



TIMBER IMPACT ASSESSMENT

April 2020 Tornadoes

April 12-13, 2020

Prepared by: Forest Health Management Group &
Sustainable Community Forestry Program

GEORGIA FORESTRY
COMMISSION



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Executive Summary

- 31 counties affected
- 5,218 acres of forestland
- Estimated value - \$3,692,960

On the evening of April 12 and the morning of April 13, 2020, Georgia was part of a severe weather event that extended across the Southeast. The National Weather Service confirmed that 30 tornadoes touched down across the state, ranging in levels from EF-0 to EF-3 and from 0.5 miles to approximately 17 miles long. These storms affected a number of landscapes across the state, including urban, suburban and rural areas.

This report includes an account of the rural timber damage and an urban assessment of the statewide storms. All together, these 30 tornadoes produced \$3,692,960 in timber damage across 5,218 acres in 31 counties. The storms with the largest acres of timber damage were in Washington/Jefferson Counties, Burke County, Chattooga/Walker Counties and Upson County.

The GFC Urban Forest Strike Team assessed damage to community forests near the cities of Fort Oglethorpe, Rome, Trion, Summerville, Trenton, Cartersville, Chatsworth, Eton, Eatonton and Odum. Overall, tree canopy was minimally impacted, with the exception of Fort Oglethorpe and Odum, where there was loss of - or damage to - numerous trees on private properties, and to approximately 100 trees on four city-owned properties, including two public parks.

Landowners are encouraged to utilize professional foresters and arborists to help with decisions about timber management or potentially hazardous trees around homes and urban environments. Resources are included in this report.

Background – Storm Information

On the evening of April 12 and the morning of April 13, 2020, Georgia was part of a severe weather event that extended across the Southeast. The National Weather Service confirmed that 30 tornadoes touched down across the state, ranging in levels from EF-0 to EF-3 and from 0.5 miles to approximately 17 miles long. These storms affected a number of landscapes across the state, including urban, suburban and rural areas.



Photo 1: Murray County.

Methodology

After the storms passed through on Monday morning, GFC field foresters began gathering local information about where the damage had occurred. Using this local report and information from the National Weather Service and Sentinel-2 forest canopy change data, foresters ground surveyed the damaged areas. Survey methods are outlined here.

1. The storm-damaged area was broken into one-mile grids and at least one survey point was placed in each grid. Data collected for each point included: species damaged, product class, % area damage, damage category and a photograph.
2. Damage categories were defined using the Dickens et al. document, "Assessing Storm Damaged Forested Stands," with each area categorized into one of the following:

(1) Light damage – An average of 10% damage (one tree of 10 damaged) with a range of 0-20% damage in stands. Only branches broken from trees, with minor damage to tree stems across the stand and trees bent less than 45 degrees from vertical. No salvage operation will be necessary and the stand may recover with no additional immediate management treatments.

(2) Moderate damage – An average of 35% damage (approximately one tree of three damaged) with a range of 20% - 50% damage in the stand. Branches broken from the trees with visible damage to tree stems across the stand. 20 - 50 % of stems in the overall stand are snapped, broken, have visible damage to tree stems, or these stands have trees that are noticeably uprooted with severe lean greater than 45 degrees from vertical. Moderate damage stands, in most cases, would require a salvage thinning to minimize losses and remove trees that will likely not survive. This salvage thinning may occur after the major clear-cut salvage operations have been completed.

(3) Catastrophic-Severe damage – An average of 75% damage (three trees of four damaged) with a range of 50% - 100% damage in the stand. 50 - 100 % of the stems are broken, tops broken out across the



Photo 2: Light Damage, Washington County.



Photo 3: Catastrophic damage, Washington County.

stand, limbs stripped, and trees bent more than 45 degrees from vertical. A salvage operation must be considered and a clear-cut in most cases will be the prudent management decision. In many cases a salvage operation may not occur or is considered unlikely (a case by case evaluation is required by the landowner, forester and logger) and the stand is considered a total loss. Catastrophic-Severely damaged stands do not have an adequate number of trees per acre to maintain a viable stand.

3. From this data, foresters determined the average percent damage across the storm area.
4. While in the field and from aerial photographs, foresters determined how many acres of each product class were damaged. These product classes include:
 - Pre-merchantable timber
 - Pine Pulpwood
 - Pine Chip-n-Saw/Pine Sawtimber
 - Mixed Pine Hardwood Pulpwood
 - Mixed Pine Hardwood Sawtimber
 - Hardwood Pulpwood
 - Hardwood Sawtimber
5. The total number of acres in each product class was combined to determine the total number of forested acres in each storm path.
6. To determine the value of timber in each storm area, the number of acres in each product class was multiplied by the average per-acre price for that product class in each region. Once calculated for each product class, the product classes were totaled to determine the total value of timber in the storm damaged area.
7. To get the final value of timber damaged in each storm, the value of timber in the storm damaged area (calculated in step 6 above) was multiplied by the overall % damage in the storm area.

For this report, damage calculations were only produced for storms rated EF-1 and greater. Total damage acres and values were only reported for areas with 20% or more damage (moderate damage or greater).

Rural Timber Damage Observations

The storm systems that crossed Georgia on April 12 and 13, 2020 created damage throughout the state. From visiting and assessing storm damaged areas, storms that were rated EF-2 or higher created timber damage that will likely require salvage harvesting and reforestation. Timber damage in storms rated EF-1 or lower was mostly light, and with minor clean-up, the stands will recover naturally. In each storm, timber damage was also found in combination with some urban (or suburban) damage to homes.

Table 1, below, shows the acres and value of the timber damage from each storm. The total amount of damage across the state was 5,218 acres valued at \$3,692,960. The four storms with the largest acres of timber damage were in Washington/Jefferson County (1,150 acres), Burke County (897 acres), Chattooga/Walker Counties (585 acres) and Upson County (570 acres). Also note that although rated as EF-1 storms, the Bartow, Cherokee and Dade County storms did not have damage to forested areas that amounted enough to assign value.

Table 1:

Storm Location	Rating	Peak Winds	Forested Acres Damaged greater than 20%	Average % Damage	Total Timber Value Damaged
Monroe County Tornado	EF3	140 mph	102	75	\$52,653.75
Upson and Lamar County Tornado	EF3	140 mph	570	75	\$295,490.63
Chattooga/Walker County	EF2	125 mph	585	70	\$299,525.63
Murray Tornado	EF2	135 mph	305	80	\$147,000.00
Burke County	EF2	125 mph	897	72	\$663,696.00
Bartow County Tornado	EF1	100 mph	0	0	\$0.00
Dade County Tornado	EF1	100 mph	0	0	\$0.00
Hall/Habersham/Banks/Stephens County Tornado	EF1	100 mph	28	70	\$19,042.10
Stephens County Tornado	EF1	110 mph	360	70	\$418,663.00
Liberty and Bryan Counties Tornado	EF1	100 mph	40	75	\$28,575.00
Washington and Jefferson County Tornado	EF1	100 mph	1,150	75	\$992,025.00
Washington County Tornado #3	EF1	100 mph	200	73	\$172,864.00
Eastern Screven County Tornado	EF1	105 mph	485	70	\$224,700.00
Putnam County Tornado	EF1	105 mph	200	75	\$150,000.00
Cherokee County Tornado	EF1	90 mph	0	0	\$0.00
Irwin County Tornado	EF1	90 mph	12	25	\$3,760.00
Washington County Tornado #2	EF1	90 mph	257	68	\$198,560.00
Worth/Tift Tornado	EF1	90 mph	7	20	\$1,790.00
Wayne	EF1	110 mph	20	75	\$24,615.00
Catoosa County/Hamilton County (TN) Tornado	EF3	145 mph	Urban		
Bibb County Tornado	EF1	100 mph	Urban		
Greene County Tornado	EF1	105 mph	Urban		
Floyd County Tornado #1	EF0	70 mph	Urban		
Floyd County Tornado #2	EF0	80 mph	Urban		
Fulton County Tornado:	EF0	75 mph	Urban		
Washington County Tornado #1	EF0	75 mph			
Harris County Tornado	EF0	80 mph			
Long County Tornado	EF0	80 mph			
Talbot County Tornado	EF0	80 mph			
Coffee County	EF0	80 mph			
Total			5,218		\$3,692,960.10

The following is an overview of the four storms with the largest acres of timber damage:

Washington/Jefferson Counties (1,150 acres) - The tornado verified in Washington and Jefferson Counties was an EF-1 tornado, with maximum wind speeds of 100 mph. This storm was approximately 14 miles long and 200 yards wide. This storm created 1,150 acres of timber damage at a value of approximately \$992,000, with the average percent damage in this storm area being 75% (catastrophic-severe). According to the National Weather Service, this tornado began along News Bridge Road, destroying a building before moving over more rural sections and snapping hundreds of trees consisting of both softwoods and hardwoods. The tornado was remarkably consistent in its track, producing EF1 damage between 95 and 100 mph for the majority of its path. Dozens of homes were damaged, with a few destroyed from falling trees. The tornado near HJ Lane picked up two vehicles, including a truck, and displaced them by 100 yards. Shortly before the tornado lifted, it crossed into Jefferson County, where additional tree damage occurred. (NWS¹) The foresters on the ground's Timber Impact Assessment revealed a wide degree of timber damage, from residential trees to mature managed forests. The majority of the timber damaged in this storm were in the pine chip-n-saw and sawtimber and hardwood sawtimber classes.

Burke County (897 acres) - The tornado in Burke County was verified as an EF-2, with maximum wind speed of 125 mph. It was reported as almost 17 miles long and 700 yards wide. This storm damaged 897 acres of timber at an approximate value of \$663,700, with the average percent damage in this storm area being 72% (catastrophic-severe). According to the National Weather Service, a tornado touched down northeast of Vidette in Burke County, GA near Highway 80. The tornado continued in a general northeastern direction, crossing Quaker Road, US 25, and dissipating near Highway 56 and Collins Road. The tornado produced mainly EF-0 and EF-1 damage along its path, but reached EF-2 intensity in several locations with peak wind speeds of 125 mph. The tornado had a path length of approximately 17 miles with a path width of around 700 yards. The tornado uprooted or snapped a significant amount of trees along its entire path. Along Highway 80, a former auto service cinder block building had its bay doors blown in, causing the roof to lift off and some of the block walls to collapse. Along Coursey Road, nearly all of the pine trees snapped in a field and a couple of houses had significant roof damage. A couple of pecan groves had significant damage with many pecan trees snapped or uprooted near Quaker Road and Taylor Road. West of Story Mill Road near George Perkins Road, there was an extensive amount of damage to hardwood trees, which were snapped and uprooted, with many falling on homes and vehicles. Major damage also occurred at a dairy farm along Highway 25, where metal posts supporting a canopy bent and snapped over a feeding area. A feed shed had its roof torn off and the metal framing bent, and several other structures on the property had significant roof damage or total roof loss. (NWS²) The foresters on the ground's Timber Impact Assessment revealed a wide degree of timber damage, from residential trees to mature managed forests. The majority of the timber damaged in this

storm was in the pine chip-n-saw and sawtimber, hardwood pulpwood and hardwood sawtimber classes.



Photo 4: Burke County.

Chattooga/Walker Counties (585 acres) - The National Weather Service determined an EF-2 tornado occurred across Chattooga and Walker County on April 13, 2020. The tornado touched down at approximately 8:15 pm, EDT, 1.8 miles northwest of Summerville, Georgia. The tornado traversed across wooded pastures and residential areas, causing damage. Damage included uprooted and broken trees, along with damage to several dwellings and utility buildings. Significant damage began off Orchard Hill Rd., north of Summerville, and continued northwest until it lifted southeast of LaFayette. Most notable damage occurred along the Walker/Chattooga County line near Halls Valley Rd. and continued up Hwy 151 as it approached southeast LaFayette. The tornado reached a width of at least 0.7 of a mile wide along Highway 151, blowing over and snapping trees off at

their bases. No reports of injury to residents or first responders were received. Approximate length of the damaging path of the tornado on the ground was four miles, with the overall length of the path indicated by radar at 15.8 miles. The Georgia Forestry Commission surveyed the primary zones impacted by the tornado. The tornado touched down briefly, 1.8 miles northwest of Summerville, Georgia near Orchard Hill Rd, lifted, and touched back down along Halls Valley Rd on the Walker/Chattooga County line. These areas endured moderate to catastrophic damage to mixed pine and hardwood stands. The tornado continued traveling northeast along Highway 151 before lifting 4.2 miles southeast of Lafayette, GA. The Timber Impact Assessment revealed a wide degree of timber damage, from residential trees to mature managed forest. On the corner of Highway 151 and Beaver Creek Drive, a tract of mature natural pine was hit just before the tornado weakened and lifted. The average percent damage in this storm area is 70% (catastrophic-severe), with a total of 585 acres of timber damaged at an approximate value of \$299,525 (NWS¹, Blake Lovell, GFC).



Photo 6: Walker County.

Upson County (570 acres) - The National Weather Service determined an EF-3 tornado occurred in locations across Upson County on April 13, 2020. The tornado touched down at approximately 2:19 AM EDT, east of Thomaston, Georgia. The tornado traversed across wooded pastures and residential areas, causing damage. Damage included uprooted and broken trees, along with damage to several dwellings and utility buildings. Significant damage began in close proximity to Highway 74 and Andrews Chapel Road and continued on a northeastern path to the Upson/Lamar County line. Other areas of significant damage include the Corner of Highway 74 and Trinity Road, Liberty Chapel Road, Jackson Drive and Bailey Mill Road. The tornado reached a width of at least 0.7 of a mile wide along Highway 74, blowing over and snapping off trees at their base. There were no reports of injury to

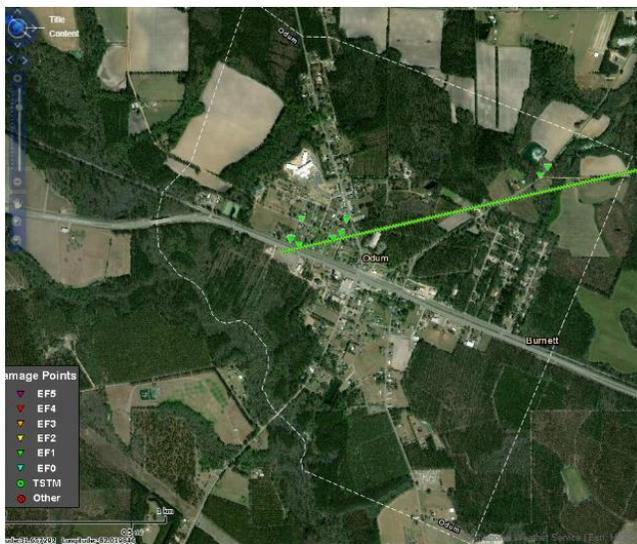
residents or first responders. Approximate length of the damaging path of the tornado on the ground was approximately 9.5 miles, with the overall length of the path indicated by radar at 16.7 miles. Georgia Forestry Commission Forester Keith Sanders and Forester Benjamin Rampy surveyed the primary zones impacted by the tornado. The tornado touched down east of Thomaston, Georgia, with moderate to catastrophic damage to mixed pine and hardwood areas. The tornado continued to travel northeast along Highway 74 and lifted close to the Upson/Lamar County line. Overall, the Timber Impact Assessment showed a wide degree of timber damage, from residential trees to mature managed forests. On the corner Highway 74 and Trinity Road, a large tract of managed pine timber was snapped off about eight feet from the ground (NWS¹, Keith Sanders, GFC). The average percent damage in this storm area is 75% (catastrophic-severe), with a total of 570 acres of timber damaged at an approximate value of \$295,490.



Photo 7: Upson County.

Urban Timber Damage Observations

Using the tornado tracks and damage reports compiled by the National Weather Service, as well as additional information provided by GFC field personnel, staff from the Sustainable Community Forestry Program (SCFP) conducted field assessments to determine the damage to community forests along seven storm tracks that occurred in or near the cities of Fort Oglethorpe (Catoosa), Rome (Floyd), Trion (Chattooga), Summerville (Chattooga), Trenton (Dade), Cartersville (Bartow), Chatsworth (Murray), Eton (Murray), Eatonton (Putnam), and Odum (Wayne). With the exception of Fort Oglethorpe and Odum, the impact to tree canopy in these communities was minimal, with some damage occurring to trees on private property in residential neighborhoods or sparsely populated areas outside city limits. However, there was minimal or no damage to public trees.



On Monday, April 13, 2020, an EF-1 tornado passed directly through the city of Odum in Wayne County. Some tree damage, in the form of large broken limbs and snapped trunks, occurred on private property in a residential neighborhood between N. Main and N. Church Streets. In addition, a small number of publicly-owned trees on the grounds of a recreation center and water treatment facility experienced broken branches or snapped trunks. However, the overall impact to tree canopy in the City of Odum was minimal.

Photo 8: - Tornado track through the city of Odum in Wayne County.

On Sunday, April 12, an EF-0 tornado touched down in the northernmost section of Chickamauga and Chattanooga National Military Park in Catoosa County. The storm continued to intensify as it tracked in a northeast direction through the City of Fort Oglethorpe into southern Tennessee, where it caused damage equivalent to an EF-3 tornado east of Chattanooga. In the City of Fort Oglethorpe, a moderate amount of damage was caused to trees and structures in several residential and industrial areas. However, the greatest damage in the city occurred near Battlefield Parkway and City Hall Drive, where the tornado impacted hundreds of public



Photo 9: Tornado track through the city of Fort Oglethorpe.

trees. After an initial damage assessment, the GFC deployed a two person Urban Forest Strike Team (UFST), at the request of city officials, on Monday April 20, to conduct a more



Photo 10: GFC's Urban Forest Strike Team assessing damage to a public park.

thorough assessment on four city-owned properties, including two public parks. The assessment was conducted utilizing standard UFST and Federal Emergency Management Agency (FEMA) storm damage mitigation protocols. In addition to dozens of trees that were completely uprooted during the storms, the assessment determined there were an additional 70 trees which were too structurally damaged to remain in the landscape long-term. These trees would need to be removed to mitigate significant risk to people

or infrastructure. Data collected during the assessment was provided to the City of Fort Oglethorpe for inclusion in their application for

FEMA assistance. Overall, tree canopy in Fort Oglethorpe was moderately impacted with the loss of or damage to numerous trees on private properties, in addition to approximately 100 trees on public properties.

Discussion

Landowners are encouraged to utilize professional foresters and arborists to help with decisions about timber management or potentially hazardous trees around homes and urban environments. Seeking independent advice is a sound way to reduce hasty judgments and insure all available options are considered. Damage associated with tornadoes rated EF-1 and greater will likely be divided into three distinct categories by which landowners can make their management decisions:

- 1) Light damage or losses that may not warrant a salvage operation - This could include merchantable stands (trees are large enough to sell) which simply don't have enough timber damage to warrant a commercial harvest, or pre-merchantable stands where there is a good chance they will recover over time. These areas will be outside the primary storm path.
- 2) Stands with moderate damage, in which a portion of the timber is damaged but a significant portion of undamaged timber remains - In these cases, landowners are encouraged to use the services of a professional forester to help make the best decision for the situation.
- 3) Stands with catastrophic-severe damage, mandating a salvage operation to recoup whatever value can be obtained from the stand - This will include a complete harvest for widespread damage, or a partial harvest of damaged timber to provide a commercial harvest. Salvage operations need to be enacted rapidly before wood degradation, such as blue-stain, occurs. Numerous landowners began timber salvaging operations as early as Tuesday, April 14th. Logging crews are continuing to salvage as much timber as possible.

Stem quality is also commonly degraded in tornado-damaged timber through the extreme twisting and snapping of the timber.

For landowners facing a complete harvest to salvage their damaged timber, please consider reforesting the area. Contact your local Farm Service Agency (FSA) about potential cost-share assistance with site preparation and tree planting. Assistance with site preparation and tree planting may be available through the Emergency Forest Restoration Program (EFRP). Apply at your local USDA –Farm Service Agency office: <https://www.fsa.usda.gov/state-offices/Georgia/index>. Landowners enrolled in the Conservation Reserve Program (CRP) who have damage to the enrolled acreage should report to the Farm Service Agency.

The following resources can help forest landowners learn more about options and considerations for situations in which trees have been damaged by severe weather:

TIMBERLAND SEVERE WEATHER DAMAGE:

How to Evaluate and Manage Storm-Damaged Forest Areas:

<http://www.forestpests.org/storm/>.

Evaluation and Management of Storm Damage to Southern Yellow Pine:

http://www.ncforests.gov/Managing_your_forest/pdf/EvaluationMngt-StormDamageSYellowPines.pdf.

TIMBER SALES:

Selling Your Timber:

<https://gatrees.org/wp-content/uploads/2020/01/SellingYourTimber.pdf>.

Selling Storm Damaged Timber:

<https://gatrees.org/wp-content/uploads/2020/01/Selling-Storm-Damaged-Timber-Final.pdf>.

TAXES:

National Timber Tax website (Master Index has good list of subject areas):

<http://www.timbertax.org/>.

References

Dickens, E. David, and Moorhead, D., Clabo, D., Bates, C., Griffin, S., 2020. Assessing Storm Damaged Forest Stands.

NWS¹ – National Weather Service. 2020. Public Information Statement. [<https://forecast.weather.gov/product.php?site=NWS&issuedby=FFC&product=PNS&format=CI&version=1&glossary=1>].

NWS² – National Weather Service. 2020. April 13, 2020 Tornado Outbreak. [https://www.weather.gov/cae/04132020_tornadoOutbreak.html].