Recovery after Katrina

Timber Stand Damage and Recovery

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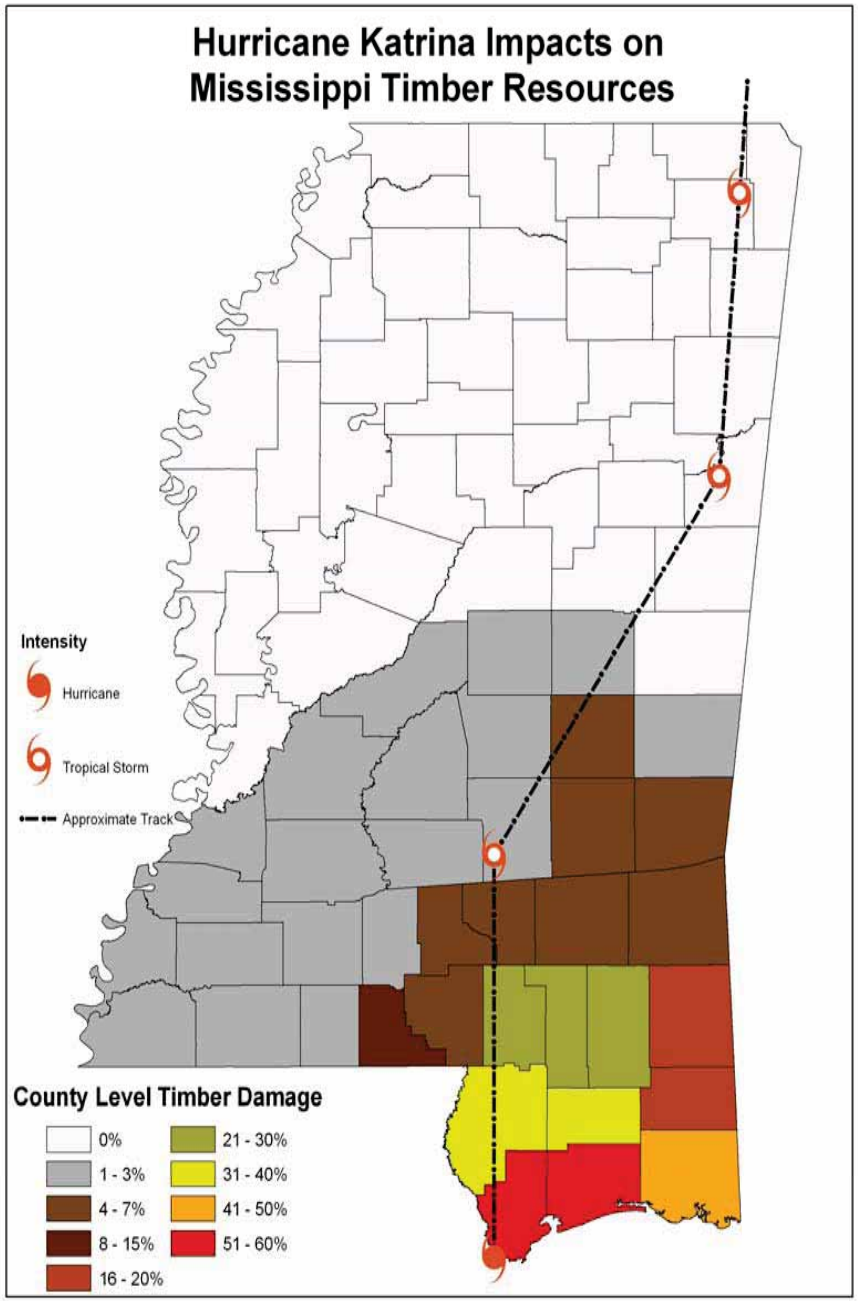
Current Situation

- Mississippi Timber Damage -
  - $1.3 Billion worth of timber destroyed
  - 1.2 Million Acres Affected.
  - 60 Million Tons Damaged Timber
  - 38 Counties with Damage


Hurricane Katrina Impacts on
Mississippi Timber Resources
Intensity
Hurricane
Tropical Storm
Approximate Track
County Level Timber Damage
0%
1 - 3%
4 - 7%
8 - 15%
16 - 20%
21 - 30%
31 - 40%
41 - 50%
51 - 60%

Mississippi Forest Recovery Task Force

Percentages Estimated by MS Forestry Commission

- **Hancock – 60%**
- **Harrison – 60%**
- **Jackson – 50%**
- **Pearl River – 40%**
- **Stone – 40%**
- **Lamar – 30%**
- **Perry – 30%**
- **Forrest – 30%**
- **George – 20%**
- **Greene – 20%**
- **Walthall – 15%**
- Clarke – 4%
- Covington – 7%
- Jasper – 7%
- Jones – 7%
- Lauderdale – 3%
- Leake – 2%
- Neshoba – 4%
- Newton – 4%
- Scott – 2%
- Smith 3%
- Wayne – 5%
- Adams – 1%
- Amite – 1%
- Claiborne – 1%
- Copiah – 1%
- Franklin – 1%
- Hinds – 1%
- Jefferson – 1%
- Jefferson-Davis- 4%
- Lawrence – 2%
- Lincoln – 1%
- Madison – 1%
- Marion – 5%
- Pike – 3%
- Rankin – 2%
- Simpson – 2%
- Wilkinson – 1%

Description of Damaged Timber

Pine Pulpwood - $204,000,000
10,164,000 Cords

Hardwood Pulpwood - $92,000,000
4,425,000 Cords

Pine Sawtimber - $755,000,000
2,157,000 MBF

Hardwood Sawtimber - $234,000,000
1,052,000 MBF


Severe Damage – NH 1938

Damage Assessment

- Develop a Recovery Plan:
  - Assess amount of undamaged timber in your stand.
  - Assess damage to your timber stand.
  - Note damage type.
    - Breakage
    - Twisted Trunks
    - Root Damage
    - Bent Trees
    - Standing Water
  - Develop action plan based on standing timber and damage.
    - Salvage
    - Manage

Breakage

- Lowers timber value.
- Rarely kills hardwood trees.
- Loblolly might survive with 3 or more live limbs left.
- Reduce growth.
- DECISION
  - Pine - Salvage.
  - Hardwood – Next scheduled harvest.

Twisted Trunks

- Causes separation of wood fibers.
- Pulpwood quality only.
- DECISION
  - Both – Salvage for pulp if possible.

Root Damage

- Probably will be degraded by insects and disease.
- Pines could become host for bark beetles.
- DECISION
  - Both – Salvage as quickly as possible.

Bent Trees

- Pines will have resin flow and attract beetles
- Severely bent not suitable for veneer, poles, or lumber because of internal splitting.
- DECISION
  - Both – salvage severely bent larger trees or ones with sap flow.

Standing Water

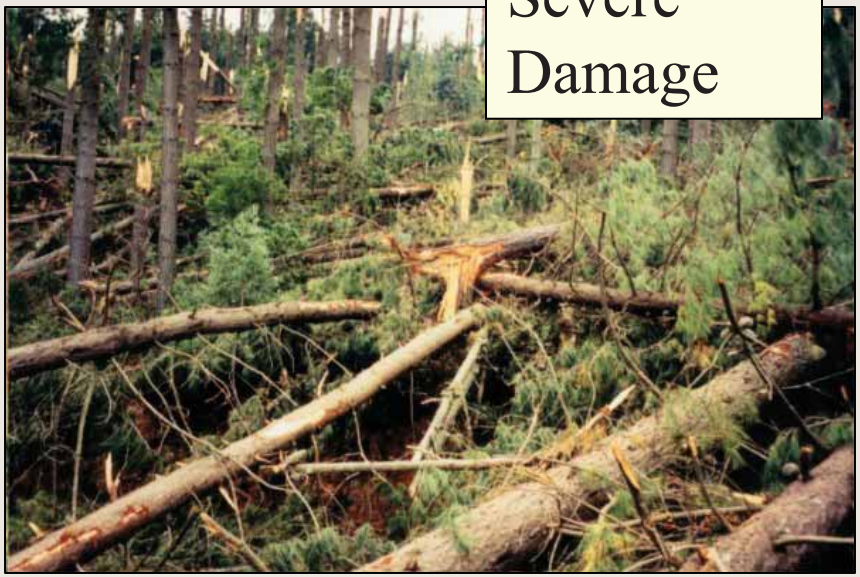
- Prolonged flooding weakens trees due to loss of oxygen.
- May attract insects and disease due to stress.
- DECISION
- Both – monitor; salvage if show signs of damage.

Twisted = pulpwood

Straight winds = <u>possible</u> sawtimber

Damaged Strips

Severe Damage



Salvage Times for Forest Products.

Product	Harvest Within	Comments
Pine and hardwood veneer and appearance lumber	4-6 weeks	Blue Stain prohibits use if left longer
Pine framing lumber	3-4 months	Should be kiln dried to prevent emergence of secondary insects
Pine Posts	4-6 weeks	Blue stain will affect toughness and preservative treatment
Pine and hardwood pulp, fiberboard, particle board & OSB	8-12 months	As wood begins to decay, pulping process will be affected. Storm damaged wood should be mixed with sound wood
Pine and hardwood Firewood	8-12 months	As wood dries out, the heat values increase prior to the decay process

(North Carolina State Cooperative Extension Service)

Salvage Times for Forest Products

- Experience shows
  - Blue Stain is already in the logs
  - It can start in a week
- General Rule – 6 – 9 months to salvage

Species	Attacking damaged trees year 1	Attacking year 2
Pine	bark beetles, ambrosia beetles, sawyers	Decay Fungi
	blue stain fungi, soft rot	
Hardwoods	wood borers, ambrosia beetles, stains,	Decay fungi
	soft rot fungi	

Blue Stain Fungi

- Reduces Quality of Lumber
- Lumber Kiln Dries Much Quicker
- Lumber Marketed as #2 Grade Lumber
  - Used for Framing

Salvage Priorities

1. **Highest potential product value**
   - **sawtimber and veneer**
2. **Timber easiest to cut**
   - **blown in one direction**
3. **Timber which is most perishable**
   - **sawtimber and veneer**

Slight - Damage Trees

- Slight debarking
- 4 or more limbs remain
- Stem lean less than 45 degrees off Vertical
- Windblown with roots in soil
- Salvage can be delayed 6 months-1 yr


Slightly Damaged Trees

Walthall County 2005 – Slight lean

Severe - Damaged Trees

- Heavy debarking
- 3 or less limbs remain
- Stem lean over 45 degrees
- Uprooted trees
- Salvage immediately

Uprooted – Walthall County 2005

Photos by Dale Brown

Timber Stand Decision Model

- 3 Questions
  - Do I have a manageable stand left undamaged?
  - Will I be able to make a timber sale in the future when prices are better?
  - Can I salvage the damaged timber?

Do I have a Manageable Stand Left?

What is the Basal Area (density) of Undamaged Standing Timber?	Decision
50 ft.^{2}/acre Or More	Manageable Stand
40 ft.^{2}/acre	Rehabilitate Stand
30 ft.^{2}/acre Or Less	Not Manageable

Will I be able to make a timber sale in the future when prices are better?

Is there 15 tons/acre sawtimber (or 25 tons/acre pulpwood) Undamaged?

Decision

YES → **Hold Undamaged Timber for Future Harvest**

NO → **Salvage Stand, Site Prep. and Replant**

Can I Salvage the Damaged Timber?

Is there 15 tons/acre sawtimber (or 25 tons/acre pulpwood) damaged?

Decision

YES → **Salvage Damaged Timber (if possible)**

NO → **No Salvage, Not Commercially Feasible**

Why 15 tons/acre sawtimber (or 25 tons/acre pulpwood)?

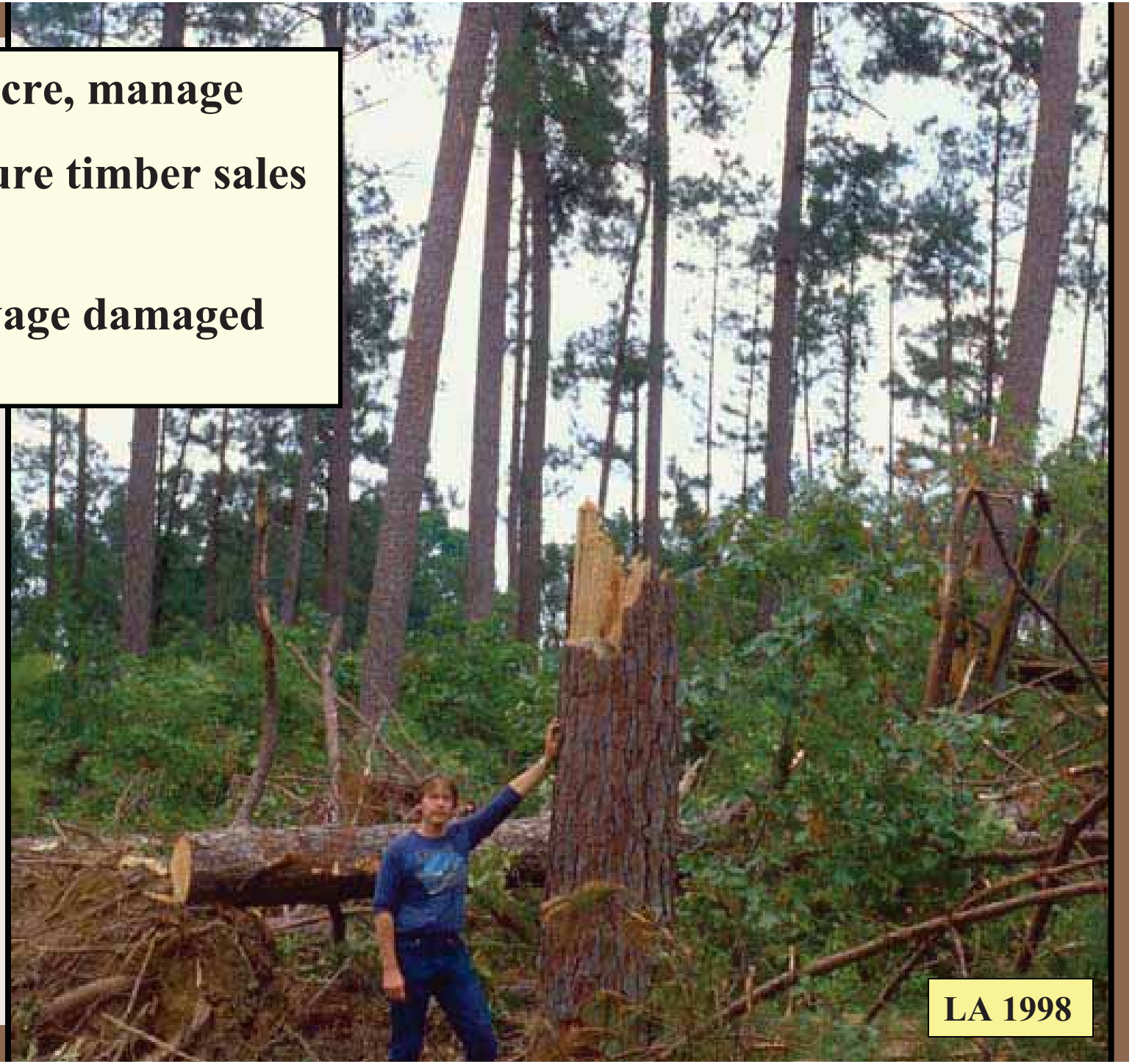
- 15 tons/acre sawtimber = approximately ½ truckload/acre.
- 25 tons/acre pulpwood = approximately 1 truckload/acre.

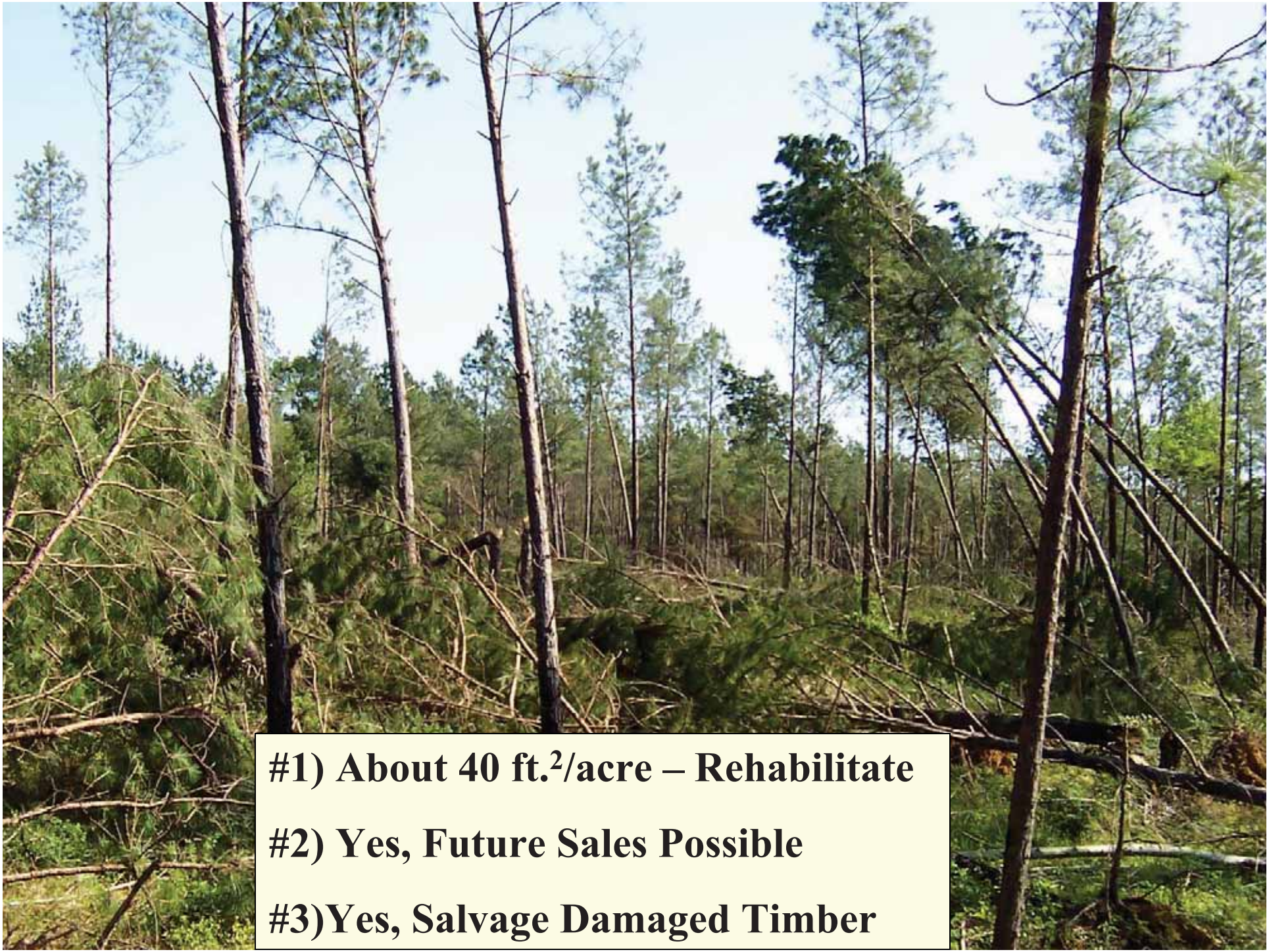
- Commercially Feasible Logging Operation

#1.) >50 ft.^{2}/acre, manage

#2.) Yes, future timber sales possible

#3.) Yes, Salvage damaged timber




#1) About 40 ft.²/acre – Rehabilitate
#2) Yes, Future Sales Possible
#3)Yes, Salvage Damaged Timber

#1) No, not manageable

#2) No, Salvage and Replant

#3) Yes, Salvage

Salvaging Timber Advice

- Protect Undamaged Timber.
- Don’t Sell Undamaged Timber
  - Sell undamaged only when complete salvaged recommended.
- Save good timber for better prices in the future.
- Sawtimber size trees = Pulpwood
  - Due to Internal Damage

Factors Affecting Salvage Price

- Reduced Price
  - Reduced Timber Quality
  - Flooded Markets
  - Limited Number of Loggers
    - Higher Costs (Fuel, long haul distances)
    - Salvaging is Difficult and Dangerous
    - Insurance Rates increase by 10x's

Timber Stand Management

- Rehabilitate
- Natural Regeneration
- Management Options

Rehabilitate

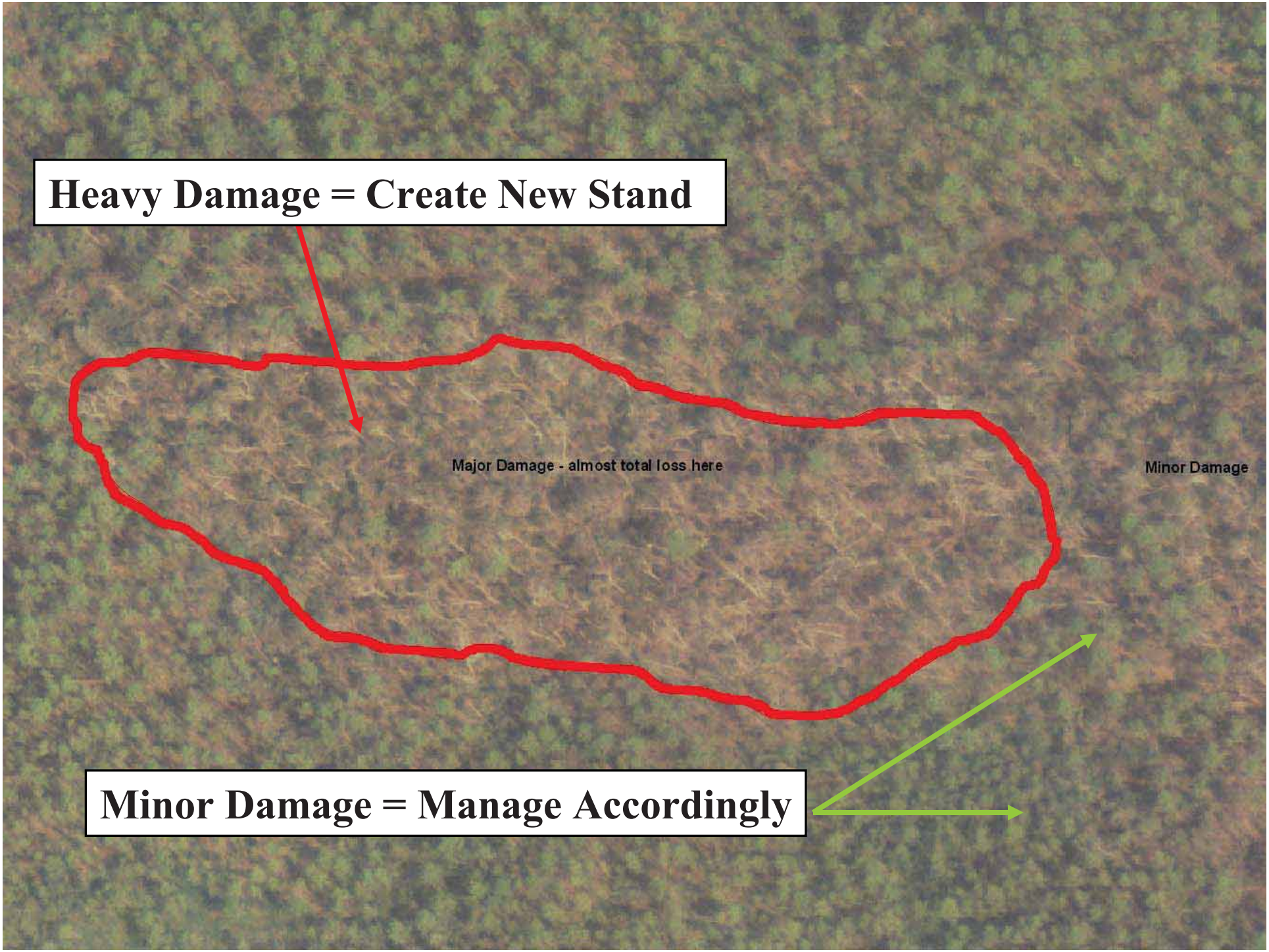
- TSI Options
  - Herbicide Application
  - Prescribed Burning
  - Fertilization

Natural Regeneration

- Hold Undamaged Trees as Seed Trees
- Site Prep Stand
  - Salvage
  - Prescribed Fire or Herbicide Application
- Harvest Seed Trees
  - Area Regenerated
  - Price Much Better
- Interplant if Necessary

Timber Stand Management

- Alter Existing Management Plan
  - Skip a Thinning
  - Create New Stands
- Follow Best Management Practices


Heavy Damage = Create New Stand
Major Damage - almost total loss here
Minor Damage
Minor Damage = Manage Accordingly

Case Study – Newton County

Damaged

Product	Tons/acre
Sawtimber	28
Pulpwood	7
Total	35

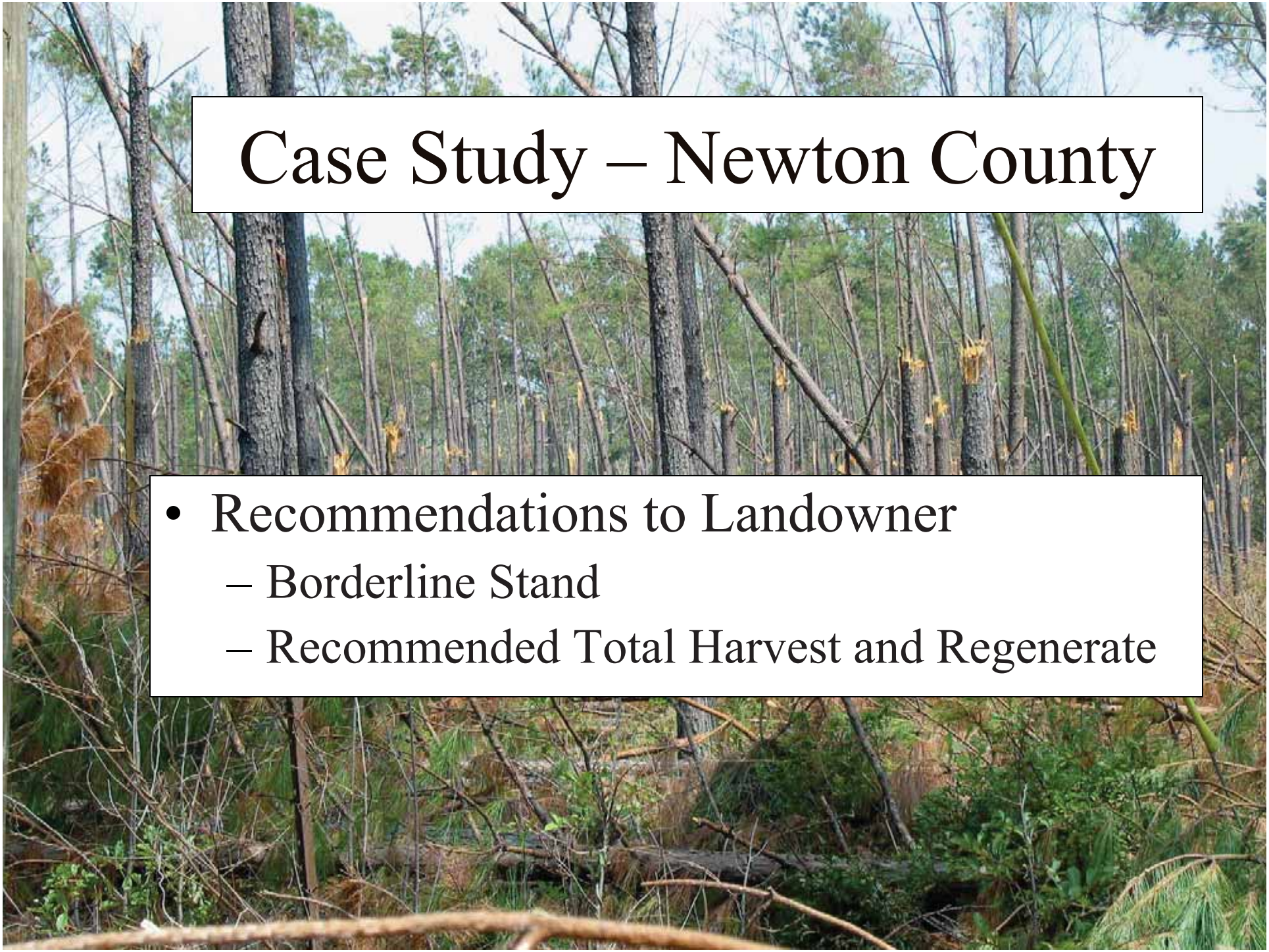
Undamaged

Product	Tons/acre
Sawtimber	17
Pulpwood	9
Total	26

Case Study – Newton County

- #1) Standing Timber approximately 40 $ft.^2$ BA Undamaged.
- #2) Approximately 17 tons/acre Undamaged.
- #3) Approximately 35 tons/acre Damaged.

- What should we do?



Case Study – Newton County

- Recommendations to Landowner
  - Borderline Stand
  - Recommended Total Harvest and Regenerate

For more information:

Mississippi State Extension Service: msucares.com

Mississippi Forestry Association: www.msforestry.net/

Mississippi Forestry Commission: www.mfc.state.ms.us/

North Carolina Forest Service. 2002. Timber Salvage Guidelines.

USDA Forestry Report SA-FR 20. 1982. How to Evaluate and Manage Storm-Damaged Forest Areas.