2017 White Paper on The Ash Disaster in Kentucky:

Economic and Landowner Impacts of Losing Kentucky's Ash Trees to the Emerald Ash Borer[1]

Ash trees are found in each of Kentucky's 120 counties, but their future is uncertain at best. In 2009, the emerald ash borer (EAB) was first discovered in Kentucky and since then it has aggressively spread south and westward killing millions of ash trees. The EAB is expected to impact every landowner with ash as a component in their woodlands. Because ash is prevalent throughout Kentucky, every county will be impacted by its loss and it will negatively impact the $14 billion forest industry in Kentucky. This white paper provides statewide and individual landowner economic loss data using the most recent forest, economic and industry data[2] available.

*The **emerald ash borer (EAB)** is a ½ inch metallic green beetle introduced to the U.S. from Asia in 2002, arriving in Kentucky in 2009. It spreads naturally and with the assistance of humans (mainly from moving infested firewood). EAB kills ash by carving galleries under the bark which prevents the tree from functioning normally (essentially girdling the tree). All ash species in Kentucky are at risk.*

Photo courtesy: Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org

Statewide Economic Loss

The most recent data (2015) shows the net volume of standing ash sawtimber was nearly 3.3 billion board feet. This volume represents 4.3 percent of all sawtimber in Kentucky compared to 4.8 percent in 2009. In 2015, ash harvest declined to less than 1/2 of what was harvested in 2009. This is not related to demand or pricing, which has increased, but rather to loss of timber volume from EAB mortality. This has resulted in significant economic loss for landowners and the state as a whole of over $94 million annually (Figure 1). Cabinet and flooring manufacturers in Kentucky will be especially impacted by EAB. The map (on the following page) shows that ash is still present in many counties in the state, indicating the potential economic loss to landowners as EAB continues to spread.

Ash Mortality

EAB is having a devastating impact on ash trees in Kentucky. Table 1 shows that the number of dead ash trees has drastically increased by over 6.59 million from 2009 to 2015 and the volume of standing dead ash trees has increased more than fourfold in just seven years. Over 76 percent of all trees (at least 5 inches in diameter) killed by insects are ash — EAB is the primary cause.

Figure 1. Cumulative annual economic loss (in millions) to Kentucky's woodland owners and forest industry due to EAB induced ash mortality.

[1]This white paper authored by Dr. Jeff Stringer, Mr. Billy Thomas, and Mr. Chad Niman, University of Kentucky, Department of Forestry and Natural Resources, was requested by the Kentucky Woodland Owners Association. [2]US Forest Service Forest Inventory and Analysis data from 2009 and 2015, 2016 Kentucky Forestry Economic Contribution Report, and delivered log pricing from the Kentucky Division of Forestry.

Timber Value Loss

Currently, Kentucky's landowners are losing more than $4.4 million annually due to ash mortality. Table 2 highlights the loss to individual landowners based on the percentage of ash in their woodland. Losses can be more than $500 an acre; however, the impact to landowners will be based upon the amount of ash in their woodlands. For an average timber harvest of 35 acres in central and northern Kentucky (where EAB first occurred) this loss ranges between $2,494 and $18,705 from a single harvest and does not include the long-term loss in future harvests.

Volume of Ash Sawtimber (Int. 1/4") on Forest Land by County in Kentucky based on 2015 USFS FIA Data

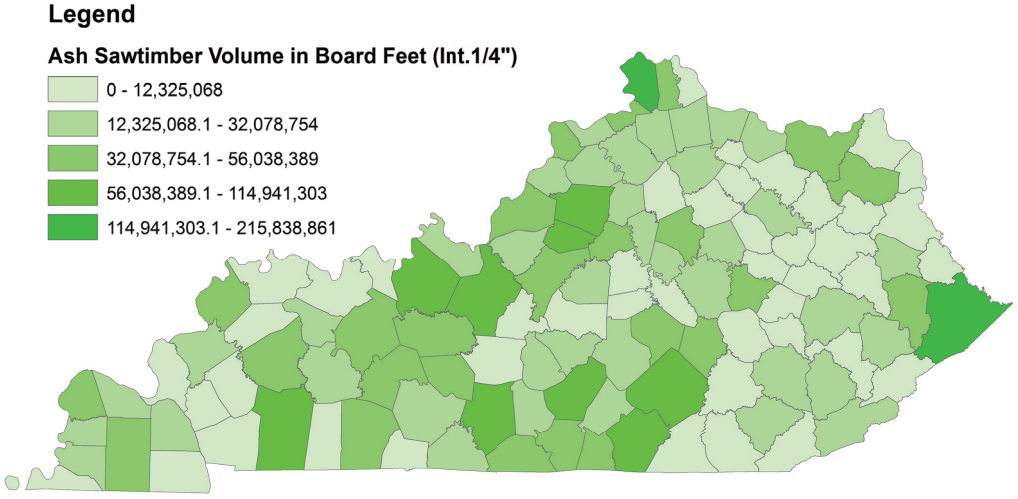

Table 1. Number and Volume of Standing-dead Trees (at least 5 inches in diameter) on Forest Land in Kentucky

	2009	*2015*	*% Change*
# of Dead Ash Trees	3,951,388	10,542,221	167%
% of Dead Trees that are Ash	3.6%	8.2%	128%
Volume of Dead Ash Trees (Board Feet)	25,333,805	117,582,052	364%
% of Volume of Dead Trees that are Ash	2.8%	12.1%	332%

Additional Impacts and Costs

In addition to the direct loss of timber revenues outlined above, woodland owners will likely be faced with additional management costs to deal with losing ash. These include costs for eradicating invasive species that can permeate the understories, salvage costs to remove dead ash trees posing a hazard, and loss of woodland productivity, growth and value over the short and mid-term. Dealing with these issues can be costly for landowners, for example, the Natural Resources Conservation Service cost-share rate for brush management can be over $445 per acre over a three-year period which does not cover the full treatment cost. There will also be the potential for numerous ecological and ecosystem impacts as well as costs to counties and cities having to deal with removal of dead trees in rights-of-way and local city and county lands. The deadly conditions created by more than 10 million standing dead ash trees also makes Kentucky's woodlands less attractive for visitation, recreation, and more dangerous to work in. It is obvious that the EAB represents a very serious threat to Kentucky's woodlands, forest industry, and landowners. The ash disaster is ongoing, and like natural disasters, it is and will continue to have significant negative impacts in Kentucky. Unlike other natural disasters the full repercussions of the ash disaster remain unknown.

Scenes like this will become increasingly common as EAB continues to spread.
Photo courtesy: Leah Bauer, USDA Forest Service Northern Research Station, Bugwood.org

Table 2. Average Landowner $ Loss Based on % of Ash in Their Woods per Acre

Percent of Ash in Woodland	Lost Timber Sale Revenue
10%	$71.26
25%	$178.15
50%	$356.30
75%	$534.45

Notes: Average bdft per acre in KY 3,563 x % Ash=bdft loss per acre x $.20 average statewide stumpage per bdft=average loss to landowner based on % ash.

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