Hurricane Michael Timber Damage in Florida

Jim Karels, Florida State Forester
Florida Forestry Association

August 21, 2019
Hurricane Michael

- Came on shore near Mexico Beach east of Panama City with over 155 MPH winds on October 10, 2018
- Michael was considered Category 4 at landing, but upgraded to Category 5 Hurricane by NOAA on April 19, 2019
Timber Damage Zones

• Catastrophic: 20 mile swath, 347,000 ac, 95% timber volume damaged

• Severe: 40 mile swath, 1.04 million ac, 75% timber volume damaged

• Moderate: 80 mile swath, 1.42 million ac, 15% timber volume damaged
Follow-up Methodology

- **Catastrophic:**
  - >50% stems broken, multiple trees down across stand, trees bent more than 45 degrees. Salvage unlikely.

- **Severe:**
  - 33 to 50% stems broken, tops broken throughout stands, trees bent more than 45 degrees. Salvage must be considered.

- **Moderate Damage:**
  - 25 to 33% stems broken, branches and limbs broken, salvage should be considered.

- **Light Damage:**
  - <25% stems broken
  - 60-150 TPA remaining in good condition, or 60 sqft BA standing and in good conditions. Little to no visible lean, no visible uprooting, small wounds.
Follow-up Methodology

Assessing Hurricane and Tornado Storm Damaged Forest Stands
Dickens and Moorhead (2016)
University of Georgia
Catastrophic Damage

Bay County
Severe Damage

Liberty County

Calhoun County
Moderate Damage

Liberty County
## Forest Acres Affected

<table>
<thead>
<tr>
<th>County Name</th>
<th>Catastrophic</th>
<th>Severe</th>
<th>Moderate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay</td>
<td>71,422</td>
<td>118,616</td>
<td>90,870</td>
<td>280,908</td>
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<tr>
<td>Calhoun</td>
<td>150,983</td>
<td>172,828</td>
<td></td>
<td>323,811</td>
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<tr>
<td>Franklin</td>
<td></td>
<td></td>
<td>283,386</td>
<td>283,386</td>
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<tr>
<td>Gadsden</td>
<td>59,311</td>
<td>184,888</td>
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<td>244,199</td>
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<tr>
<td>Gulf</td>
<td>124,507</td>
<td>141,168</td>
<td></td>
<td>265,675</td>
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<tr>
<td>Holmes</td>
<td></td>
<td></td>
<td>29,241</td>
<td>29,241</td>
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<tr>
<td>Jackson</td>
<td>295,628</td>
<td>98,501</td>
<td></td>
<td>394,129</td>
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<tr>
<td>Leon</td>
<td></td>
<td></td>
<td>154,245</td>
<td>154,245</td>
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<tr>
<td>Liberty</td>
<td>255,388</td>
<td>261,285</td>
<td></td>
<td>516,673</td>
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<tr>
<td>Wakulla</td>
<td></td>
<td></td>
<td>203,140</td>
<td>203,140</td>
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<tr>
<td>Washington</td>
<td></td>
<td></td>
<td>113,240</td>
<td>113,240</td>
</tr>
<tr>
<td>TOTAL</td>
<td>346,912</td>
<td>1,042,939</td>
<td>1,418,796</td>
<td>2,808,647</td>
</tr>
</tbody>
</table>
### Pine Timber Damages

<table>
<thead>
<tr>
<th>Damage</th>
<th>Percent Lost</th>
<th>Tons Lost</th>
<th>Price per Ton</th>
<th>Est Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic</td>
<td>95%</td>
<td>9,442,060</td>
<td>$20.33</td>
<td>$191,957,089</td>
</tr>
<tr>
<td>Severe</td>
<td>75%</td>
<td>22,410,146</td>
<td>$20.33</td>
<td>$455,598,258</td>
</tr>
<tr>
<td>Moderate</td>
<td>15%</td>
<td>6,097,270</td>
<td>$20.33</td>
<td>$123,957,506</td>
</tr>
<tr>
<td>Pine Total</td>
<td>N/A</td>
<td>37,949,476</td>
<td>N/A</td>
<td>$771,512,853</td>
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</tbody>
</table>
## Timber Damage Values

<table>
<thead>
<tr>
<th>Damage</th>
<th>Pine</th>
<th>Mixed</th>
<th>Bottomland</th>
<th>Est Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic – 95%</td>
<td>$191,957,089</td>
<td>$49,930,972</td>
<td>$78,828,506</td>
<td>$320,716,567</td>
</tr>
<tr>
<td>Severe – 75%</td>
<td>$455,598,258</td>
<td>$118,508,085</td>
<td>$187,094,377</td>
<td>$761,200,720</td>
</tr>
<tr>
<td>Moderate – 15%</td>
<td>$123,957,506</td>
<td>$32,243,245</td>
<td>$50,904,005</td>
<td>$207,104,756</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>$1,289,022,043</td>
</tr>
</tbody>
</table>

NICOLE “NIKKI” FRIED, COMMISSIONER
DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES
### Landowner Types Impacted

<table>
<thead>
<tr>
<th>Ownership</th>
<th>Catastrophic</th>
<th>Severe</th>
<th>Moderate</th>
<th>Total Acres*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>10,448</td>
<td>114,246</td>
<td>487,500</td>
<td>612,193</td>
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<tr>
<td>State</td>
<td>908</td>
<td>76,749</td>
<td>317,552</td>
<td>395,209</td>
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<tr>
<td>Local Gov’t</td>
<td>165</td>
<td>6,275</td>
<td>6,214</td>
<td>12,653</td>
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<tr>
<td>Private</td>
<td>333,925</td>
<td>835,885</td>
<td>600,174</td>
<td>1,769,984</td>
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<tr>
<td>Other</td>
<td>1,466</td>
<td>9,785</td>
<td>7,357</td>
<td>18,608</td>
</tr>
<tr>
<td>Total</td>
<td>346,912</td>
<td>1,042,939</td>
<td>1,418,796</td>
<td>2,808,647</td>
</tr>
</tbody>
</table>

Number of Private Landowners impacted (over 16,000 total):

- 772 – Catastrophic Zone
- 8,159 – Severe Zone
- 7,884 – Moderate Zone
Initial Actions Taken

• Florida Forest Service timber damage estimates produced on 10/17

• Commissioner of Agriculture and state forester held two listening sessions with landowners on 10/30 and 11/1

• Meeting with mills operators, loggers, key public officials and businesses held on 10/31 to forge way forward

• Discontinued timber sales on surrounding state forest to help facilitate salvage operations on private lands.

• Additional funding sought from the feds to address landowner relief, fire concerns, reforestation, etc.
Wildfire Threat

- Increased wildfire risk to 233 Communities
- Fire equipment access is significantly reduced
- Fuel loadings more than 10 times the normal
Community Forest Impacts

• Nearly 776,000 citizens live in or near communities in the impacted area

• Recovery activities have already begun with Florida Arbor Day 2019
Federal Disaster Supplemental

• 480 million dollars in Emergency Forest Restoration Program (EFRP)
• 3 billion dollars funded to USDA to support multiple state disasters with WHIP and state block grants which may include:
  – A form of timber loss payment
  – Reforestation in addition to EFRP
  – Other Ag commodity assistance
Federal Disaster Supplemental
(where we are today)

- Florida, Governors office (DEM) and DACS (FFS) have requested forestry assistance in state block grants that includes:
  - Landowner Production Loss ($370 million)
  - Site Preparation and Reforestation ($230 million)
  - Requested need of up to $350 million in Emergency Forest Restoration Program (USDA program) for Florida.
State and Private Forestry Funds

- State Fire Assistance for wildfire mitigation and response
- Volunteer Fire Assistance to support rural fire departments
- Forest Health funds that support reduction of pests, disease and invasive species
- Forest Stewardship for landowner assistance
- Forest Inventory and Analysis.
Summary of Losses

2.81 million Acres impacted

71.93 million Tons – 4.4 years of annual forest harvest in Florida

$1.29 Billion in damaged resource

16,000 private parcels impacted

233 Communities At Risk
Questions?