

Hurricane Michael  
Florida Forest Service  
**Initial Value Estimate**  
**of**  
**Altered, Damaged or Destroyed Timber in Florida**  
10/19/2018

This preliminary value estimate of timber loss within the affected area of the Florida panhandle is based on the following assumptions:

Total estimated forest land area with catastrophic timber damage -	346,911 acres
Total estimated forest land area with severe timber damage -	1,042,939 acres
Total estimated forest land area with moderate timber damage -	1,418,795 acres
<b>Total estimated forest land area damaged</b>	<b>2,808,645 acres</b>
Timber damage percent in catastrophic damaged area -	95%
Timber damage percent in severe damaged area -	75%
Timber damage percent in moderate damaged area -	15%
Pine acres with catastrophic severe damage -	198,780 acres
Mixed upland acres with catastrophic damage -	86,034 acres
Bottomland acres with catastrophic damage -	62,097 acres
Pine acres with severe damage -	597,604 acres
Mixed upland acres with severe damage -	258,649 acres
Bottomland acres with severe damage -	186,686 acres
Pine acres with moderate damage -	812,969 acres
Mixed upland acres with moderate damage -	351,861 acres
Bottomland acres with moderate damage -	253,964 acres

**Methodology**

Following landfall of Hurricane Michael on October 10, 2018 maps were prepared using available wind speed data to calculate potential affected acres. These maps were further refined using available aerial imagery, aerial surveys and ground reconnaissance to determine areas that were catastrophically damaged, severely damaged and moderately damaged (Table 1). No estimation was conducted on minimally effected acres due to the lack of necessity for salvage harvesting.

Forest Inventory and Analysis (FIA) data for the affected counties was obtained. This data was used to obtain percent of forest land in each county, percent of forest type, and volume by forest type.

The affected acres in each county by damage type was then multiplied by the percent forest land in each county to determine the acres of affected forest land. The number of affected acres was then multiplied by the percent of forest type to obtain the number of affected acres in each forest type. The FIA volume data was used to calculate the average number of tons per acres for the forest types. The average tons per acres were multiplied by the number of acres to calculate the estimated number of tons.

Stumpage prices for timber products in the 3<sup>rd</sup> quarter of 2018 published by TimberMart-South were used to calculate the value of losses in each forest type. Specifically, Florida Region 2 average prices per ton were used in the calculations. The products used for pine acres included were pine pulpwood, pine chip-n-saw and pine

sawtimber. For mixed upland forests products included were pine pulpwood, pine chip-n-saw, pine sawtimber, hardwood pulpwood and mixed hardwood sawtimber. For bottomlands forests products included were hardwood pulpwood and mixed hardwood sawtimber.

The percent timber damage for each damage zone were based on visual observation and aerial imagery of the affected area. This percentage was multiplied by the number of tons per acre prior to the hurricane for each forest type to obtain the estimated number of affected tons. The estimated number of tons was then multiplied by the price per ton for each forest type to obtain an estimated value of the timber damaged (Table 2).

Estimated value of pine timber with catastrophic damage -	\$191,957,089
Estimated value of mixed upland timber with catastrophic damage -	\$ 49,930,972
Estimated value of bottomland timber with catastrophic damage -	\$ 78,828,506
Estimated value of pine timber with severe damage -	\$455,598,258
Estimated value of mixed upland timber with severe damage -	\$118,508,085
Estimated value of bottomland timber with severe damage -	\$187,094,377
Estimated value of pine timber with moderate damage -	\$123,957,506
Estimated value of mixed upland timber with moderate damage -	\$ 32,243,245
Estimated value of bottomland timber with moderate damage -	\$ 50,904,005
<b>Total Estimated Timber Damage -</b>	<b>\$1,289,022,044</b>

**Disclaimer:**

This preliminary value estimate of timber loss within the Hurricane Michael affected area is an estimate and should be accepted as such. Only through an actual statistical based intense aerial and ground survey can a more accurate timber volume and corresponding timber value figure be determined.

**Potential Additional Costs or Loss of Value:**

The above figures account only for immediate and direct impacts of Hurricane Michael on timber resources in Florida. Previous experience and technical forestry knowledge indicates that there will also be additional indirect and long-term impacts and value losses associated with Hurricane Michael.

**Listed below are just of few of the additional future potential costs and impacts to the forest landowners and forest industry in Florida.**

- **Significant debris removal costs for timber that cannot be salvaged.**
- **Reforestation costs that could be as high as 240 million dollars on pine stands alone in the catastrophic and severe damaged areas.**
- **Loss of additional timber because of pine beetle outbreaks or wind damage and reduced value of remaining timber because of poor form and wind sweep.**
- **Significantly increased threat and cost to suppress wildfires in areas with upwards to 100 tons per acre of forest fuels on the ground.**
- **Potential loss or the reduction of jobs and forest industry in the heavily impacted area because of a loss of forest products for an estimated 15 to 20 years into the future.**