

Monitoring and Managing Ash (MaMA)

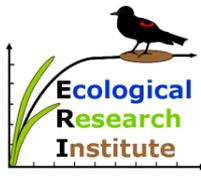
- Launched by ERI in 2017
- Aims at long-term ash conservation by integrating:
 - Citizen science
 - Management guidance



See www.MonitoringAsh.org



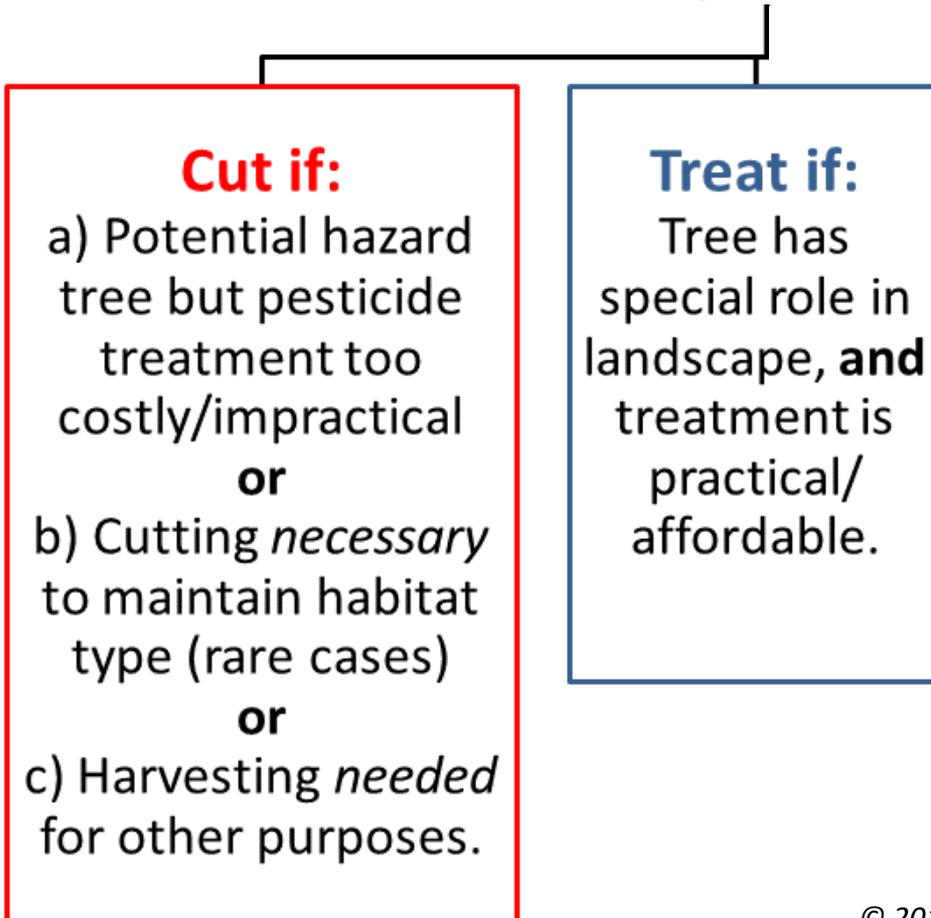
Monitoring and Managing Ash



Management decisions can either hinder or facilitate finding lingering ash

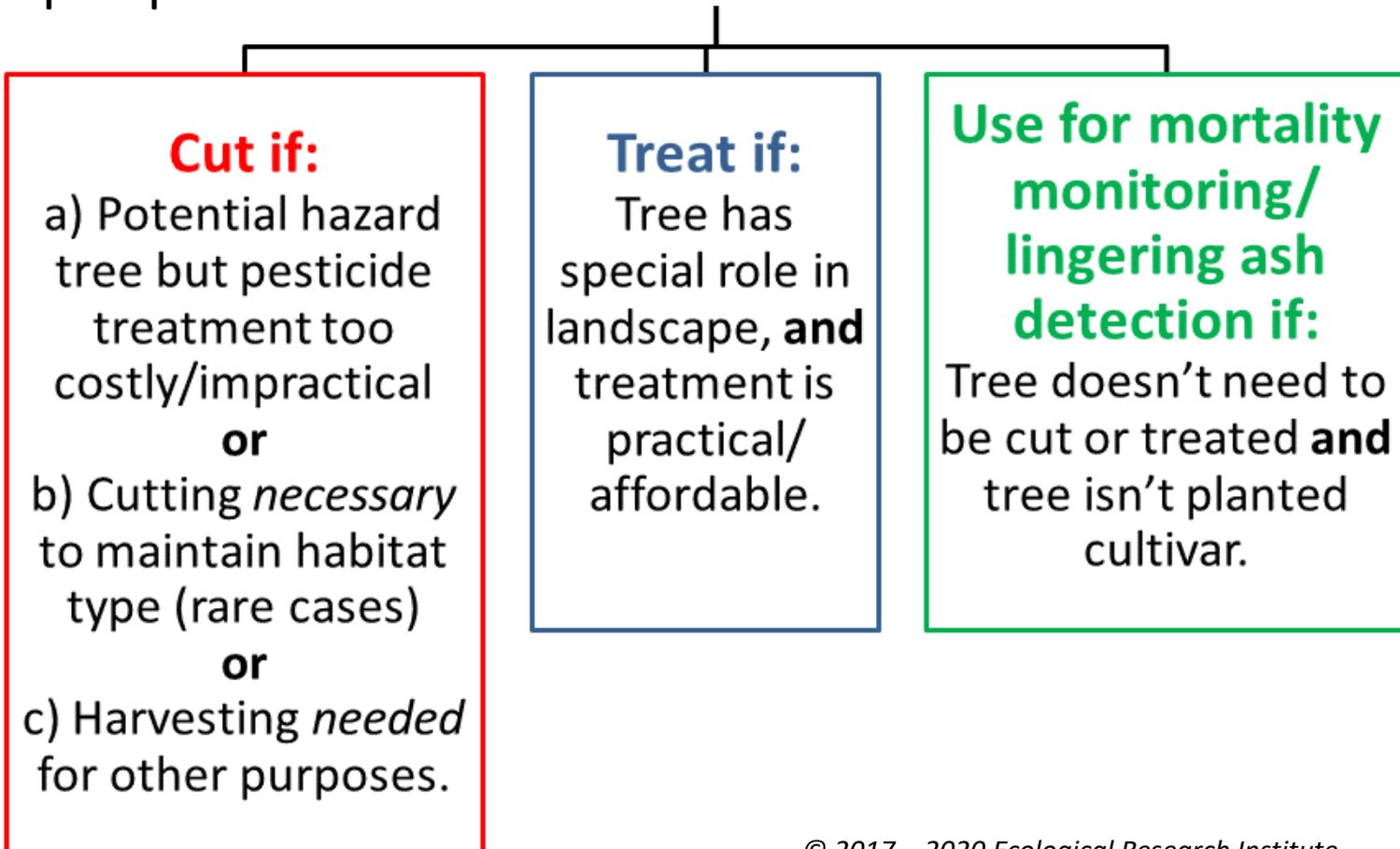
Management choices for trees

Decision tree *without* long-term conservation perspective



Management choices for trees

Decision tree *including* long-term conservation perspective



PSA: Don't needlessly cut healthy ash



- Although cutting ash for reasons mentioned above (hazard tree elimination, harvesting, etc.) is sensible,

Don't needlessly cut ash, because

... enough healthy ash need to be left standing to reasonably enable finding lingering ash and

... reducing ash presence generally *increases* local mortality (Knight et al. 2013), increases spread rate (Mercader et al. 2011) and promotes large-scale plant invasion, and

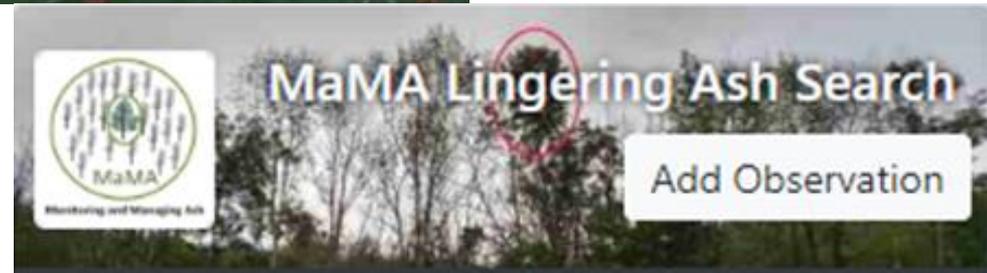
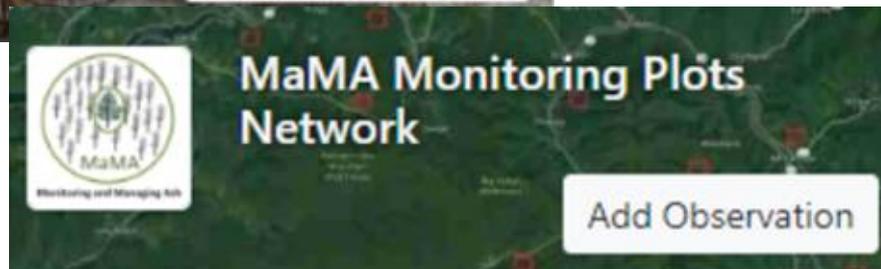
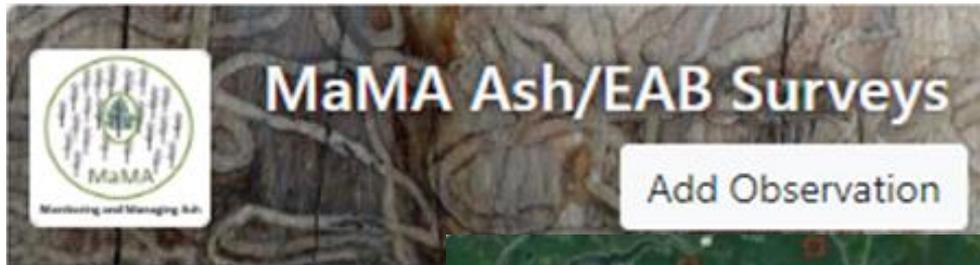


Tasks for each stage of EAB infestation

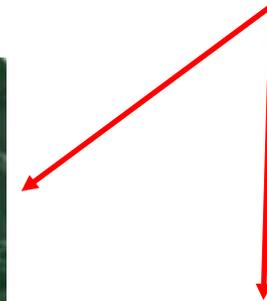


Pre-infestation EAB not yet present	Early infestation Some EAB signs; some dead ash along w/ healthy and declining trees	Mid-infestation Widespread EAB signs; higher ash mortality; few healthy trees	Late infestation Ash largely dead, with remainder very unhealthy except for <i>very rare lingering ash</i>
Assess ash presence/importance			
Decide which trees to be treated vs. cut vs. left for mortality monitoring/lingering ash detection			
Identify sites where mitigation needed (for invasive plants, hydrological changes, etc.)			
Document infestation onset			
Establish/use mortality monitoring plots; detect when thresholds reached			
		Record, report, protect potential lingering ash	
		Find/mark lingering ash , report for possible scion collection	

Includes three citizen-science projects on [Anecdata.org](https://www.anecdata.org) platform



These two designed to help find lingering ash



MaMA Mortality Monitoring Plots Network

- Already includes 58 plots in four states
- Documents EAB-induced mortality rates
- Indicates where/when to search for lingering ash
- Provides focal points for outreach efforts



MaMA Monitoring Plot Network requirements

- a) ERI modified Knight et al. (2014) protocols to make more accessible while retaining rigor.
- b) Plots need to have ≥ 40 adult ash trees ($\geq 4''$ dbh) spread over 0.5 to 10 acres
- c) Plots can be any shape
- d) Trees must be native, naturally occurring ash
- e) Trees must not be treated w/ insecticide
- f) Live trees cannot be cut down until relevant mortality threshold reached
- g) *Plot set-up takes $\leq \frac{1}{2}$ day; annual data collection ≤ 2 hrs.*



Example of how MaMA AMPs fit into overall framework

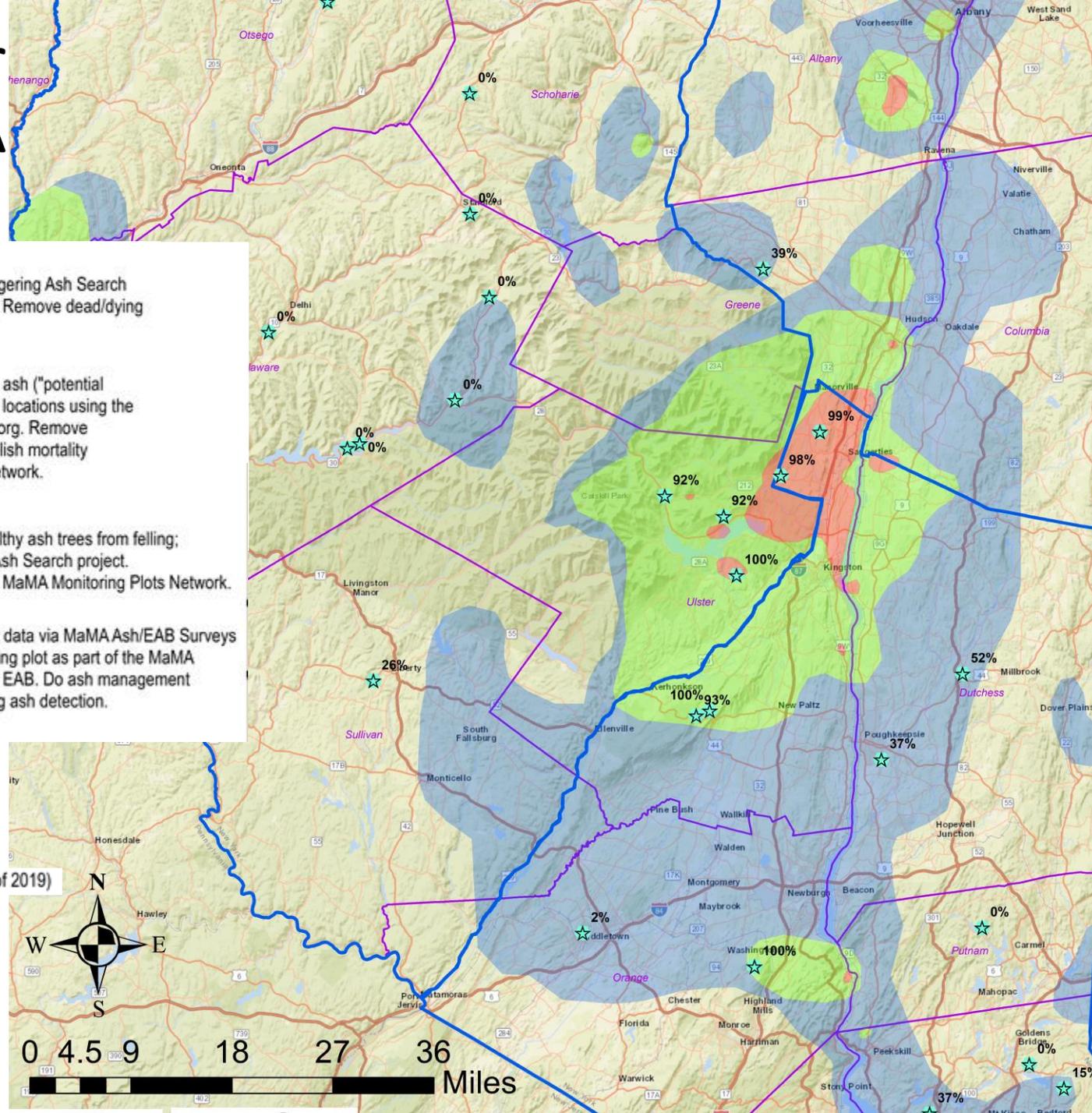


In the Catskill and adjacent Lower Hudson regions of NY:

- 17 training workshops, attended by representatives of about 70 institutions, plus private individuals.
- Attendees learned all three MaMA citizen-science projects, how to incorporate lingering ash into mgmt.
- Has yielded 33 plots in these two regions
- We use data from these plots, our Ash/EAB Surveys project, NY DEC and [iMapInvasives](#) to create a regional ***MaMA Action Map***.



Catskills/Lower Hudson MaMA Action Map



EAB first detected 2010-2012

Actions: Search for lingering ash, using MaMA Lingering Ash Search project on Aneccdata.org; protect them from felling. Remove dead/dying ash near potential lingering ash.

EAB first detected 2013-2014

Actions: Protect healthy, untreated, mature native ash ("potential lingering ash") in this area from felling; report their locations using the MaMA Lingering Ash Search project on Aneccdata.org. Remove dead/dying ash near potential lingering ash. Establish mortality monitoring plots for the MaMA Monitoring Plots Network.

EAB first detected 2015-2018

Actions: At sites with $\geq 50\%$ mortality, protect healthy ash trees from felling; report their locations using the MaMA Lingering Ash Search project. Establish mortality monitoring plots as part of the MaMA Monitoring Plots Network.

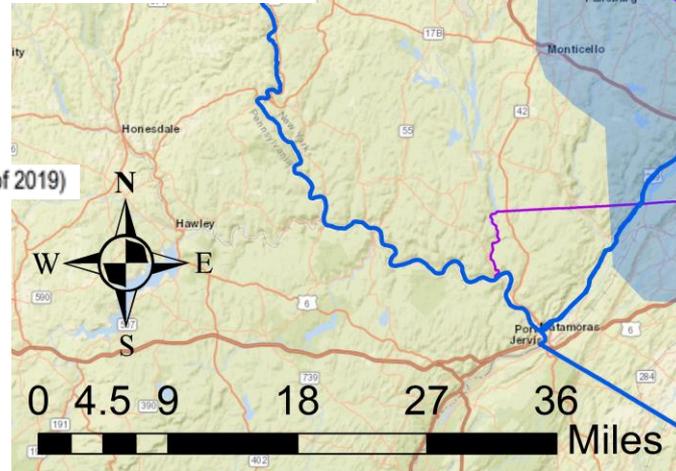
Areas with no infestation yet detected

Actions: Inspect ash for EAB evidence and report data via MaMA Ash/EAB Surveys project. Consider establishing a mortality monitoring plot as part of the MaMA Monitoring Plots Network, especially if you detect EAB. Do ash management planning, including setting aside trees for lingering ash detection. Do invasive plant mitigation if appropriate.

PRISM boundaries

County lines

MaMA ash mortality monitoring plot (showing percentage of adult ash trees killed by EAB as of 2019)





- In areas indicated by MaMA Action Maps as ready to be searched for lingering ash, such trees can be reported via MaMA Lingerin Ash Search project.
- This project can also be used to report “potential lingering ash” = healthy trees where most of the trees are dead or have significant die-back (so canopy classes 4 or 5).

These trees should be reported and should be protected from cutting as long as they’re healthy.

- We’ll follow up when area ready for lingering ash search, to see if they’re still healthy.

Marking potential lingering ash

Potential lingering ash in area that reached 93% mortality in 2019



Protecting it is crucial



How can MaMA help you take action to help conserve ash?

- Visit www.MonitoringAsh.org to see the resources and information offered
- For the MaMA Monitoring Plots Network, you need to attend a training session by ERI or someone who's been trained by us – contact us if interested
- Visit Anecdata.org or download Anecdata app, search for MaMA's citizen-science projects
- Integrate the search for lingering ash into your management strategy
- Contact us at Outreach@MonitoringAsh.org

Take-home messages

- Lingering ash offer great hope due to the work of Dr. Koch, Dr. Knight, and their colleagues.
- Finding lingering ash depends on broad participation to gather the necessary data, *and* management that enables lingering ash detection.

Thank you

- **Dr. Kathleen Knight and Dr. Jennifer Koch, USFS**
- **Everyone responsible for Urban Forest Connections**
- **Dr. Radka Wildova, ERI**
- **Our partners (list growing rapidly):**

Bedford Audubon

Cary Institute of Ecosystem Studies

Catskill Center

Catskill Forest Association

Cornell Cooperative Extension Delaware County

Cornell Cooperative Extension Dutchess County

Cornell Cooperative Extension Greene & Columbia County

Cornell Cooperative Extension Oneida County

Cornell Cooperative Extension Orange County

Cornell Cooperative Extension Schoharie & Otsego County

Cornell Cooperative Extension Sullivan County

Cornell Cooperative Extension Ulster County

Cornell University

Green Chimneys

Michael Kudish Natural History Preserve

Mohawk Council of Akwesasne

Mohonk Preserve

New Paltz High School

Catskill Regional Invasive Species Partnership (CRISP)

Finger Lakes PRISM

Lower Hudson PRISM



St. Lawrence Eastern Lake Ontario PRISM (SLELO)

**New York State Parks, Recreation & Historic
Preservation**

NYC Dept. of Environmental Protection

NYS DEC Forest Health

NYS Dept. of Environmental Conservation

Otsego County Conservation Association

SUNY Ulster

Teatown Lake Reservation

The Fresh Air Fund

The Morton Arboretum

The Nature Conservancy

The Watershed Institute

Tug Hill Tomorrow Land Trust

University of Illinois at Urbana-Champaign

US Forest Service

Vassar College

Vermont Land Trust

Watershed Agricultural Council

Westchester County Parks