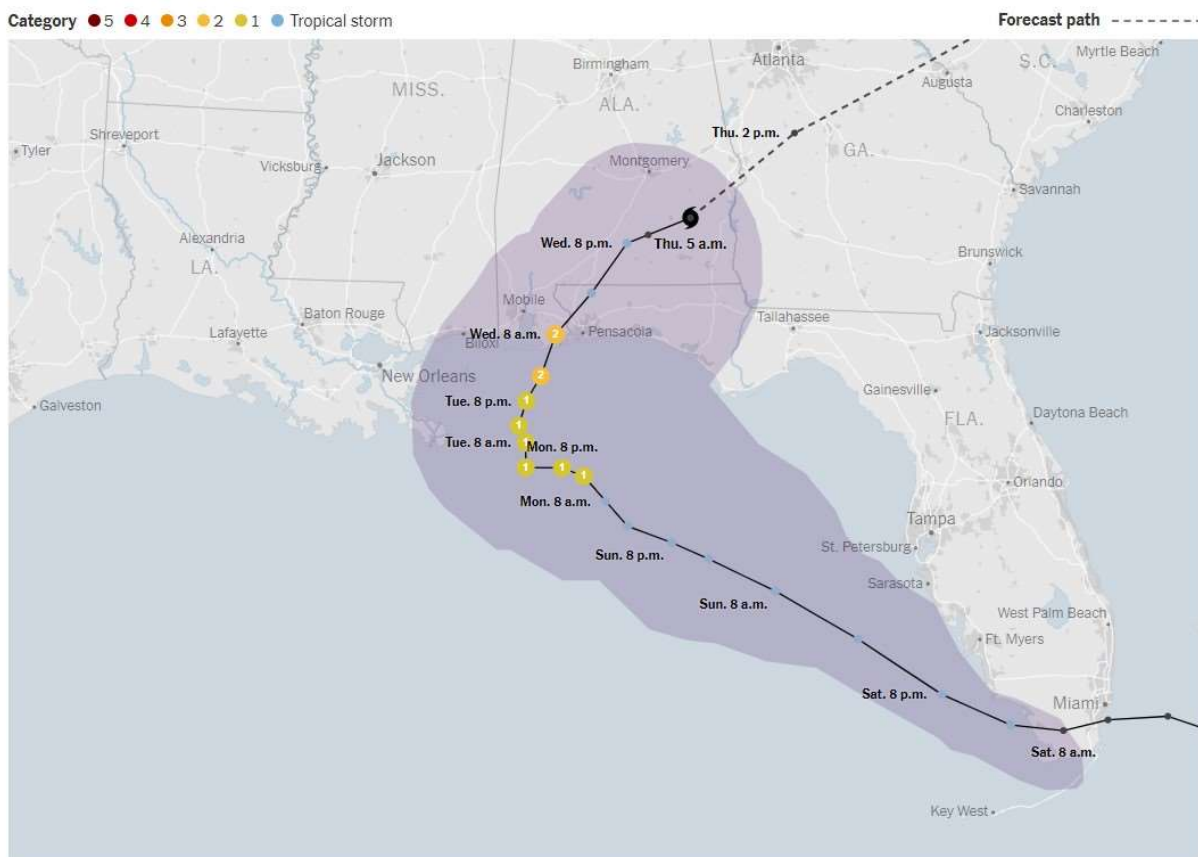




# The Alabama Forestry Commission Storm Damage Assessment Report Hurricane Sally – September 16, 2020

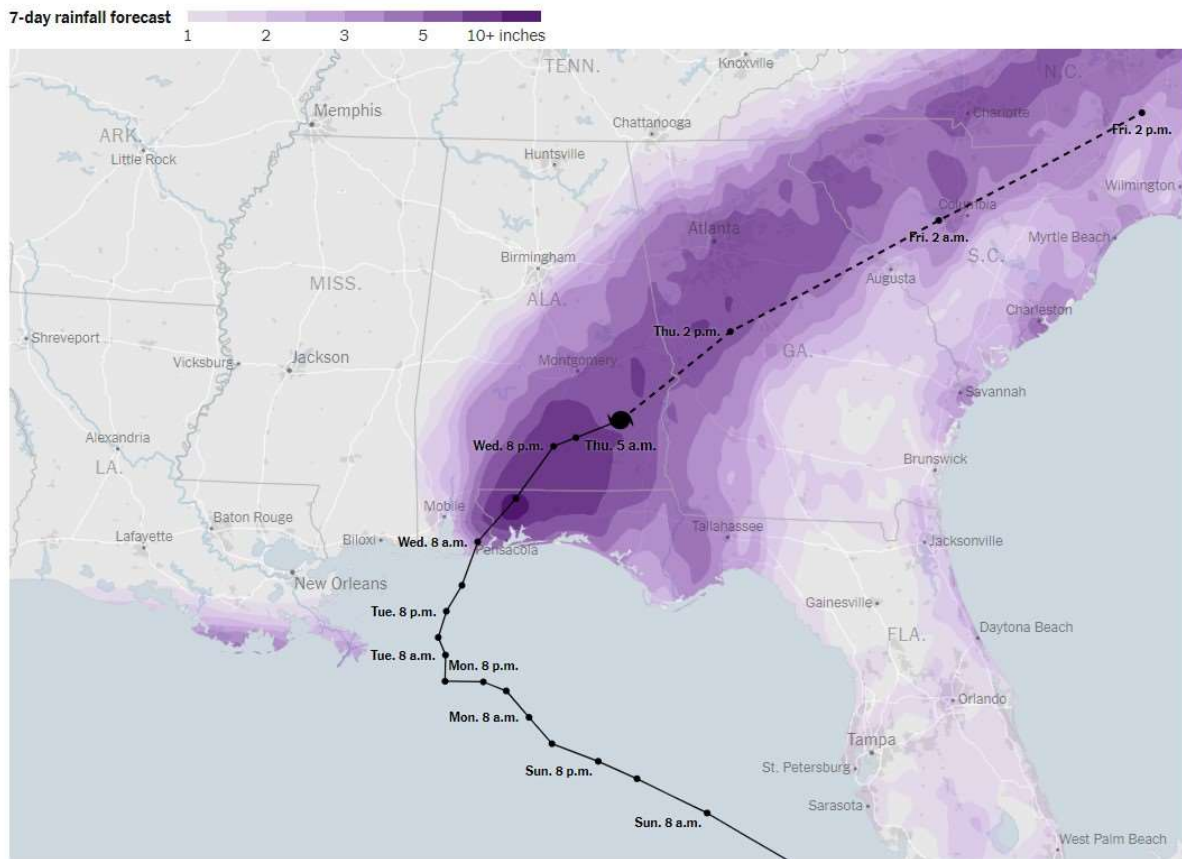
## **INTRODUCTION:**

Hurricane Sally entered the Gulf of Mexico from the southeast coast of Florida on Saturday, September 12, 2020. Initially a tropical depression, the storm soon increased speed as it traversed the warm waters of the Gulf. By Monday, September 14, the storm was classified as a Category 1 hurricane. The path of Hurricane Sally appeared to be heading toward the shores of southeast Louisiana until it suddenly shifted. By late Monday, the hurricane had turned eastward toward the coastline of Alabama. As the storm continued its new path in the warm waters of the Gulf on Tuesday, September 15, it increased to a Category 2 hurricane. Tumultuous rain pummeled the coastal areas of Alabama and Florida. On Wednesday, September 16, Hurricane Sally made landfall near Gulf Shores, Alabama as a Category 2 with wind speeds around 100 mph. Although structural damage to buildings and homes, broken limbs and fallen trees occurred, more serious destruction was caused by water efflux and extensive flooding. The worst of the storm damage occurred in areas around Orange Beach and Gulf Shores, Alabama, as well as Pensacola, Florida.



The New York Times, “Map: Hurricane Sally’s Path and Rainfall”  
[www.nytimes.com/interactive/2020/09/14/us/hurricane-sally-map.html](http://www.nytimes.com/interactive/2020/09/14/us/hurricane-sally-map.html)

Hurricane Sally quickly reduced speed over the hours as it crossed the Florida panhandle into southeast Alabama. The slow-moving system continued its path bringing drenching rain to affected areas. Within four hours, the hurricane saturated properties along the Gulf Coast that was equivalent to four months of rain. Some areas received as much as 12 inches of precipitation. As the storm system traveled northeast moving across southern Alabama, winds decreased to 35 mph and eventually down to 5 mph with occasional wind gusts of 50 mph. By Thursday morning, the storm was classified once again as a tropical depression. Severe wind damage from the storm was limited, but heavy precipitation from the slow-moving system became a concern. Inlying areas of Alabama experienced severe flooding, especially along rising rivers and overflowing streams with numerous homes, trees, and buildings inundated in water. By Thursday, September 17, southern Alabama and parts of western Florida were trying to recover from Hurricane Sally. Several hundred citizens had to be rescued from flooded neighborhoods and thousands of residents were without power. In Orange Beach, there was one fatality and one person missing.



The New York Times, “Map: Hurricane Sally’s Path and Rainfall”  
[www.nytimes.com/interactive/2020/09/14/us/hurricane-sally-map.html](https://www.nytimes.com/interactive/2020/09/14/us/hurricane-sally-map.html)

### **NOTES FROM REPORTS:**

From aerial assessments, ground surveys, employee conversations, and landowner statements, the amount of damage to properties from Hurricane Sally varied. Reports from Mobile, Escambia, and Covington counties mentioned considerable flooding but no widespread or continuous forest damage. Several individual trees were downed by the storm, not necessarily from strong winds, but because of saturated soils. Most of the downed trees were large ones in urban areas or on residential properties with poor or shallow root systems. Trees that fell because of strong winds seem to have fallen in the south or southwest direction. Urban areas such as Mobile, Orange Beach, Gulf Shores, and Foley, Alabama, received subtle and sporadic, but significant individual tree damage. There were also scattered broken limbs and fallen timber in rural stands that were recently thinned. Major flooding caused streets to become impassable and unsafe in several Alabama counties including Baldwin, Escambia, Conecuh, Covington, Coffee, Crenshaw, Pike, Dale, Barbour, and Geneva. Streams, rivers, creeks and ponds were rising and overflowing.

Reports of extensive and significant storm damage from Hurricane Sally resulted in severe conditions in Baldwin County. Most areas of the county had no power. Airports in southern Baldwin County were inoperable because of wind damage and considerable flooding. Right along the coast, several buildings were covered with blue tarps and numerous boats were mangled and tossed upon dry land. All crews planning to implement surveying or cleanup activities in the immediate area were advised to proceed with caution.



Picture: Water submerges a road along a commercial strip Thursday, September 17, 2020, in Gulf Shores, Alabama – one day after Hurricane Sally struck.

[Alabama and Florida Residents Struggle with Sally's Flooding as Remnants Threaten More Misery in Georgia and the Carolinas.](#) By Jason Hanna and Faith Karimi, CNN, September 17, 2020.

### **AERIAL SURVEY PROCEDURE:**

Florida and Alabama state forestry agencies collaboratively surveyed damaged areas from Hurricane Sally to complete a consistent assessment and reporting protocol across the two states. Florida Forest Service completed an aerial survey of the coastal counties of Escambia, Santa Rosa, and Okaloosa on Friday, September 18, 2020. The state surveyed for damaged trees from strong winds and severe flooding from saltwater intrusion. Even though forestland and structural damage were limited, Florida's surveying crew did observe areas inundated with water. Coastal properties were affected by storm surge that brought saltwater into the interior areas of the state.

The Alabama Forestry Commission conducted its aerial survey on Monday, September 21, 2020, with an agency pilot and two spotters. The southern part of Mobile County and the southern half of Baldwin County were surveyed using DMSM (Digital Mobile Sketch Mapping) technology. Although there were reports of several counties in Alabama impacted by large-scale flooding, this type of damage was not recorded during the aerial survey since most of the standing water had receded. The focus of the aerial assessment was on wind damage to forest stands. No significant forest damage was observed in Mobile County, but there was recordable damage in Baldwin County. Few, scattered tracts of land were destroyed by Hurricane Sally; most of them were pecan orchards or thinned pine stands. While significant damage and downed trees along fence rows and field-bordering tracts were noted, large stands of uninterrupted forest did not show serious interior damage.

Forested areas that received noticeable storm damage were documented and the information was saved into the iPadOS operating system. ArcGIS Collector application was used for recording data and disconnected editing. Spotters delineated damaged areas by drawing polygons that recorded the measurement in acres. For each polygon, the percentage of damaged forestland was also recorded. After mapping polygons of damaged properties, the data was synced and illustrated on the web-based map. On Tuesday, September 22, 2020, the data was corrected and analyzed. The Forest Inventory and Analysis (FIA) Coordinator reviewed the data to summarize the number of acres and to calculate timber damage and monetary loss. The GIS Specialist and the Forest Health Coordinator categorized the percent damage for each polygon and created a map of the assessed counties.



Picture by AFC: South Mobile County, Alabama, September 21, 2020



Picture by AFC: South Baldwin County, Alabama, September 21, 2020



Picture by AFC: Near Orange Beach, Alabama, September 21, 2020



Picture by AFC: Near Orange Beach, Alabama, September 21, 2020

**TIMBER VOLUME AND ESTIMATED LOSS:**

The Forest Inventory and Analysis Coordinator obtained volume estimates from current FIA data. The dollar value of the volume was obtained from TimberMart-South second quarter price report. The FIA Coordinator used the methodology of multiplying acres by the percent damage in the stand. The per-acre dollar amount was calculated using a combination of FIA county-level stand size data and TimberMart-South prices. The following information was produced: timber volume and estimated monetary loss. The Forest Health Coordinator reviewed the information and incorporated it into the Storm Damage Assessment Report. In summary, there were 2,440 forested acres damaged by Hurricane Sally with 79,175 tons of timber destroyed at a value of \$1,564,160.

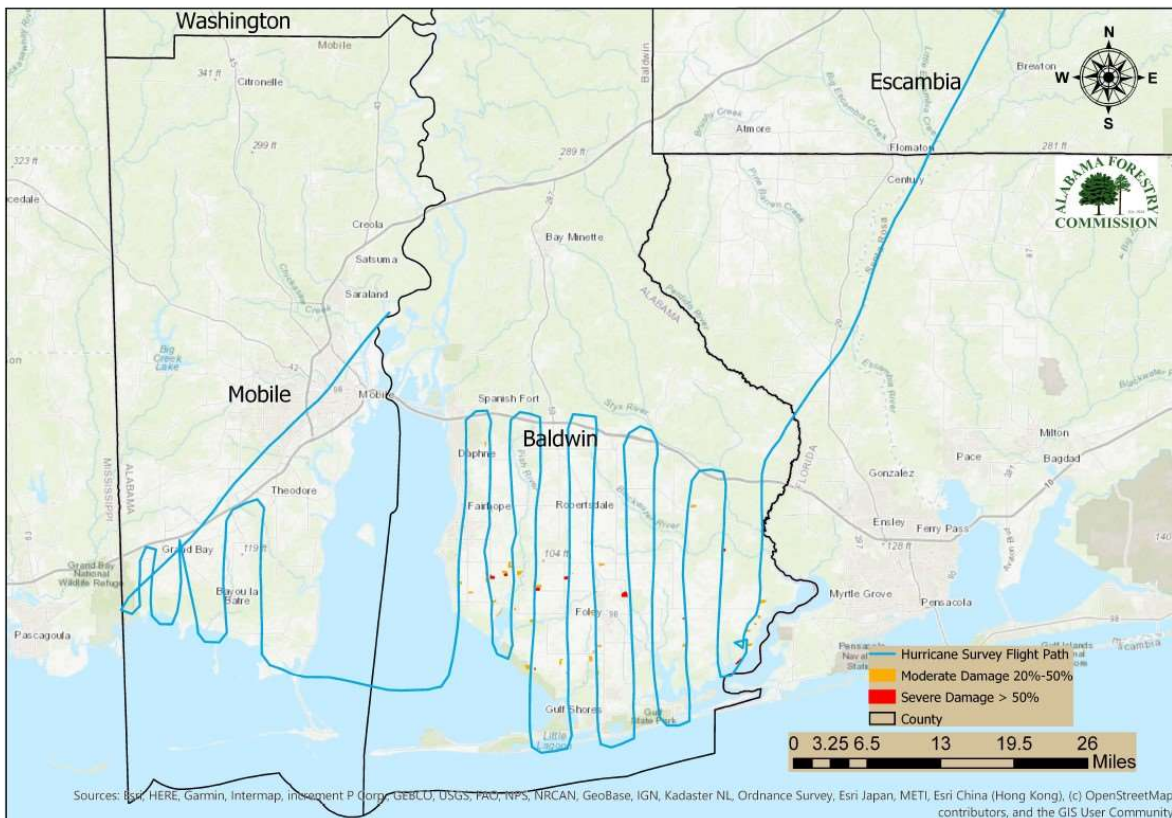
Baldwin County	Forestland (Acres)	Percent Forestland Damage	Volume Per Acre (tons)	Total Volume Damaged (tons)	Value Per Ton	Total Value Damage
Pine	898	54.33	52.57	25,648	\$17.30	\$443,745
Hardwood	1,281	50.00	64.78	41,491	\$21.39	\$887,578
Mixed (P/H)	261	73.26	62.95	12,036	\$19.35	\$232,837
<b>Total</b>	<b>2,440</b>	<b>---</b>	<b>---</b>	<b>79,175</b>	<b>---</b>	<b>\$1,564,160</b>

**Hurricane Sally Aerial Storm Damage Assessment**

Hurricane Sally - September 16, 2020

Alabama Forestry Commission

Aerial Survey - September 21, 2020



Sources: Bing, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# Hurricane Sally Aerial Storm Damage Assessment

Hurricane Sally - September 16, 2020

Alabama Forestry Commission

Aerial Survey - September 21, 2020



## **ADDITIONAL RESOURCES:**

Assessments of damaged properties and structures in southwest Alabama are still in progress. With subtle, but extensive damage to isolated and individual trees in urban areas, the ground survey is more meticulous. In October, the Urban Forest Strike Team will implement a rapid response and tree canopy analysis in Mobile and Foley, Alabama, for determining the extent of damage. Even though an ample number of residential landowners in the affected areas are concerned about cataclysmic tree injury and property damage, these concerns are limited. There are discussions, however, of potential harm and subsequent mortality to residual trees from rain inundation and saltwater intrusion. Certain tree species are intolerant of these environmental conditions. Over the next year, these affected trees will be monitored for prominent decline and forest pests. Another concern from natural resource specialists is the probability of extensive spread of nonnative invasive plant species. Hurricane winds can translocate plants and seeds long distances and introduce nonnative invasive species into new areas of the state. Also, sites directly disturbed by the storm or properties impacted by cleanup activities can encourage the establishment of nonnative invasive plants.



Landowners with questions about storm-damaged trees should contact a professional forester for proper assessment and management recommendations. The Alabama Forestry Commission has foresters that can give pertinent management options. Contacting an extension agent, a local urban forester or hiring a consultant forester are other alternatives for receiving management advice.

Several Alabama Forestry Commission employees contributed to this report – the FIA Coordinator, the agency pilots, the GIS Specialist, the Southeast Regional Staff, the Southwest Regional Staff, the Urban Forest Coordinator, the Public Information Manager, and many others in the agency. Thank you for your diligence and cooperation.

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Alabama and Florida Residents Struggle with Sally's Flooding as Remnants Threaten More Misery in Georgia and the Carolinas. By Jason Hanna and Faith Karimi, CNN, September 17, 2020.

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