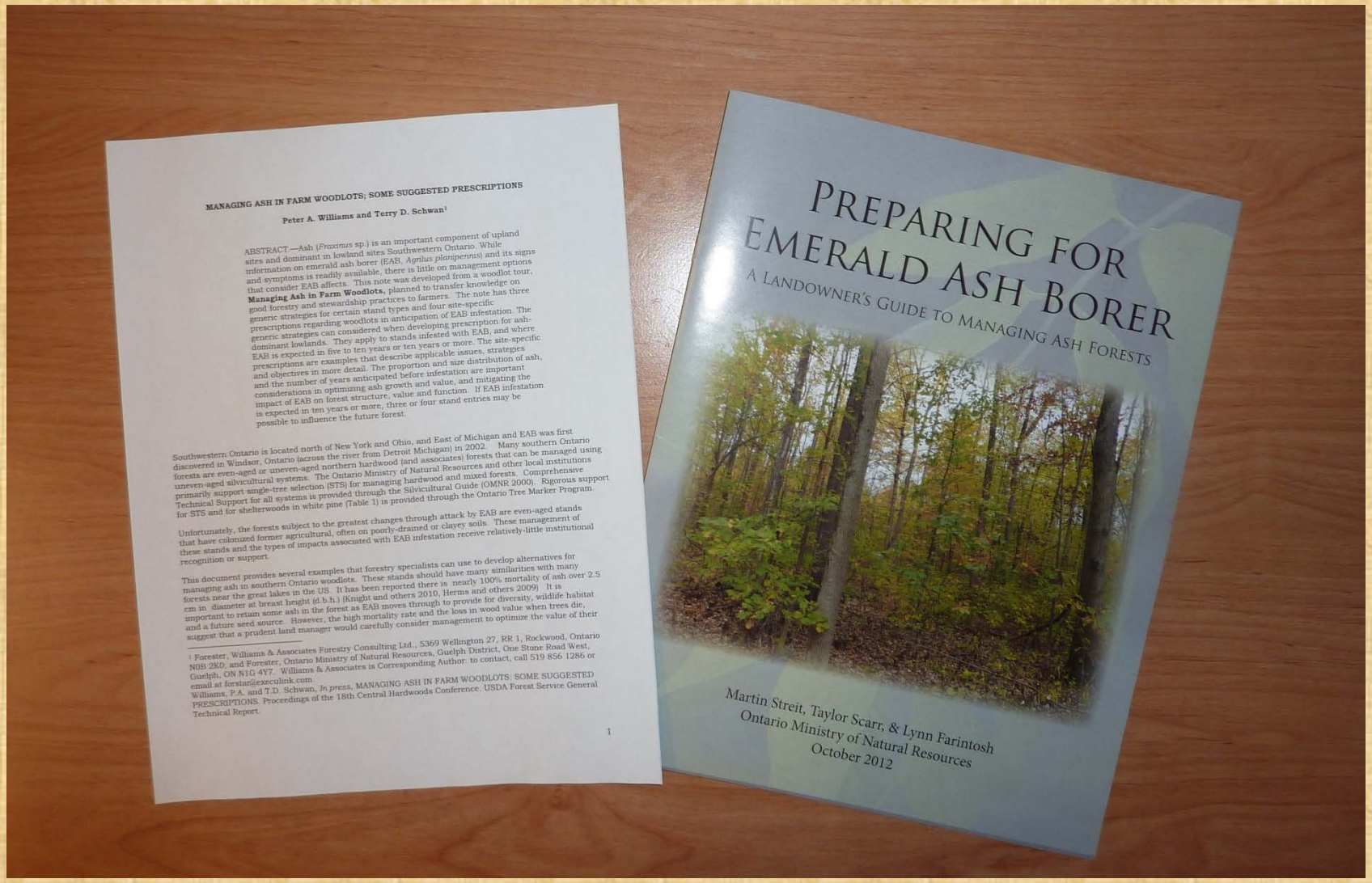
Prescriptions for Managing Ash in Woodlots with Emerald Ash Borer

Terry Schwan, RPF
Peter Williams, RPF

Williams & Associates

Kingston, March, 2014

Williams
& Associates



MANAGING ASH IN FARM WOODLOTS; SOME SUGGESTED PRESCRIPTIONS

Peter A. Williams and Terry D. Schwan[1]

ABSTRACT.—Ash (*Fraxinus* sp.) is an important component of upland sites and dominant in lowland sites Southwestern Ontario. While information on emerald ash borer (EAB, *Agrilus planipennis*) and its signs and symptoms is readily available, there is little on management options that consider EAB affects. This note was developed from a woodlot tour, **Managing Ash in Farm Woodlots,** planned to transfer knowledge on good forestry and stewardship practices to farmers. The note has three generic strategies for certain stand types and four site-specific prescriptions regarding woodlots in anticipation of EAB infestation. The generic strategies can considered when developing prescription for ash-dominant lowlands. They apply to stands infested with EAB, and where EAB is expected in five to ten years or ten years or more. The site-specific prescriptions are examples that describe applicable issues, strategies and objectives in more detail. The proportion and size distribution of ash, and the number of years anticipated before infestation are important considerations in optimizing ash growth and value, and mitigating the impact of EAB on forest structure, value and function. If EAB infestation is expected in ten years or more, three or four stand entries may be possible to influence the future forest.

Southwestern Ontario is located north of New York and Ohio, and East of Michigan and EAB was first discovered in Windsor, Ontario (across the river from Detroit Michigan) in 2002. Many southern Ontario forests are even-aged or uneven-aged northern hardwood (and associates) forests that can be managed using primarily single-tree selection (STS) for managing hardwood and mixed forests. Comprehensive Technical Support for all systems is provided through the Silvicultural Guide (OMNR 2000). Rigorous support for STS and for shelterwoods in white pine (Table 1) is provided through the Ontario Tree Marker Program.

Unfortunately, the forests subject to the greatest changes through attack by EAB are even-aged stands that have colonized former agricultural, often on poorly-drained or clayey soils. These management of these stands and the types of impacts associated with EAB infestation receive relatively-little institutional recognition or support.

This document provides several examples that forestry specialists can use to develop alternatives for managing ash in southern Ontario woodlots. These stands should have many similarities with many forests near the great lakes in the US. It has been reported there is nearly 100% mortality of ash over 2.5 cm in diameter at breast height (d.b.h.) (Knight and others 2010, Herms and others 2009) It is important to retain some ash in the forest as EAB moves through to provide for diversity, wildlife habitat and a future seed source. However, the high mortality rate and the loss in wood value when trees die, suggest that a prudent land manager would carefully consider management to optimize the value of their

1 Forester, Williams & Associates Forestry Consulting Ltd., 5369 Wellington 27, RR 1, Rockwood, Ontario N0B 2K0; and Forester, Ontario Ministry of Natural Resources, Guelph District, One Stone Road West, Guelph, ON N1G 4Y7. Williams & Associates is Corresponding Author: to contact, call 519 856 1286 or email at forstar@execulink.com.

Williams, P.A. and T.D. Schwan, *In press*, MANAGING ASH IN FARM WOODLOTS: SOME SUGGESTED PRESCRIPTIONS. Proceedings of the 18th Central Hardwoods Conference. USDA Forest Service General Technical Report.

PREPARING FOR EMERALD ASH BORER

A LANDOWNER'S GUIDE TO MANAGING ASH FORESTS

Martin Streit, Taylor Scarr, & Lynn Farintosh
Ontario Ministry of Natural Resources
October 2012

Williams & Associates

Ash *Fraxinus*

- Three main species
- Intermediate to intolerant

- Excellent growth potential
- Very good wood quality

Williams & Associates

Ash *Fraxinus*

- Green/white aggressive colonizers

- Even-aged stands
- Excellent for planting in open
- Health problems - dieback

Williams & Associates

Early Successional Forest

- Most common species are green and black ash, white elm, poplar, white cedar and red/silver maple

- NOT A PERMANENT CONDITION

Williams & Associates

Two things we can do

Evaluate the risk to the forest.

Implement strategies to diversify the forest.

Williams & Associates

Evaluate the risk

- Location of EAB - the killing front
- Look for signs and symptoms
- Ash proportion of the stand and size class
- The owner’s interest and resources
- Contractor/Market availability;
  - Determine potential number of entries
  - Affect silvicultural/operational strategy

Williams & Associates

Three general scenarios

- Scenario 1: EAB is found in the woodlot
- Scenario 2: EAB is in the County (a quarantine area) or nearby. (expected infestation in 5 to 10 years)
- Scenario 3: EAB may affect the woodlot in more than 10 years.

Williams & Associates

Signs and Symptoms of EAB

Williams & Associates

More Symptoms

Candace Karandiuk

Williams & Associates

Evaluate the risk

- Location of EAB - the killing front
- Look for signs and symptoms
- Proportion of ash in the stand and size class
- The owner's interest and resources
- Contractor/Market availability;
  - Determine potential number of entries
  - Affect silvicultural/operational strategy

Williams & Associates

Ash Management – proportion in stand

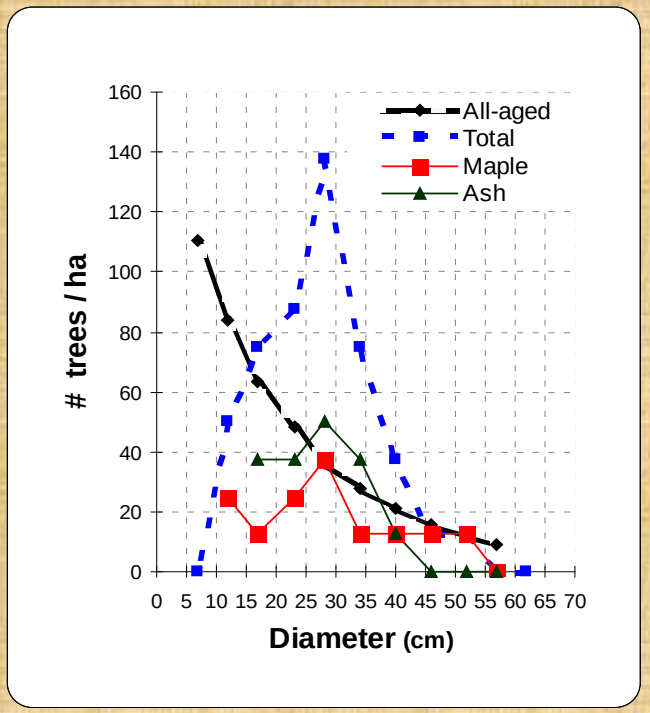
- <30% ash; no problem
- >30% ash; diverse stand - no problem
- >60% ash; good variable regen - no problem

- >60% ash; no or limited regen – PROBLEM

More on size class coming

Williams & Associates

upland tolerant hardwood type



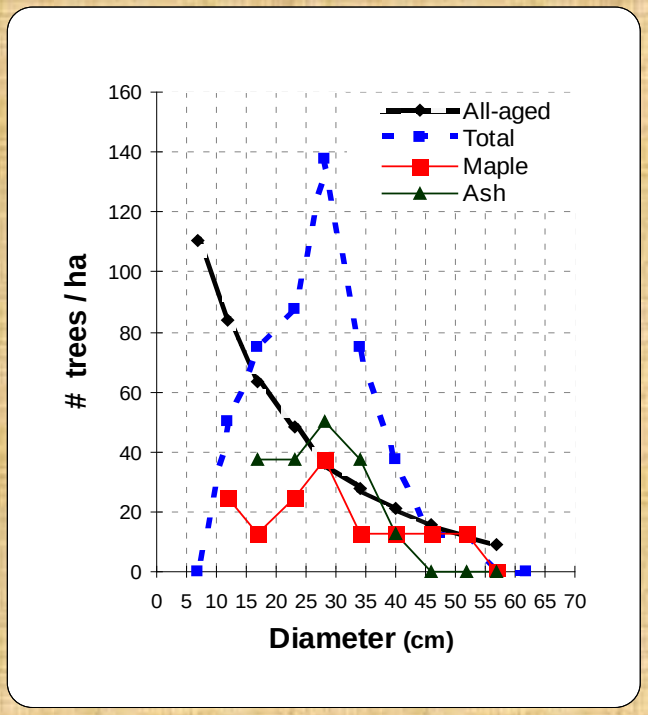
Initial BA - 32 m^2/ha
Residual - 22 m^2/ha

Sugar maple 37%
White ash 34%
Hickory 12%
Other 17%

Age ~95

Williams & Associates

upland tolerant hardwood type



Single tree selection

Generally mark to reduce felling damage to remove UGS, to improve health and value

- Ash < than 30% of stand
- Harvest larger ash >45 cm
- Release high-quality residuals
- Mark ash < 30 cm where operationally convenient
- Release clumps of other species

- Keep high-quality trees all species in 30-48 cm class

Williams & Associates

Evaluate the risk to your forest

- Location of EAB - the killing front
- Look for signs and symptoms
- Ash proportion of the stand and its size class(es)
- The owner's interest and resources
- Contractor/Market availability;
  - Determine potential number of entries
  - Affect silvicultural/operational strategy

Williams & Associates

Ash Management Strategies - General

- Owners objectives
  (Economics, Health, Aesthetics, Recreation)
- One or more stand entries
- Time frame of infestation
- Encourage establishment and development of desirable species
- Consider underplanting

Williams & Associates

CAUTION: In ash-dominated stands overharvest may lead to:

- **An increase in undesirable or exotic species,**
- **A conversion to non-forest cover and/or**
- **Elevated water tables, increased risk of windthrow.**

Martin Streit

Williams & Associates

Scenario 1 - EAB found in woodlot

- Expect that most ash will be killed
- For ash > 30% of BA
- Salvage most 48+ cm trees and as much fuelwood as operationally convenient
- Basal area reduction should not exceed 40%
- Retain some healthy 30 - 48 cm ash

Williams & Associates

Williams & Associates

Scenario 2 – Expected infestation in 5 – 10 years

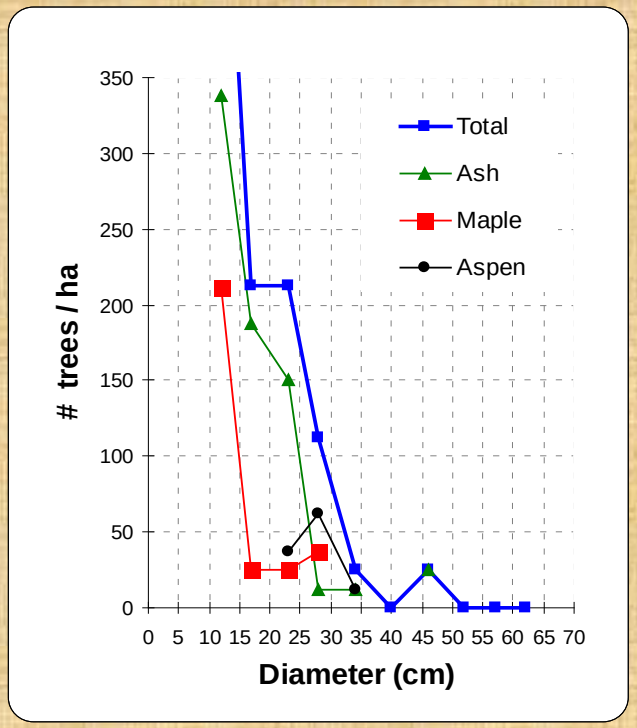
- Time for 2 entries
- Ash marked to encourage non-ash species
- Capture value of large trees
- Retain vigorous quality medium-sized trees
- Where regen is lacking, consider underplanting
- When ash <30% density, one entry
- When >30%, time before infestation is important

Williams & Associates

lowland ash polewood type

Williams & Associates

lowland ash polewood type



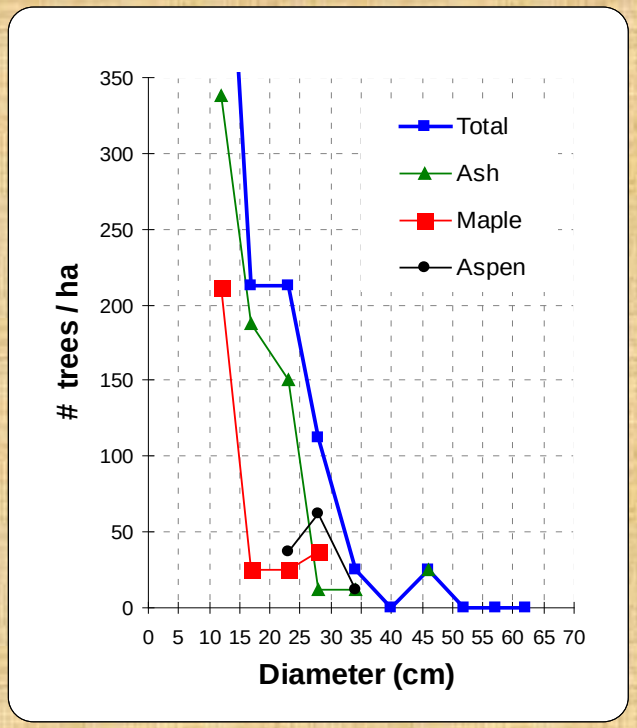
Initial BA - 34 m2/ha
Residual - 23 m2/ha

Ash	60 %
Soft maple	20%
Aspen	20%

Age ~40

Williams & Associates

lowland ash polewood type



Shelterwood approach

•Heavy thinning of ash (30%+) to encourage soft maple and regeneration of other species

•Remove poor-quality and suppressed ash

•Mark 30 to 40% of BA

•Retain and release vigourous trees between 30 to 48 cm

Williams & Associates

Natural bottomland ash

Metro Road Tract: bottomland ash

- 80% green ash
- Short term objective: diversify stand with bottomland hardwood
- Implement group selection across 20% of compartment
- Underplant and seed
- System mimics natural small-scale disturbance
- Long term objective: establish research area to monitor effects of management vs. no-management on successional change in bottomland ash forests
- Buckthorn control
- Minimum 2 cords of logs left for seed bed and habitat

Scenario 3 - EAB may effect woodlot in more than 10 years

- Time for 2 – 4 entries, 5 – 10 years part
- 1st entry reduces poor-quality ash and other species
- Reduce larger ash, retain some to facilitate later entries
- Retain vigourous, medium ash trees to get bigger
- Mark ash to release non-ash species
- Reduce BA by 30%
- With non-ash advance growth, heavily thin ash
- Consider underplanting where little other regen

Williams & Associates

Managing ash forests enhancing tree species diversity

- Thin stands to remove ash component
- Remove defective or diseased trees
- Follow basal area guidelines (stocking)
- Promote regeneration of non-ash tree species
- Retain non-ash species
- Retain trees with significant wildlife value (e.g., cavity trees)

Williams & Associates

Good Forestry practices

- Forest management plan
- Prescription and tree marking by a forest professional
- Cut in dry or frozen conditions to avoid rutting lowland
- Mark to avoid damaging high quality residual stems

- Dead trees can be salvaged for several years
- Discourage wood movement to less infested areas

Williams & Associates

Fencerows and Riparian Areas:

- **Critical for habitat and aesthetic values**
- **In riparian areas, dead and fallen trees also contribute to habitat values**
- **Retain non-ash trees**
- **Ash Replacement Strategy**
  Consider Underplanting


Martin Streit


Martin Streit

Williams & Associates

Final thoughts

- No single answer to deal with EAB
  - Owner
  - Forest
  - Markets
  - Contractors
- Do not feel pressured to remove your ash
  - loggers
- No urgent need to cut healthy ash trees
- Don’t move infested wood/logs to areas with less EAB

Williams & Associates

(More) Final thoughts

- Total removal of ash from woodlot is not recommended
- Trees retain some timber value for ~ 3-5 years
- Healthy and diverse forest is best
- Have a forest management plan with silvicultural prescriptions

Williams & Associates

Thank you

Questions?

Williams & Associates