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SENT TO LSU AGCENTER/LOUISIANA FOREST PRODUCTS DEVELOPMENT CENTER - FOREST SECTOR / FORESTY PRODUCTS INTEREST GROUP

Attached are two articles we wrote last year addressing hurricane/tornado damaged forest stands that may be of value to SE Texas and SW LA forest landowners when they assess their timber stands.

Distribute as you see fit.

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Assessing Hurricane and Tornado Storm Damaged Forest Stands

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Severe thunderstorms, hail storms, hurricanes and tornadoes impact portions of our state almost every year. These weather events often damage urban and rural forests. Severe events such as tornadoes and hurricanes tend to cause tree breakage, and immediate losses, while less severe storms may leave trees damaged and standing or uprooted where the stems may live for a period after the event. Land managers can be faced with evaluating these areas to determine if the stand will recover without intervention, or if a salvage or partial removals are needed. Storm damage within a given area can vary greatly, so careful evaluation of each damaged area should always be the first step. Management decisions are often made on the worst areas within the damaged areas, and damage can vary to the point where areas within the same stand must be treated differently. This publication presents a set of points that should be considered when evaluating and managing storm damaged areas. It is recommended that you get a local, reputable professional forester to assist you in evaluating your timber stands.

In general, trees damaged in storms that cause tree breakage must be salvaged immediately, while stands with less damage such as limb or top breakage and leaning trees with partial uprooting or fallen trees with some roots still in the soil allow for much longer salvage windows. Trees with severe root damage rarely survive the growing season, but can last much longer if the weather event occurs during the cooler seasons of the year. Opportunistic insects and tree diseases will often find these weakened and stressed trees and hasten mortality so they should be considered when evaluating storm damaged stands.

General rules of thumb after hurricane and tornado storm events: (1) Unthinned, well stocked young pine (less than 10-years old and hardwood stands (less than 15-years old) with heights less than 30 feet generally have minimal stem breakage, lean, or uprooting damage. The lean, uprooting and stem damage in these young, unthinned stands tend to be on the edges of these stands where the winds were the strongest. (2) Recently thinned (within the last 2 years and more so in stands thinned within the last year) pine stands tend to have the most damage. Leaning and uprooted trees are common when storms winds are close to minimal hurricane strength wind speeds (74-95 mph, Category 1) with high rainfall. Pine and hardwood stem breakage (usually at the 6-16 feet stem height range) becomes more common at sustained, prolonged higher hurricane strength wind speeds (100+ mph, Category 2). Category 4 Hurricane Hugo (135 mph sustained wind speeds) in September 1989 broke on average 2/3 of mature pine stems in thinned stands in Berkeley County, SC. (3) Pines with heights greater than 30 feet and lean greater than 45 degrees do not typically straighten up and recover. (4) Older, larger pines and hardwoods (diameters greater than 12-14 inches and greater than 60 – 80 feet in height) that are leaning to any extent will usually not straighten back up. (5) Uprooted pines that have a portion of their root system intact in the ground can survive for some time but will not be a viable long-term part of the stand. (6) Pine and hardwood stumpage prices after these storm events can be greatly lower than pre-storm event due to a much higher supply of wood on the market suddenly. (7) Logger operations in storm damaged stands are generally much slower and more hazardous.

► Assess stand(s) damage and categorize

- (1) Minimal damage – Scattered branches broken from trees, with little to no damage to the overall stand (in particular the tree stems) and a few trees bent less than 45 degrees. No salvage operation will be necessary and the stand should recover with no additional immediate management requirements.
- (2) Light damage – Only branches broken from trees, with minor damage to tree stems in the overall stand and trees bent less than 45 degrees. No salvage operation will be necessary and the stand will recover with no additional immediate management requirements, though the long-term wood yields will likely be impacted to some extent.
- (3) Moderate damage – Branches broken from the trees with visible damage to tree stems in the overall stand. At least 25 to 33 percent of the stems are snapped or broken or noticeably uprooted with severe lean (greater than 45 degrees), a salvage operation should be considered to minimize losses and remove trees that will likely not survive.
- (4) Severe damage – 33 to 50 percent of the stems are broken, tops broken out across the stand, limbs stripped, and trees bent more than 45 degrees. A salvage operation must be considered and a clearcut may be the prudent management decision.
- (5) Catastrophic damage – More than 50 percent of the stems are broken out across the stand, tops broken out across the stand, limbs stripped, and trees bent over more than 45 degrees. A salvage operation is considered unlikely (a case by case landowner, forester and logger judgment) and the stand is considered a total loss. care

Major types of damage (pine and hardwood trees are sold by weight so water loss is an important economic factor):

- (1) Snapped, broken stem pine and hardwood trees – these trees will lose weight relatively quickly (approximately 50% of a tree's weight is water) if broken below the live crown and should be salvaged sooner than pines and hardwoods that have been uprooted assuming a portion of these snapped trees are of high value.
- (2) Uprooted pine and hardwood trees – if the root systems have been mostly uprooted but some of the root system is still in soil contact, these trees will generally lose their weight slower than snapped stem trees and salvage operations may be done weeks to months after the uprooting has been done. For example, hurricane Matthew of 7-8 October 2016 caused many pines and hardwoods to be uprooted in the coastal counties of Georgia to about 70 miles inland due to the high amounts of rain during the hurricane. Many of these trees (especially the pines) can be salvaged between October and early February (prior to the next growing season) without much weight loss.

Merchantable pine stands (greater than age 15 to 20 years) -- Levels of damage:

Pine stands tend to occupy moderately well, well, and excessively drained soils (upland sites) and therefore stem breakage and “leaners” and the common tree damage problems. In lower lying areas (somewhat poorly to very poorly drained soils) and with excessive rain (Hurricane Matthew of 7-8 October 2016) pines and hardwoods can be uprooted or will lean excessively. Valuable snapped pine and hardwoods trees should be salvaged sooner than uprooted hardwoods due to quicker water (weight) loss. Snapped pines and hardwoods, regardless of pre-storm event product class (pulpwood, chip-n-saw, sawtimber or pole class), are considered generally to be pulpwood. Exceptions include very tall, older pines that may have one, two or three logs of good wood eight feet above the snapped part of the stem. These high valued, visibly unaffected logs should be salvaged as soon as possible due to weight loss and wood degradation issues reducing their value with time (Table 1 and 2).

CATASTROPHIC: Stands with greater than 50 percent of the stems having significant damage and having not enough good trees per acre to thin back to (less than 60 to 150 trees per acre or less than 60 square feet of basal area per acre) standing and in good condition with little to no visible lean, no visible uprooting and small to no visible wounds (Photos 1 and 3).

Options. Where feasible perform a salvage operation (clearcut) as soon as possible to include removal of standing trees along with storm damaged wood. Post salvage options for reforestation include: (1) Pile debris, limbs, and tops away from standing trees and burn piles with burn permit under appropriate weather conditions. (2) Prescribe burn site with debris not moved to reduce debris level (fire breaks in place) then wait 2 to 3 months after burn and apply pre-plant site preparation herbicide treatment in late summer or fall. For all burning get a burn permit before burning. (3) Chemically treat or mechanically prepare the site for planting without burning (or burn 2-3 months after the chemical or mechanical treatment). Plant quality seedlings in December - February. If salvage operations are conducted after June, site preparation will likely have to be held over until the following growing season to allow sufficient resprouting of vegetation (1 to 3 feet tall or taller) to insure herbicide uptake and translocation to roots for most effective competition control. Regeneration weevils could be a problem following planting after mid- to late-season harvests (harvests after 30 June).

SEVERE: Stands with 33 to 50 percent stem damage (snapped or excessive lean; greater than 45 degrees) Photos 2 and 7.

Option 1. A salvage thinning operation, when feasible, leaving enough (generally considered at 50 to 150 trees per acre or at least 60 square feet basal area per acre, Table 3) good condition, standing trees to continue to grow to rotation age.

Option 2. A salvage thinning operation, when feasible, leaving standing trees to serve as seed or shelter wood trees (Table 3) for next rotation. Pile debris, limbs, and tops away from standing trees where feasible and burn piles under appropriate weather conditions with a burn permit. A September burn followed by a light disking in the year for natural seeding will enhance pine seed germination.

Option 3. Where option 1 above is not feasible a salvage clearcut operation to include removal of standing trees. Prescribe burn site to reduce debris level (fire breaks in place) with a burn permit and perform pre-plant site preparation (chemical, mechanical or both) in summer or fall, plant seedlings December - February.

MODERATE: Stands with 25 to 33 percent of the stems with significant damage with at least 60 to 150 trees per acre or at least 60 square feet of basal area standing and in good condition (little to no visible lean, small to no visible wounds, no visible uprooting portions of Photos 2, 4, 5, 8 and 9).

Option 1. Salvage thinning operation when feasible leaving standing trees to serve as seed trees for next rotation. Pile debris, limbs, and tops away from standing trees where feasible and burn piles under appropriate weather conditions with a burn permit. A September burn followed by a light disking in the year for natural seeding will enhance pine seed germination.

Option 2. Salvage clearcut operation when feasible to include removal of standing trees. Prescribe burn site to reduce debris level (fire breaks in place) with a burn permit and perform pre-plant site preparation (chemical, mechanical or both) in summer or fall, plant seedlings December - February.

LIGHT: Stands with less than 25 percent of stems with significant damage (at least 60 – 150 trees per acre or at least 60 square feet of basal area per acre standing and in good condition little to no visible lean, no visible uprooting, and small to no visible wounds, Photo 6, 8, 9, and 12).

Option 1. Typically there is not enough damage in these stands to warrant any salvage operation (thinning)

Option 3. In a few case a salvage operation removing broken stems, lean trees (trees with a visible lean) and uprooted trees may be performed. Prescribe burn the stand, where feasible, the first winter or second after the weather event with adequate firebreaks, good weather conditions, and with a burn permit. Grow stand out to desired rotation.

Pre-merchantable pine stands (age 1 - 15 to 20-years) -- Levels of damage:

Generally stands with heights less than 30 feet and lean less than 45% with no visible uprooting will recover. Assess level of lean and stem breakage. If there are > 300 to 350 stems that are in good condition (lean < 45%, no visible stem breakage and no visible uprooting) the stand can be carried out to thinning age (Photos 9, 11 and 12).

- ▶ Table 1 lists a timeline for salvaging timber.
- ▶ In all damaged stand cases, keep an eye on the site every 2-3 weeks for beetle outbreaks or disease (root rot, pitch canker, etc.). Table 2 lists timeline for insect and disease infestations.

Hardwood and mixed pine-hardwood stands

Hardwood and mixed pine hardwood stands tend to occupy lower slope positions with soils ranging from somewhat poorly to very poorly drainage classes. In these cases most damage is from uprooting, tree tops, stem, and branch breakage. Assess that stands in a similar manner as pine stands from severe (Photo 10), moderate to low and prioritize what stands need salvage first and what stands can wait.

Follow-up visits to storm damaged stands

Damaged stands that have been left unthinned due to low amounts of damage or salvaged thinned should be visited every two to three weeks looking for insect (i.e., pine beetles) and/or disease (i.e., pitch canker) damage that can hit these damaged stands for the next two years. If evidence of insect or disease is present, contact a local, reputable forester for assistance in determining the need for further salvage thinnings. Photos 13, 14, and 15 illustrate post-storm forking and broken top pine that continue to live years after the event.

Table 1. Timeline for timber to be salvaged to prevent degradation

Product	Harvest window	Comments
Pine and hardwood veneers	4 - 6 weeks	Blue stain prohibits use if left longer
Pine dimension lumber	3- 4 months	Should be kiln dried to prevent emergence of secondary pests
Pine posts	4 - 6 weeks	Blue stain will affect toughness and preservative treatment
Pine and hardwood pulp, fiberboard, particleboard and OSB	8- 12 months	As wood begins to decay, pulping process will be affected. Storm damaged wood should be mixed with sound wood

Table 2. Timeline for invasion of damaging insects and diseases

Species	Year one	Year two
Pine	Bark beetles, ambrosia beetles, sawyers, blue stain fungi, soft rot fungi	Decay fungi
Oak and Hickory	Wood borers, ambrosia beetles, sawyers, soft rot fungi	Sapwood decay fungi
Other hardwoods	Wood borers, ambrosia beetles, sawyers, soft rot fungi	Sapwood and heartwood decay fungi

▶ Does the stand qualify as a "casualty loss" for tax purposes?

A casualty loss is a sudden loss, so tornado and hurricane damaged stands can qualify as casualty losses. Casualty losses are deductible the year of the casualty on IRS Form 4684, Casualty and Thefts (Gaddis and Dicke 2006). The wind damaged stand qualifies as a casualty loss as the lesser of the fair market value (FMV) loss in timber and the timber basis. Timberland owned for more than one rotation will often have a zero basis whereas timberland recently purchased (i.e., \$1800 per acre for 100 acres of loblolly in 2000 with \$500 in a land basis and \$1300 in the timber basis) may have some timber basis. If the landowner has a timber basis, then a registered forester will need to (1) estimate the fair market value (FMV) of the timber pre-casualty, (2) the FMV following the casualty (# 1 and 2 by timber cruise) with the FMV loss = FMV before – FMV after (often the salvage value), The FMV loss is deductible up to the timber basis, and (3) the basis in timber.

Table 3. Southern pine basal area per tree, target minimum per acre (BA/ac) based on average dbh^a (diameter at 4.5 feet above groundline), and target minimum trees per acre (TPA) in good condition and well-spaced.

Average dbh (inches)	Basal area/tree (square feet)	TPA for 60 sq ft BA/ac (timber production)	TPA for 30 sq ft BA/ac (wildlife)	TPA for longleaf natural regeneration	TPA for loblolly/slash natural regeneration
6	0.1765	340	170	--	--
7	0.2673	224	112	--	--
8	0.3491	172	86	--	--
9	0.4418	136	68	--	--
10	0.5454	110	55	55	12
11	0.6600	91	45	47	10
12	0.7854	76	38	38	9
13	0.9218	65	32	33	8
14	1.070	56	28	28	6

^a note photo 16

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Gaddis, D. A. and S. G. Dicke. 2010. Frequently asked questions about timber casualty losses. Publication 2619. Mississippi State University, Extension Service.

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Wang, L., and J. Greene. 2013. Tax Tips for Forest Landowners for the 2013 Tax Year. U.S. Department of Agriculture Forest Service Southern Region Cooperative Forestry Technology Update. Southern Research Station Management Bulletin R8-MB 141.

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Photo 1 and 2. Examples of a catastrophic to severely damaged pine stand (left photo) with less than 80 good crop trees per acre and a moderate to severely damaged pine stand (right photo) with a marginal number of crop trees left per acre.



Photo 3. Catastrophic damaged pine stand; less than 30 trees per acre standing in good condition



Photo 4. Light to moderate damage pine stand; 30 to 60 trees per acre standing in reasonable visible condition



Photo 5. Light to moderate damage pine stand with 100 to 200 trees per acre standing in reasonable visible condition



Photo 6. Low damage pine stand with greater than 125 trees per acre standing in good visible condition



Photo 7. A severely damaged stand (in foreground) clearcut 10 days post-tornado with moderately damaged stand thinned in background



Photo 8. A light to moderate damaged loblolly stand thinned 30 days post-tornado



Photo 9. Young pre-merchantable longleaf stand with light to moderate levels of damage, but with a sufficient number of trees per acre to carry to rotation with some clean-up



Photo 10. A mixed pine-hardwood stand with moderate to severe damage



Photos 11 and 12. Young old-field planted longleaf stands with varying levels of lean. The left photo longleaf trees with lean greater than 45 degrees will most likely not straighten up and recover. The right photo is a 16-year old longleaf stand 4 days after Hurricane Matthew came through in Bulloch County GA with portions of the stand having uprooted trees due to high rainfall and lower (76-90 mph) hurricane force winds. Overall, both stands should have enough good, healthy trees to carry the stands to rotation with some clean up.



Photo 13 & 14. Photo 13 (left photo) with a fork where storm damage broke the terminal growth and photo 14 (right photo) with a broken top from the same storm. If the fork or broken top is at least 17 feet above the ground, then the tree may have chip-n-saw or sawtimber value to that height.



Photo 15 and 16. Left photo - a broken top living loblolly pine with 4 live limbs, 6 years after a storm event. Right photo – a 32-year-old loblolly pine wood disk (cut @ dbh; 4.5 feet above groundline) showing examples of a 6, 9, and 12.5” dbh tree and basal area per tree (Table 3) and dbh for pulpwood, chip-n-saw, and sawtimber categories.

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TIMBER IMPACT ASSESSMENT

Southwest Georgia Storm Damage, January 2, 2017

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BACKGROUND

On the evening of January 2, 2017, severe storms/EF-1 tornados produced a one to four mile swath of destruction, moving northeast from Leary, Georgia in Calhoun County, across Dougherty County and the city of Albany into Worth County and across Turner County. A separate severe storm, EF-1 tornado, moved across Early, Baker and Mitchell Counties. The National Weather Service (NWS) identified some damaged areas as EF-1 tornado, while other areas had extensive damage due to strong straight line winds.

The severe storms caused widespread damage along their path. In Albany, thousands of trees snapped and/or were uprooted. Minor to severe roof damage to dwelling structures and buildings was recorded. Much of the severe structural damage was a result of trees falling onto structures and power lines. Moderate to severe timber damage occurred in the western portion of Dougherty County, north of the Leary Highway (GA 62).

An EF-1 tornado touched down just inside the Dougherty County line along Cordele Road (GA 300), before moving east-northeast towards the community of Doles in Worth County. The storm's path continued in a northeast direction, moving north of the city of Ashburn in Turner County toward the town of Rebecca in northeast Turner County.

The line of severe storms/EF-1 tornados impacted multiple counties in southwest Georgia. Wind gusts of 80-85 miles per hour were detected by the NWS in the zones classified as straight line winds, while wind gusts of 95-120 miles per hour were detected in the zones classified as EF-1 tornados.

Pine and hardwood timber in the direct path of these storms received moderate to severe damage. The majority of the storm's path left timber uprooted with scattered broken trees. However, the tornado paths left severe to catastrophic broken timber.

In addition to the damage to forested areas, pecan orchards and individual pecan trees were uprooted by the strong winds. Furthermore, extensive damage occurred to numerous agricultural center-pivot irrigation systems.



Figure 1: Storm Destruction Path in southwest Georgia

Governor Deal declared a state of emergency on Tuesday, January 3, for four counties in southwest Georgia: Baker, Calhoun, Dougherty and Mitchell. Governor Deal added the counties of Early, Miller, Turner and Worth on January 9. Figure 1 displays the storm's path. The Federal Emergency Management Agency (FEMA) conducted ground inspections across the impacted areas on Wednesday, January 11, 2017.

Georgia Forestry Commission Air Operations and Forest Health staff began aerial reconnaissance on Thursday, January 5, 2017. Widespread damage was observed along the storm's path. Figure 2, right, shows an aerial view of a damaged pine stand uprooted by high winds. Forest Health staff began conducting ground surveys to determine the extent of timber damage on Friday, January 8.

The goal of the Timber Impact Assessment survey was to determine current overall damage to the forest in Georgia, and to document widespread impacts to the region struck by the severe storms. The storm path was the primary timber assessment observation area. However, this is not to say that damage was not or could not be found further outside the primary storm path.

OBSERVATIONS

Local Georgia Forestry Commission foresters surveyed the primary zone impacted by the strong winds/EF-1 tornados. Overall, the Timber Impact Assessment revealed moderate to severe damage in rural forested areas. However, tornado-impacted areas had catastrophic damage. Tornado-impacted areas had severe tree breakage (Figure 3), while areas with strong straight line winds had numerous uprooted trees (Figure 4). Even well-established pine plantations that were properly stocked, healthy, and vigorously growing suffered damage ranging from occasional wind-bent trees to severe wind-bent, broken and uprooted trees (Figure 5). Hardwood timber damage was primarily located within Streamside Management Zones (SMZs) or mixed pine/hardwood timber stands.

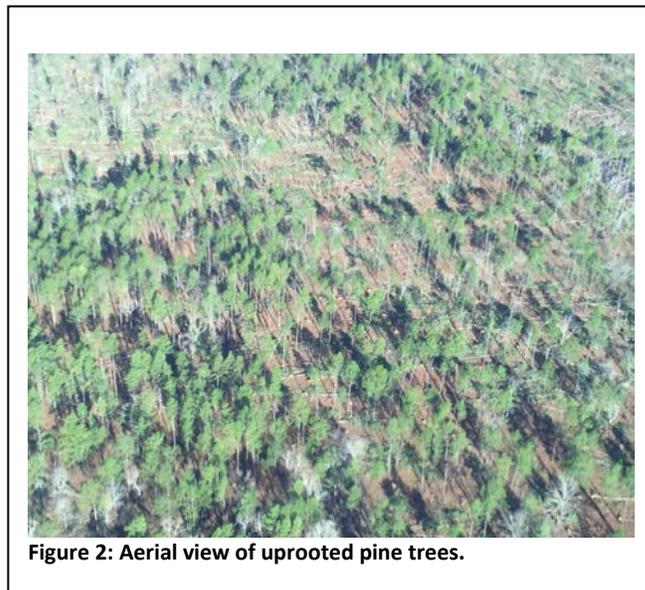


Figure 2: Aerial view of uprooted pine trees.



Figure 3: Tornado damaged site: tree breakage



Figure 4: Straight line wind damage; trees uprooted



Figure 5: Fifteen year old un-thinned pine plantation

Storm Damage Intensity:

Minimal damage – scattered branches and limbs broken from trees, with little to no damage to the overall stand and scattered trees bent less than 45 degrees. No salvage operation will be necessary and the stand should recover with no additional management requirements.

Light damage – only branches and limbs broken from the tree, with minor damage to the overall stand and trees bent less than 45 degrees. No salvage operation will be necessary and the stand should recover with no additional management requirements, though long term yields will likely be impacted.

Moderate damage – branches and limbs broken from the trees with damage to the overall stand. More than 25% of stems broken, wind-bent or uprooted and a salvage operation should be considered to minimize losses and remove trees that likely will not survive.

Severe damage – more than 30% of stems broken, tops broken out across the stand, limbs stripped, trees uprooted and/or trees bent more than 45 degrees. A salvage operation must be considered ASAP, with clear-cutting recommended. The stand is, from a management perspective, a total loss.

Catastrophic damage – more than 50% of stems broken, multiple trees blown down across the stand, tops broken out across the stand, limbs stripped, and trees bent more than 45 degrees. A salvage operation is necessary ASAP. The stand is considered a total loss.

Storm damage was detected in all timber types in the direct path of the storms. The only timber stands observed with little to no damage were pre-commercial planted pine stands five years old and younger.

EXTENT OF DAMAGE

GFC foresters evaluated the counties noted on the previous map (*Figure 1*) and developed estimates of damage based upon field work. These estimates do not include areas outside this primary storm zone. Georgia Forestry Commission Geographic Information System (GIS) Specialist Michael Torbett created the maps used to estimate the amount of damage across the affected area. Overall, there were approximately 5,400 acres of rural timberland impacted by the storms. In addition to the rural areas, thousands of urban forest trees were damaged and/or destroyed. The urban damage assessment was incomplete at the time this report was written.



Figure 6: Storm Destruction paths on aerial photograph.

Damage estimates from the severe storms showed that 539 acres (10.0%) of **minimal to light damage** was detected across forested, agricultural, and urban landscapes. These areas suffered little to no damage in forested lands other than broken limbs, and will require no salvage operations. Forested stands in these areas should recover with no additional management requirements. Minimal to light damage was seen two to three miles outside the primary storm path.

There is an estimated area of **moderate damage** totaling 1,079 acres (20.0%). This area of damage is located along the outer edges of the storm path, from Calhoun County to Turner County, and from Miller County to Mitchell County. This would indicate more severe damage to the overall stands, and that more than 25% of stems would be broken or uprooted and a salvage operation to minimize losses should be considered. Landowners in this moderately damaged area are encouraged to use the services of a professional forester to assist in making informed decisions about the management of their individual stands.

The majority of the impacted area was classified as **moderate-severe damage**. An estimated 3,775 acres (70.0%) have been identified across the eight counties. The majority of the timber type impacted was pine saw timber and chip-n-saw. Most of these stands were estimated to be 25 years of age or older. Pine pulpwood was the second most impacted timber type, with the majority of the timber being 15-22 years of age. The least impacted timber type was mixed hardwood saw timber/pulpwood. Much of this timber was located in drains, riparian zones and SMZs. From an agricultural perspective, several pecan orchards sustained moderate to severe damage, and numerous center pivot irrigation systems were damaged or destroyed.

An area of **catastrophic damage** was detected along Ga. Highway 300 (Cordele Road) near the Dougherty/Worth County line, moving in a northeast direction along Camp Osborne Road all the way to the Doles community along Highway 313. The tornado damage appeared to be approximately a half-mile wide, with wind damage noted two to three miles beyond the primary path.

RECOMMENDATIONS

With the damage inflicted by the combination of EF-1 tornados and strong straight line winds, there will likely be three distinct categories by which landowners make their evaluations:

- 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.
- 2) **Stands with severe damage, mandating a salvage operation to recoup whatever value can be obtained from the stand.** This might include a complete harvest for widespread damage, or a partial harvest of damaged timber to provide a commercial harvest.
- 3) **Stands with moderate damage or situations falling between the two scenarios above, in which a good bit of the timber is damaged but there might be enough timber to leave growing.** In these cases, landowners are encouraged to use the services of a professional forester to help make the best decision for the situation.

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 FSA office. Landowners enrolled in the Conservation Reserve Program (CRP) who have damage to the enrolled acreage should report to the Farm Service Agency.

ADDITIONAL PHOTOS



Photos 1&2: Pine timber damage-Worth County



Photos 3&4: Pine timber damage-Worth County



Photos 5&6: Pine timber damage-Worth County



Photos 7&8: Center pivot damage (7) and pecan orchard damage (8)-Turner County & Dougherty County

*Special thanks to other GFC personnel who helped develop this Timber Damage Assessment:
Greg Klett-forester, Flint District pilots, and Michael Torbett-GIS Specialist.*

Stasia Kelly, Media Relations Specialist, worked diligently to assist with the production of this report.

URBAN TREE ASSESSMENTS

The urban assessment was incomplete at the time of this report.

These 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:

Wind Wood Utilization (this has numerous documents and links that are beneficial):

<http://www.windwoodutilization.org/salvage.asp>

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 (General Advise)

<http://www.gatrees.org/forest-management/private-forest-management/timber-selling/>

Selling Your Timber

<http://www.gfc.state.ga.us/resources/publications/sellingyourtimber.pdf>

TAXES:

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

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

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.