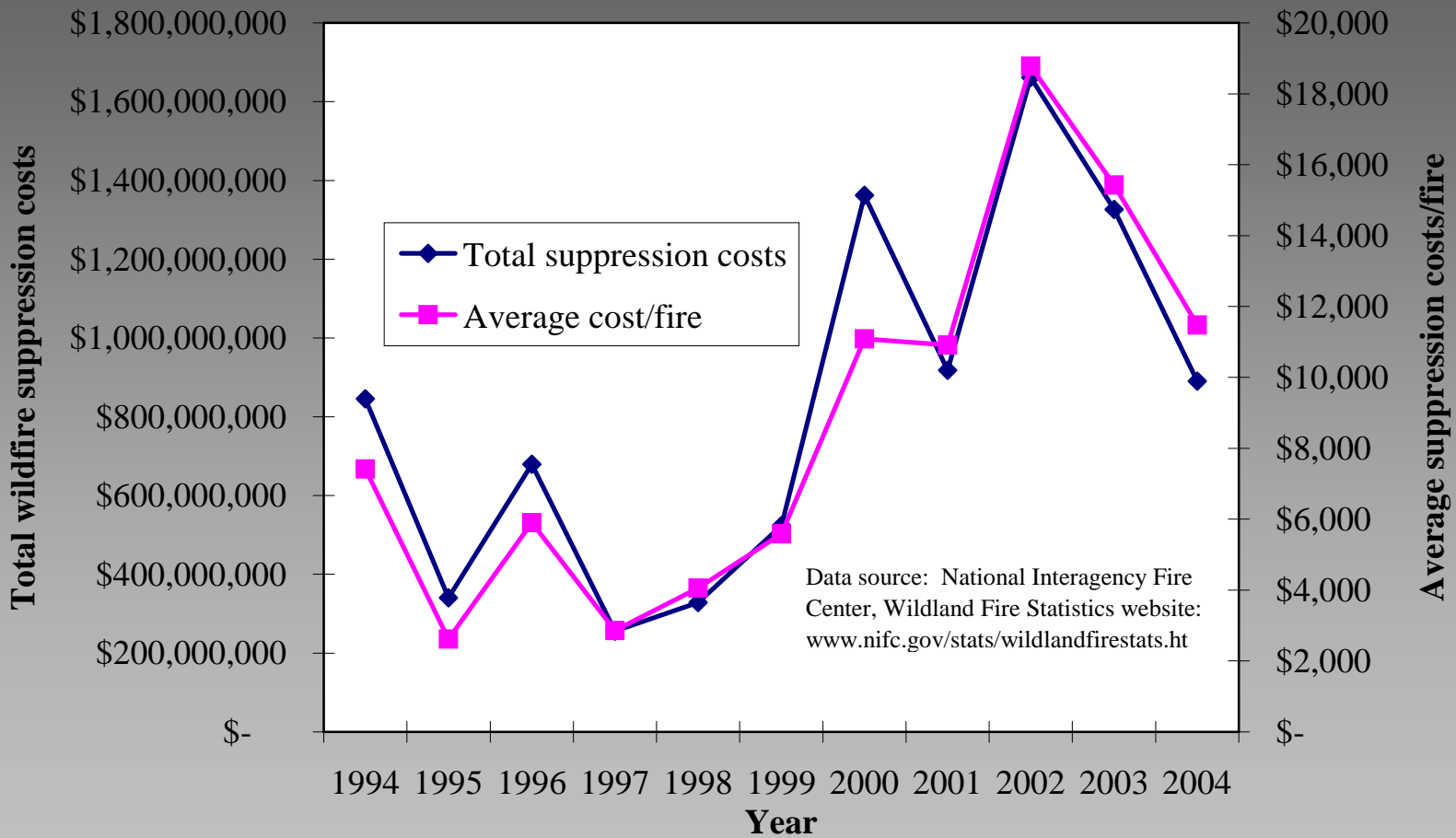
1949. Photo by F.R. Herman, Courtesy of Franco Biondi  
Source: <http://www.ispe.arizona.edu/climas/learn/fire/figures/gpna.html>



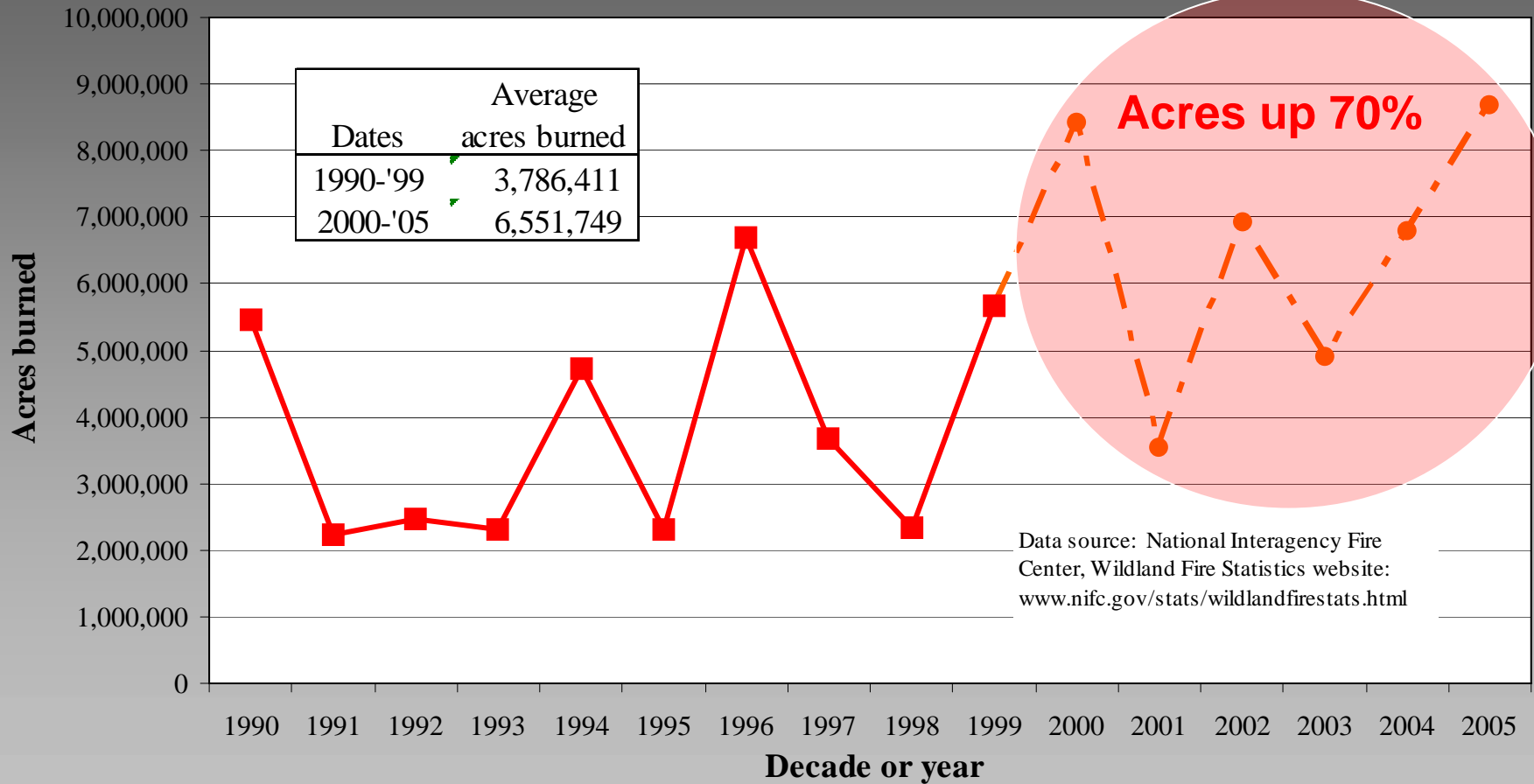
1992 photo by Franco Biondi

Source: <http://www.ispe.arizona.edu/climas/learn/fire/figures/gpna.html>

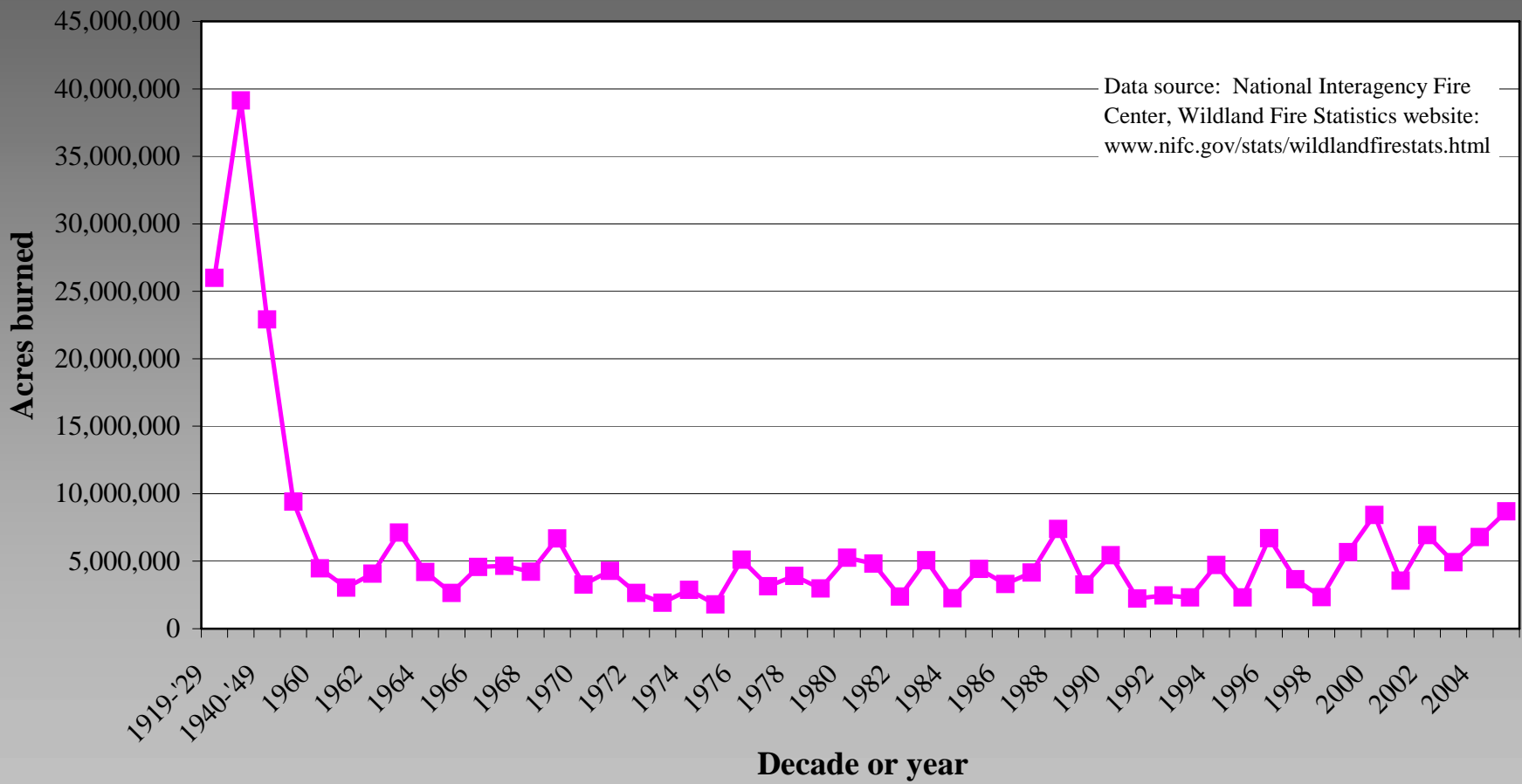
## Total U.S. federal agency wildfire suppression costs and average suppression costs per fire, 1994-2004



# Acres burned by wildfires in the United States, 1990-2005

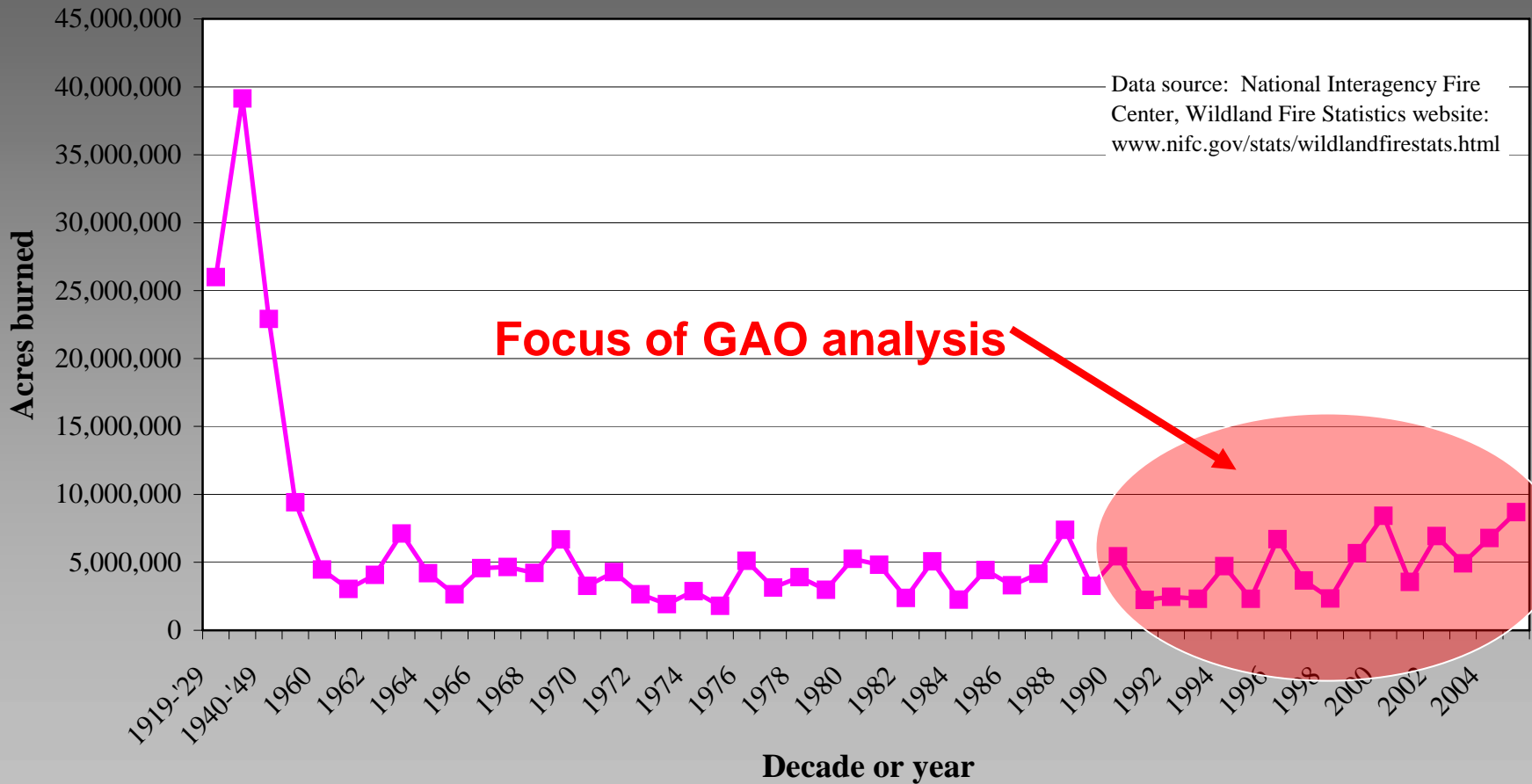


# Acres burned by wildfires in the United States, 1919-2005

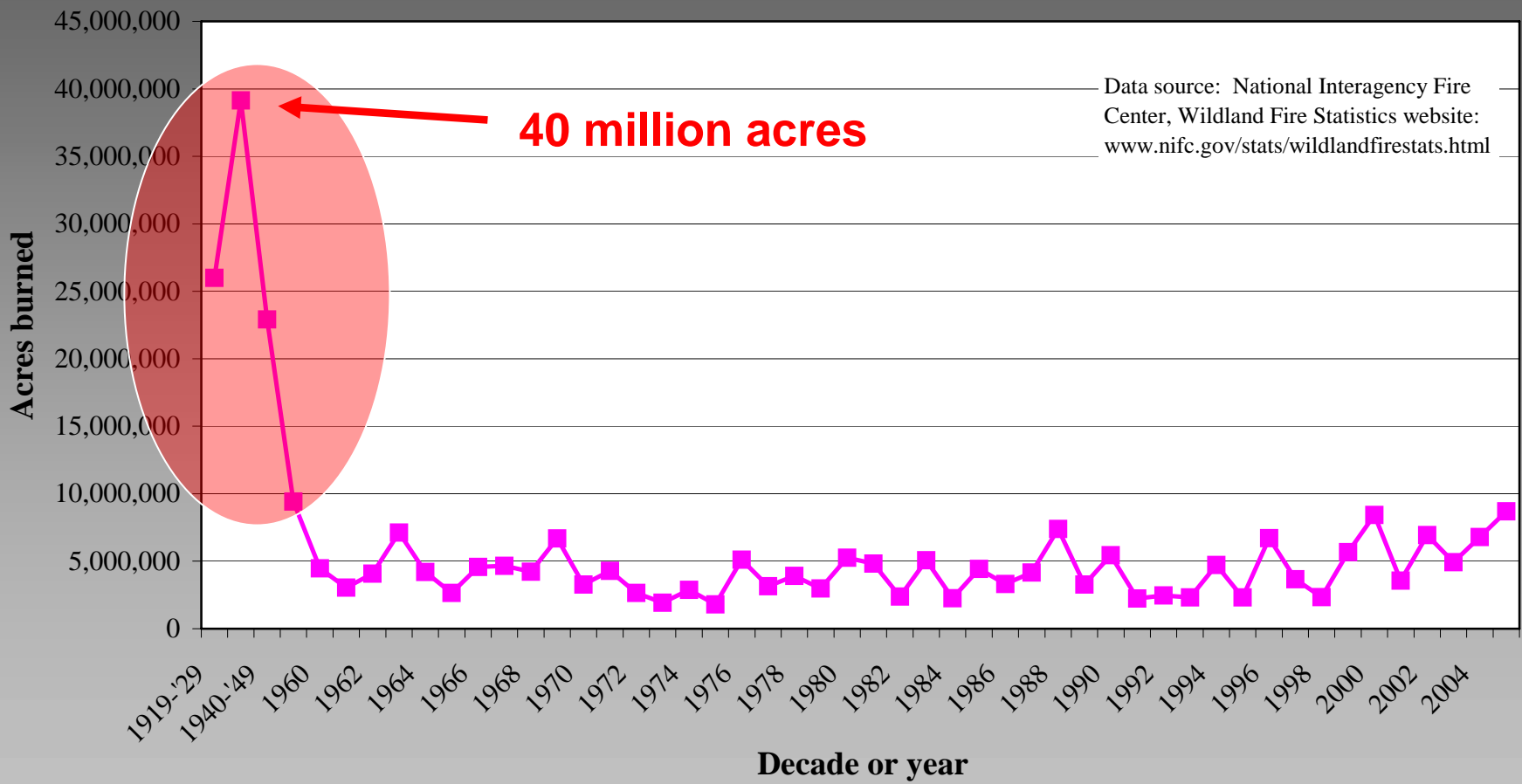


Data source: National Interagency Fire Center, Wildland Fire Statistics website: [www.nifc.gov/stats/wildlandfirestats.html](http://www.nifc.gov/stats/wildlandfirestats.html)

# Acres burned by wildfires in the United States, 1919-2005



# Acres burned by wildfires in the United States, 1919-2005



*“An estimated two-thirds of Federally-managed wildlands in the lower 48 states are now at an elevated risk of unusually destructive wildland fire.”*

- U.S. Department of the Interior and  
USDA Forest Service, 2006

# Complications

- Treatment costs
- Lack of markets

Treatment costs can range from an average of less than \$100/acre for prescribed burns to \$1,600/acre for mechanical thinning and removal of fuel.

# Lack of markets

*“...at the upper end of the potential range, broad-scale implementation of mechanical fuel reduction could produce nearly twice as much material (51 million bdt) as is currently being processed in the West.”*

- Rummer, et al. 2003

# An Aside on Energy

- Annual U.S. energy consumption is about 100 quadrillion Btu;
- In colonial times and up until about 1850 we had a sustainable wood-based economy.

**Question: If we convert  
our forests to energy,  
how much of our current  
consumption could we  
produce?**

# Answer: it depends...

- Net annual removals  $\approx 4\%$
- Net annual growth  $\approx 6\%$
- Live cull + annual mortality  $\approx 17\%$
- Liquidate everything  
<  $2\frac{1}{2}$  years' supply

# The Woody Biomass Grants Program

- History
- Magnitude
- Objectives
- Mechanics
- Evaluating the effectiveness

*[The Forest Service is directed] ... “to develop this program with the clear intent to make grants that will result in increased commercial use of biomass products, and which will thereby result in reduced overall hazardous fuels program costs.”*

In: United States Government  
Accountability Office. 2005

# Program Objectives

- Help reduce management costs by increasing value;
- Create incentives and/or reduce risk;
- Target and help remove economic and market barriers.

# Program Mechanics

- Grants are between \$50,000 and \$250,000;
- Grant term is up to three years;
- Grants may not be used for construction or the purchase of land.

# Woody Biomass Grants by Region, 2005

<b>Grants by FS region</b>	<b>Number</b>	<b>Amount</b>
Northern Region (R1)	2	\$ 201,600
Rocky Mountain Region (R2)	2	\$ 368,834
Southwest Region (R3)	4	\$ 1,000,000
Intermountain Region (R4)	2	\$ 500,000
Pacific Southwest Region (R5)	2	\$ 397,640
Pacific Northwest Region (R6)	5	\$ 1,178,500
Southern Region (R8)	2	\$ 436,473
Eastern Region (R9)	1	\$ 250,000
Alaska Region (R10)	-	\$ -
<b>Total</b>	<b>20</b>	<b>\$ 4,333,047</b>

# Woody Biomass Grants by Type, 2005

<b>Grants by type</b>	<b>Number</b>	<b>Amount</b>
Harvesting	4	\$ 936,433
Value-added	9	\$ 1,780,100
Biomass energy	3	\$ 647,680
Market barriers	4	\$ 968,834
<b>Total</b>	<b>20</b>	<b>\$ 4,333,047</b>

# Evaluating the Effectiveness

...to evaluate how biomass product output volume and the value of biomass products change as a direct or indirect result of the grant projects, and in turn how changes in biomass use and biomass revenues affect government costs per acre on fuel treatment projects.

# Methodology

- Establish a base case;
- Review progress reports and compare progress reports with base case;
- Conduct modeling work to estimate regional impacts of the grants.

# Grantee Half-year Reports

- 20 grants
- 1 canceled
- 1 has not yet reported
- 15 report no impact thus far
- 3 report positive results

# Positive Results

- Two sawmill upgrades are complete;
- One market structure grant reports excellent progress.

# NFS Half-year Reports

- 28 NFS contacts
- 8 have reported
- NFS reports are largely consistent with grantee reports.

# Modeling Work – EBR West

- Economic Biomass Removal
- Designed by Peter Ince and built with JFSP funding
- An econometric model balancing regional supply and demand by timber product

# Purpose of the Modeling

- to evaluate the regional market impacts of changes in the volume and value of biomass product output or biomass supply, based on the estimated impact of the overall grant program;
- to show the extent to which the grants provide benefits in terms of reducing Forest Service hazardous fuels treatments costs.

# Preliminary Conclusions

- Market structure investments take time;
- Investing in risky ventures can easily produce failures. It has the potential to also produce spectacular results.