The Effects of Parcelization on Forest Operations & Procurement Strategies

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Presentation Topics

- Introduction
  - What is Parcelization?
  - Why the Concern?
- 2008 SC Timber Producers S
  - Methods, Results, and Conclusio
- Parcelization and Procurement Strategies
- Positioning for the Future

Parcelization of Forests

- **Parcelization (fragmentation) -** ***the process by which contiguous tracts of land are subdivided***
- ***Wildland-Urban Interface (WUI)….***
  - *Interface – Where housing abuts vegetation*
  - *Intermix – Where housing is dispersed throughout the wildland*
  - *…..Where urban growth meets rural properties*

Parcelization of Forests

- **Parcelization contributes**
  - Urban sprawl - development
  - Habitat fragmentation
  - Management difficulty and reduced economic yield
  - Highest and best use tax consequences
    - What constitutes forestry?

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Parcelization of Forests

- **Smaller parcels and expanding infrastructure….**
  - Diminish economics of scale
  - May reflect a change in resident values
  - Influence the scale and feasibility of management
  - Changes the profitability structure of forest operations

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Population Dynamics

- **As population density increases, the likelihood of management decreases**
  - 19 people per square mile, probability = 75% (Sampson & DeCoster 2000)
  - >150 people per square mile, probability = 0% (Wear et al. 1999)
- **Age**
  - 40% of owners are retired and will soon sell or pass to heirs
  - 93 million acres owned by people >65 years old

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The US South

- *"Forestland in the south is experiencing more contact with urban growth than any other part of the US"* **(Macie and Hermansen 2003)**
- **NIPFs are a major source of resources for harvesting contractors in the South**
  - 68% of private forest land is NIPFs
  - 26% is in counties with >250,000 people

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South Carolina

- **NIPFs account for 74% of the state's 12.3 million acres**
  - 16% (1.5 million acres) are in tracts >500 acres
  - 31% (2.8 million acres) are in tracts 100-500 acres
  - 10% (0.9 million acres) are in tracts ≤10 acres
  - The most common size is 10-100 acres, 43% or 3.9 million acres

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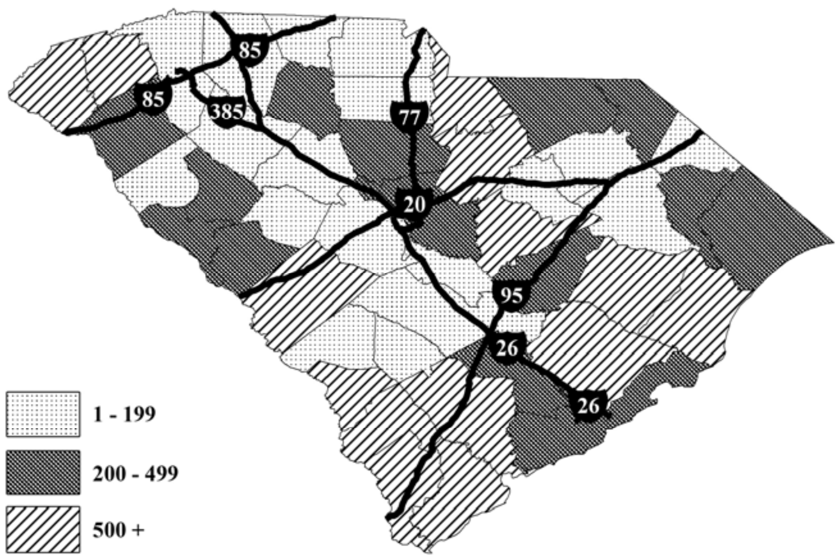
Average NIPF Size by County



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Concern for Profitability

- Economies of scale are negatively impacted by reduced parcel size…..
  - Row (1978): 20-40 acres to be minimum
  - Cubbage (1982): just less than 40 acres
  - Greene et al. 1997: costs increase rapidly on tracts <50 acres
- Same fixed costs - fewer tons

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Moving

- More moves are bad for loggers....
  - If average tract size goes from 40 to 20 acres, loggers will move nearly twice as much
  - Moving costs include….
    - Lost revenue from lost volume
    - Transporting equipment
    - Wages paid to unproductive employees
    - Fixed cost of idle equipment

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2008 SC Timber Producers Survey

- 28-question survey instrument constructed
- Population included SCTPA and TOP loggers
- 443 surveys mailed during Summer 2008
- Dillman Total Design Method
  - 4 mailing sequence to improve response rate

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2008 SC Timber Producers Survey

- **Survey questions obtained information on:**
  - Firm demographics
  - System modifications for parcelization
  - Moving and hauling expenditures
  - Concerns for the future of the forest products industry

2008 SC Timber Producers Survey

- **Example questions included:**
  1. Have you noticed a reduction in your average harvested tract size in recent years?
  2. How have you responded to changing tract size?
  3. What minimum number of days, loads per acre, etc. are you willing to move for?
  4. What is your average moving time, distance, and cost?

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Timber Producers Survey - Results

- 179 surveys were returned
  - 41% response rate
- Results were characterized into 5 sections:
  1. Firm Demographics
  2. Parcelization and Tolerances
  3. Moving and Hauling
  4. Reactions to Rising Costs
  5. Logging Firm Priorities

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Firm Demographics

- 62% obtain at least 80% of their production from NIFPs
- Establishment
  - 22% in the 70s
  - 27% in the 80s
  - 34% since 1990

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Firm Demographics

- System type
  - 90% - feller-buncher/grapple-skidder
  - 3% - tracked feller-buncher/grapple skidder
  - 1% - cut-to-length
  - 6% - manual with chainsaws
- Product type
  - 48% - softwood pulpwood
  - 23% - softwood sawtimber
  - 18% - hardwood pulpwood
  - 10% - hardwood sawtimber

Parcelization and Tolerances

- **73% of firms have noticed a reduction in tract size**
- **In response….**
  - 32% reduced their number of employees
  - 26% downsized their system
  - 15% refused to harvest smaller tracts
  - 13% increased their productivity
  - 15% made no adjustments

Change in Tract Size Harvested

	< 10 acres % tracts	10-20 acres % tracts	20-40 acres % tracts	40-80 acres % tracts	> 80 acres % tracts
10 years ago	7.8	11.8	18.3	28.8	33.3
5 years ago	9.2	16.0	25.2	35.0	14.7
Currently	14.4	17.2	33.3	25.9	9.2
5 years est.	18.6	26.2	28.3	22.1	4.8
10 years est.	25.9	25.2	26.6	17.5	4.9

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Parcelization and Tolerances

- In the last 10 years – 74% reduction in parcels harvested greater than 80 acres
- Harvesting has increased 82% on 20-40 acre tracts over the last 10 years
- Harvesting on tracts <10 acres has increased 83% during the last decade

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Minimum Tract Requirements

Tract Size	% Response
< 10 acres	19.8
10-20 acres	27.1
20-40 acres	24.3
40-80 acres	20.9
> 80 acres	7.9

Working Days	% Response
≤ 3 days	15.8
4-6 days	43.5
7-10 days	22.0
11-15 days	9.0
> 15 days	9.6

Loads per Acre	% Response
< 1 load	2.9
1 load	12.1
2 loads	41.0
3 loads	16.2
> 3 loads	27.7

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Moving and Hauling

- 56% of firms average haul is 40-60 miles
- 26% of firms average haul is 20-40 miles
- 1% of firms average haul is 20 miles

- 48% own and operate their own trucks
- 38% use a combination of

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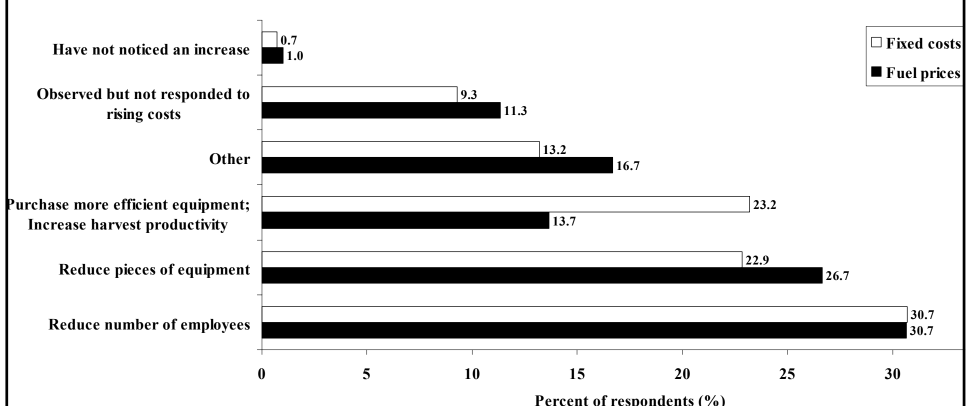
Moving Between Tracts

Distance	% Response
< 20 miles	12.9
20-40 miles	55.6
40-60 miles	25.8
60-80 miles	4.5
> 80 miles	1.1

Time	% Response
< 2 hours	5.1
2-4 hours	23.2
4-6 hours	35.0
6-8 hours	22.0
> 8 hours	14.7

Cost	% Response
< $0.25/ton	1.8
$0.25-0.75/ton	15.5
$0.75-1.25/ton	18.5
> $1.25/ton	25.0
Don't know	39.3

Reactions to Rising Costs



- Average fuel prices during the survey period were $4.48/gal

Change in Number of Employees

	≤ 3 employ.	4-6 employ.	6-8 employ.	8-10 employ.	≥ 11 employ.
	% crews	% crews	% crews	% crews	% crews
10 years ago	22.1	30.9	22.8	12.8	11.4
5 years ago	23.2	39.0	23.2	7.9	6.7
Currently	42.0	43.7	6.9	4.6	2.9

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Reactions to Rising Costs

- Other modifications included….
  - Minimizing moving and hauling distances
  - Reducing work days
  - Reducing skidding distance
  - Cutting only high quality timber
  - Hauling loads over legal weight limits
  - Cutting the family forest
  - Terminating operation altogether

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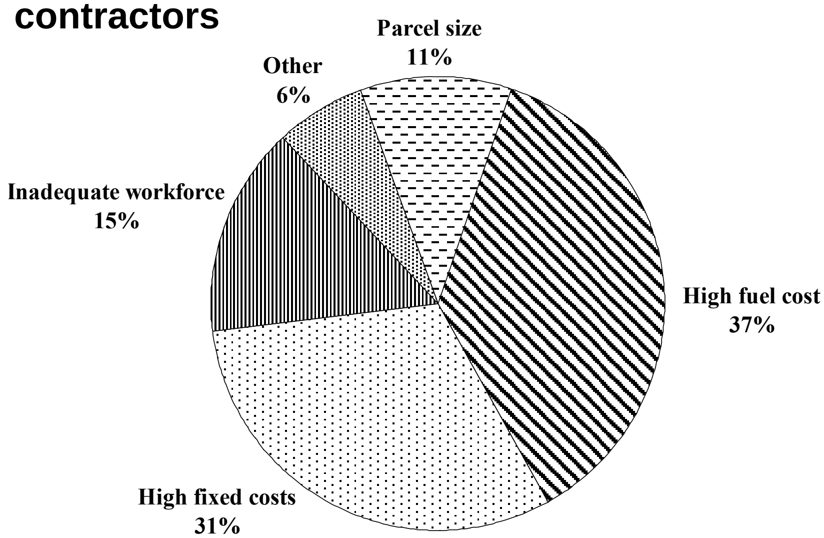
Reasons for Competition Loss

- 87% have noticed a reduction in competing contractors



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Study Conclusions

- SC Timber Producers have observed a change in tract size
- Many have taken measures to reduce system size
- Smaller systems may….
  - Reduce capital investment, reduce fixed costs, reduce moving time & expense, make BMP compliance easier, & improve efficiency
- Parcelization is currently not so great that firms cannot adapt

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Parcelization & Procurement Strategies

- **Land ownership changes and forest industry consolidation is dramatically changing wood procurement strategies**
  - There are no “fee” lands to rely on
  - Wood dealer network has and is expanding
  - The same operations are occurring but under different roofs with different hats

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Parcelization & Procurement Strategies

- **With so many players at the table, competition is inevitably going to increase**
- **As tracts become smaller and most landowners are not governed by a mill to feed….**
  - Procurement skills, inventory accuracy, and negotiating skills become more important

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Parcelization & Procurement Strategies

- As vertical integration disappears, more players take a seat at the table and want to distribute a finite amount of profit
- Will become more pronounced as wood supply agreements expire (5-99 years)
  - What happens then? – All bets are off?

Parcelization & Procurement Strategies

- Widespread development has introduced a new silvicultural Rx called “residential cuts”
  - This complicates procurement strategies as well as forest management
  - Afterwards there is <u>no more forestry</u>

Biomass

- **How does biomass influence forest operations and procurement?**
  - New markets create work for loggers and value for landowners
  - May create more intense competition in some areas and affect stumpage prices
  - An in-woods chipper gives loggers another selling point
  - Landowners like the clean look & may be willing to pay more

Biomass

- **How does biomass influence forest operations and procurement?**
  - Gives procurement foresters another market to bid on and adds value to timber sales
  - More value has to come out of products to offset the higher unit costs associated with smaller tracts

Positioning for the Future

- **Where do we go from here?**
- **We must….**
  1. Capitalize on all opportunities to market our products & services at the appropriate scale
  2. Become multi-dimensional to provide flexibility

Positioning for the Future

- **Loggers**
  - Be willing to adapt or change as necessary to stay viable
    - Equipment change, Tract size change, New trucking configuration, New hours, etc.
- **Forest Industry**
  - Be open to new products or processing potential & capitalize
  - "Fingers in ears" approach = out of business
  - Pay more attention to value recovery
    - More and more sorts on TIMO/REIT landings

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Positioning for the Future

- **Foresters**
  - Listen to what clients are telling you
  - Seek education, learn something new
  - Get certified or gain credentials in multiple areas
  - Set yourself apart from the competition
  - There has never been a better time for fresh ideas and entrepreneurship

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QUESTIONS?

Photos by: Dr. John Seiler

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