


# Effectiveness of Financial Incentive Programs in Promoting Sustainable Forestry in the South



SOFEWorkshop 2008 – Savannah, Georgia

This study was sponsored by the National  
Commission of Science for Sustainable Forestry  
(NCSSF)

# Research Team



- John L. Greene, USFS Southern Research Station
- Thomas J. Straka, Clemson University  
Dept. of Forestry and Natural Resources
- Steven E. Daniels, Utah State University  
Dept. of Sociology, Social Work & Anthropology
- Michael G. Jacobson, Penn State University  
School of Forest Resources
- Michael A. Kilgore, University of Minnesota  
Dept. of Forest Resources

# Introduction



- Policy tools influence the management and use of nonindustrial private forests
  - Education
  - Tech. assistance
  - Regulation
  - Financial incentives
- Increasing concern over forest fragmentation, loss of open space, the impact of globalization of forest product markets has revived interest in financial incentives

# Introduction



- The South – 13 states from Virginia to Texas – an ideal place to study effectiveness of financial incentives on nonindustrial private forests
  - Home to 33% of US population and 42% of >10 MM nonindustrial private forest owners
  - Comprises 29% of US forestland and 40% of commercial timberland
  - 88% of forestland is privately owned vs. 57% nationwide

# Objective



- Nested within larger study to identify financial incentive programs with the potential to enhance the practice of sustainable forestry on nonindustrial private lands
- Specific objective to assess the effectiveness of currently available public and private financial incentives in encouraging sustainable forestry on nonindustrial private lands

# Approach



- Identified one forester in each state with broad knowledge of public and private incentives
  - Typically the state agency forester who managed the Forest Stewardship Program
- Surveyed using Dillman Tailored Design Method
  - Mail questionnaire: 89 questions on 30 pages
  - 100% response

# Approach



- Foresters identified public and private financial incentive programs available in their state and rated each on a 4-point Likert scale for:
  - Forest owner awareness of the program
  - Its overall appeal
  - Its effectiveness in encouraging sustainable management
  - Its effectiveness in helping owners meet their objectives

# Approach



- Foresters also estimated:
  - Percent of program practices that remained in place over time
  - Percent of enrolled acres that remained in forest over time
- We used the results to:
  - Calculate overall summary statistics
  - Test for statistically significant differences, overall and by individual attributes

# Financial Incentives Surveyed



- Eight federal programs (handout):
  - Forest Stewardship Program (FSP)
  - Conservation Reserve Program (CRP)
  - Wetlands Reserve Program (WRP)
  - Forest Legacy Program (FLR)
  - Environmental Quality Incentives Program (EQIP)
  - Wildlife Habitat Incentives Program (WHIP)
  - Forest Land Enhancement Program (FLEP)
  - Landowner Incentive Program (LIP)

# Financial Incentives Surveyed



- State preferential property tax programs
- State financial incentive programs
- Privately-sponsored financial incentive programs


# Results: Catalog



- State-by-state catalog of public and private financial incentive programs available to non-industrial private forest owners

[www.srs.fs.usda.gov/econ/data/forestincentives/](http://www.srs.fs.usda.gov/econ/data/forestincentives/)

# Results: Federal Programs



Program Attribute	FSP <sup>2</sup>	CRP	EQIP	FLEP	FLP	WRP	WHIP
Awareness <sup>1</sup>	2.69A	2.62A	2.40A	2.75A	1.89A	1.75A	2.14A
Appeal <sup>1</sup>	3.31AB	3.38A	2.50BA	3.50A	3.00BA	2.13B	2.86BA

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: Federal Programs



- All programs scored in middle ranges for both owner awareness and owner appeal, with appeal rated somewhat higher than awareness
- FLEP and CRP scored highest in owner appeal, followed closely by FSP

Same programs scored slightly higher in owner awareness, but the difference was not significant

# Results: Federal Programs

Program Attribute	FSP <sup>2</sup>	CRP	EOIP	FLEP	FLP	WRP	WHIP
Effectiveness in encouraging sustainable management <sup>1</sup>							
Prev conversion	3.00BAC	3.70A	2.11C	3.5BA	3.67A	3.00BAC	2.50BC
Prev parcelization	2.85BAC	3.27BA	2.11C	3.30BA	3.67A	3.38BA	2.50BC
Maint forest type	3.00BA	3.40A	2.40B	3.36A	3.50A	3.25BA	2.57BA
Prot wildlife/fish	3.77A	3.31A	3.30A	3.27A	3.56A	3.38A	3.71A
Prot water quality	3.92A	3.77BA	3.70BA	3.40BA	3.56BA	3.50BA	3.14B
Prot soil productiv	3.54A	3.92A	3.50A	3.55A	3.67A	2.71B	3.25BA
Encg forest mgmt	3.85A	3.46BA	2.50C	3.91A	3.67A	2.25C	2.57BC
Overall Average	3.42BA	3.55A	2.82C	3.47BA	3.62A	3.14BC	2.83C

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: Federal Programs



- FLP and CRP ranked highest overall for effectiveness in encouraging sustainable management

FLP scored well in all attributes of conservation; CRP scored particularly high in protecting soil productivity and water quality

## Results: Federal Programs



- FLEP and FSP ranked next highest overall for encouraging sustainable management

Among individual attributes, FLEP scored highest in encouraging forest management, and lowest in protecting wildlife or fish

FSP scored highest in protecting water quality and encouraging forest management, and lowest in preventing parcelization

# Results: Federal Programs



- WRP ranked third-highest overall; it averaged in moderately ineffective range for encouraging forest management
  - WHIP and EQIP ranked lowest in encouraging sustainable management
- WHIP, however, scored well in protecting wildlife or fish, EQIP in protecting water quality

# Results: Federal Programs

Program Attribute	FSP <sup>2</sup>	CRP	EOIP	FLEP	FLP	WRP	WHIP
Effectiveness in helping owners meet their objectives <sup>1</sup>							
Timber prod'n	3.54A	3.06BA	2.30BC	3.82A	3.38BA	2.38BC	1.86C
Recreation	3.23A	2.67A	2.40A	3.00A	3.12A	2.75A	3.29A
Wildlife	3.69BA	3.31BA	3.10B	3.55BA	3.38BA	3.38BA	4.00A
Aesthetics	3.38A	2.69A	2.70A	2.91A	3.38A	3.00A	3.14A
Soil/water conser	3.38BAC	3.92A	3.50BA	3.64BA	3.75BA	3.25BC	2.86C
Invas spp control	2.62A	2.50A	3.22A	3.18A	2.75A	2.11A	2.71A
Overall Average	3.31A	3.04BAC	2.87BC	3.35A	3.23BA	2.83C	2.98BAC

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: Federal Programs



- FLEP and FSP ranked highest overall for effectiveness in helping forest owners meet their objectives
  - FLEP scored highest for timber production and lowest for aesthetics
  - FSP scored highest for wildlife and lowest for invasive species control

# Results: Federal Programs



- FLP ranked next highest overall in helping forest owners meet their objectives

Among individual attributes, FLP scored highest for soil and water conservation and lowest for invasive species control

# Results: Federal Programs



- CRP and WHIP ranked third-highest overall  
CRP received high score for soil and water conservation, but rated moderately ineffective for invasive species control  
WHIP received highest possible score for wildlife, but rated moderately ineffective for timber production

# Results: Federal Programs



- EQIP and WRP ranked lowest overall in helping forest owners meet their objectives

Among individual attributes, however, EQIP received a solid score for soil and water conservation, and WRP for wildlife

# Results: State & Private Programs

Program Attribute	State Property Tax Programs <sup>2</sup> (n=12)	State Financial Incentives (n=7)	Industry & Assoc Prog'ms (n=8)	Land Bank & NGO Prog'ms (n=3)
Awareness <sup>1</sup>	3.00A	2.70A	NA	NA
Appeal <sup>1</sup>	3.25A	3.14A	NA	NA

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: State & Private Programs



- For owner awareness, state property tax and incentive programs rated generally higher than federal programs  
For owner appeal rated about on a par
- Number of industry and non-profit programs was too low for comparison of rankings to be meaningful

# Results: State & Private Programs

Program Attribute	State Property Tax Programs <sup>2</sup> (n=12)	State Financial Incentives (n=7)	Industry & Assoc Prog'ms (n=8)	Land Bank & NGO Prog'ms (n=3)
Effectiveness in encouraging sustainable management <sup>1</sup>				
Prev conversion	3.08A	3.71A	3.00A	2.66A
Prev parcelization	2.91A	3.28A	2.87A	3.00A
Maint forest type	3.00A	3.28A	3.14A	3.33A
Prot wildlife/fish	2.81A	3.14A	2.50A	3.33A
Prot water quality	3.00A	3.42A	3.12A	3.33A
Prot soil productiv	2.83A	3.43A	2.87A	3.33A
Encg forest mgmt	2.91A	3.71A	3.25A	3.00A
Overall Average	2.94B	3.43A	2.96B	3.14BA

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: State & Private Programs



- Among state programs, financial incentives rated higher than property tax in encouraging sustainable management
- Both types of programs received high scores for preventing conversion of forest land
- State financial incentives also scored high for encouraging forest management

# Results: State & Private Programs



- Among private programs, incentives offered by nonprofits rated higher than those offered by industry and state associations

# Results: State & Private Programs

Program Attribute	State Property Tax Programs <sup>2</sup> (n=12)	State Financial Incentives (n=7)	Industry & Assoc Prog'ms (n=8)	Land Bank & NGO Prog'ms (n=3)
Effectiveness in helping owners meet their objectives <sup>1</sup>				
Timber prod'n	3.08A	3.85A	3.87A	3.00A
Recreation	2.72A	3.00A	2.37A	3.33A
Wildlife	2.75A	3.28A	2.62A	3.33A
Aesthetics	2.82A	2.85A	2.50A	3.33A
Soil/water conser	3.00A	3.57A	3.25A	3.66A
Invas spp control	2.30A	3.14A	2.43A	2.67A
Overall Average	2.79A	3.28A	2.85A	3.22A

<sup>1</sup> Likert Scale rating: 4=Very effective, 3=Moderately effective, 2=Moderately ineffective, 1=Very ineffective

<sup>2</sup>Tukey's grouping across incentive programs for each respective program attribute. Alpha=0.05. Means with the same letter are not significantly different.

# Results: State & Private Programs



- Differences in state and private program rankings for helping forest owners meet their objectives not statistically significant, but follow same pattern as for encouraging sustainable management

State property tax programs scored highest for timber production, soil and water conservation, and lowest for invasive species control

# Results: State & Private Programs



State financial incentives scored nearly perfect for timber production but only moderately effective for aesthetics

# Conclusions



- Results indicate are clear differences between financial incentives currently available to nonindustrial private forest owners
  - Among federal programs, FSP, FLEP, FLP were among the top rated programs by all measures, both overall and for individual attributes
- All three stress multiple objectives, but clientele is limited to forest owners

# Conclusions



The remaining programs have forestry emphases but clientele includes farmers and ranchers as well as forest owners

- State property tax programs scored generally lower than federal incentives for effectiveness
- State, industry, and nonprofit incentives generally more targeted than federal; scored higher for specific attributes

# Conclusions



- Targeted programs outperform general conservation programs for:
  - Regional concerns – e.g. SPB
  - Emerging issues – e.g. invasive species
  - Where funding is constrained

