Managing Stressed Woodlots

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Outline

- Assumptions
- Stress factors
- Consideration for managing stressed forests
- Best practices/choosing the right tree
- Resources

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Assumptions/givens

- You are interested in
  - Economic return from your forest
  - Increasing wildlife potential
  - Managing pest damage
- The landscape is no longer pristine
  - fragmentation
  - altered ecosystems
  - degraded/stressed ecosystems
  - invasive/introduced species

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Stress factors

- Living or non-living
- Natural or unnatural

- Climate
- Soil – moisture, texture, shallow, nutrients
- Insect - also mites, nematodes
- Disease – fungi, bacteria, virus,
- Animal
- Plants
- Man

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Climatic stresses

- Wind
- Ice
- Snow
- Drought
- Excess water
- Early/late frost
- Pollution- air, soil, water

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Climate change

- Climate change is very likely happening
- Forests are likely to suffer major impacts
- Adaptation should be facilitated
  - recommended measures differ little from sound management under static climate
- Main issues: adaptation and mitigation

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Likely Impacts on Forests

- Shifting range boundaries
- Changes in growth related to climate
- Changes in the carbon balance (???)
- Increased incidents of abiotic damage
- Increased incidents of biotic damage

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Adaptation Measures

- Nature reserves
- Connectivity
- Protect climatic refugia / migration corridors
- Protect primary forests
- Provide buffer zones to protected areas
- Practice low-intensity forestry
- Maintain genetic diversity at all levels
- Identify and protect functional groups
- Monitor changes (adapt mgmt. if needed)

Insect problems

- *Gypsy moth*
- *Emerald ash borer*
- *Asian long-horned beetle*
- *Sirex wood wasp*
- *European pine shoot beetle*
- *White pine weevil*
- Hickory bark beetle
- Two-lined chestnut borer
- Bruce spanworm
- Forest tent caterpillar
- Fall webworm

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Disease problems

- *Chestnut blight*
- *Dutch elm disease*
- *White pine blister rust*
- *Beech bark disease*
- *Butternut canker*
- Fomes root rot
- Armellaria root rot
- Stem cankers

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Pests at the door

- Sudden oak death
- Kudzu
- Mile-a-minute weed

Invasive plants and animals

- *Buckthorn*
- *Garlic mustard*
- *Dog strangling vine*
- *Earthworms*
- Deer
- Turkey

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Management stresses

- Rutting, compaction
- Drainage changes
- Erosion
- Keeping the forest ‘clean’

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Management stresses

- Tree damage - mechanical
- Selective eradication of species
- Maple syrup
- Pesticides

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General forest decline

- Healthy trees are stressed by climate, site conditions and
  - native insect and disease take advantage
  - natural process part of succession renewal

- Healthy trees stressed by climate, site conditions, cultural action, pollution and/or
  - native and exotic pests take advantage

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What to do - options

- Do nothing
  - And nothing has to be done immediately
- Manage
  - silviculture
  - pest management

  - Basics of forestry
    - Manage to improve tree/forest health
    - Manage to improve habitat and biodiversity

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General Considerations for managing stressed forests

- Maintain biodiversity
  - Size, structure, species
- Maintain buffers
- Protect vernal pools and other special features

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General Considerations for managing stressed forests

- Maintain and protect wildlife habitat
  - Nest, cavity and den trees
  - Avoid critical nesting and breeding periods
  - Leave downed material in place

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Best practices for timber

- Know what is in your woodlot
- Use tree marking and a forest management prescription
- Select crop trees (for future) with clear straight boles and healthy crowns
- Limit felling and skidding damage
- Harvest on frozen or dry conditions
- Keep livestock out of woodlot

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Selecting the right tree

- Tree selection based on vigour and risk
  - Consider species, size, density ,age, tree health, habitat
- Assess tree potential for growth ability to increase in size
  - Consider crown position, size, quality, bark character, degree of competition

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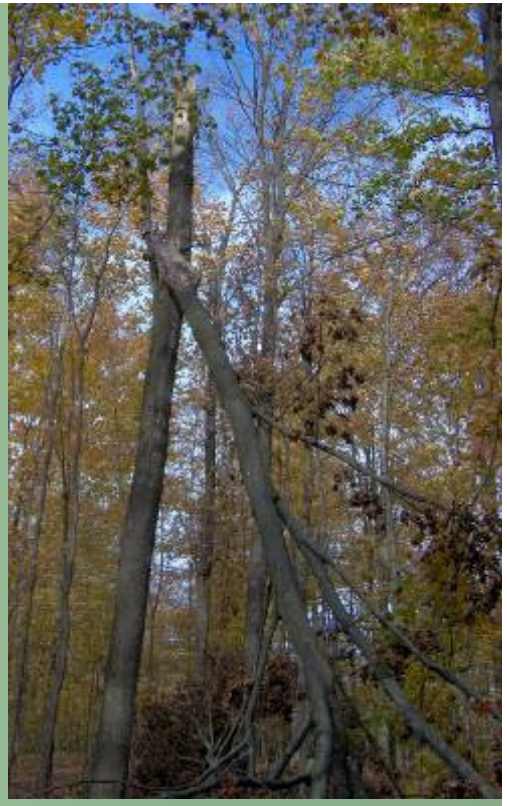
Selecting the right tree

- Assess tree for risk
  - Trees expected to decline in the next 10 – 20 years
  - Poor form, low quality
  - Wounds and decay, structural defect, crown damage and dieback
- Retain certain risk trees for wildlife
- Take one or more harvests to remove risk trees



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How poor cutting practices affect the stand

Highgrading and/or diameter limit cutting produce residual stands that;

Contain low value, undesirable species trees of poor form

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How poor cutting practices affect the stand

- Little if any regeneration of desirable species
- Reduces genetic stock
- Does not consider the future stand

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Pest management

- Direct control
  - cutting, burning, trapping generally on small areas
- Chemical
  - Spraying ground, or aerial
- Biological
  - Use of pheromone traps, predators, biological agents such as Btk

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Management for specific situations

- Emerald Ash Borer
- Hickory Bark Beetle
- Gypsy moth
- Wind and Ice damage
- Beech bark disease
- Butternut

So Emerald Ash Borer is in the neighbourhood

What to do!!!

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Poor Strategies for Managing Ash

- No management plan
- Relying solely on logger for advice
- Cut all healthy ash trees in a woodlot
- Cut all healthy ash trees in a woodlot before the EAB has arrived
- Sell their merchantable ash for timber because the EAB will get it
- Selling when price of ash lumber is very low
- Removal of all ash in stands when >50% of the dominant trees or basal area is ash - result in wind damage or allow invasive plant species to establish.

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Good Strategies for Managing Ash

- Have a management plan
- Contact a professional forestry consultant
- Monitor your forest regularly
- Thinning and pruning for vigour.
- Harvest ash according to good forestry practice
- Young plantations – wait and see
- If no concern for economics – leave it

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EAB what is happening

- EAB not moving fast naturally
- Start on edge of stand
- Natural and imported predators are being found – bio control
- When ash a minor component, the effect of EAB are less severe.
- EAB effects only outer wood

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Ash Yellows

- Trees exhibit decline and mortality
- Mycoplasma-like organism (MLO)
- No known way to prevent or cure
- Stand more likely to be susceptible
  - Forest stands dominated by white ash
  - Aw located next to nonforest
  - 30 – 50 year stands dominated by Aw
  - Aw dominated stands on potentially droughty sites and exposed area

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Ash yellows management

- Management of stands where ash yellows occurs should be aimed at gradual white ash removal
- Trees that exhibit slow growth and dieback should be removed during regular harvests as follows:
  - Harvest trees with greater than 50% crown dieback within 5 years.
  - Remove other affected ash during subsequent harvests.

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Hickory Bark Beetle

- Recently caused high mortality in SW Ontario
- Linked to droughts of 2001 and 2002.
- In area of high hickory concentrations
- Native insect

- Management
- Maintain healthy vigorous forest

- remove brood material (declining/dead standing hickories OR hickory firewood) from area.
- only practical if problem is caught early and control is performed in adjacent woodlots.

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Gypsy Moth

- A heavy defoliator of oak , aspen
  - But a multitude of species
  - Repeated defoliation of 3-4 years will kill healthy trees
- Viral and fungal pathogens that kill GM
- Bacterial agent Btk
- Municipal spray programs in last few years
- Homeowners can use various treatments

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Beech Bark Disease

- A complex of scale insect and Nectria fungi
- Scale is like a white wool
- Nectria kills tissue and girdles tree
- Beech snap
- Thickets of root sprouts
- Beech is important wildlife tree
- Some trees are resistant to the disease

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Managing Beech Bark Disease

- Management depends the disease status of beech in forest
- If no sign of disease in healthy beech
  - Look to retain vigorous trees with smooth bark
  - Minimize injury to beech roots
  - Favour other species
  - Harvest poor-quality trees if beech > 40 % of stand

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Managing Beech Bark Disease

- If BBD is in forest
- Identify, mark and retain resistant trees
- Identify or salvage dead or declining trees
- Control root sprout beech regeneration
- Do not transport beech wood between midsummer and fall

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Butternut

- Declared endangered under *Endangered Species Act 2007*
- Not your average species at risk
- Common but rarely abundant shade intolerant
- Butternut Canker - most serious & widespread threat

- The ‘cut it now’ attitude is a threat to species recovery

- A huge role for landowners, tree markers, loggers, log buyers
- Managing includes thinning around Bn to help thrive and allow nuts to grow

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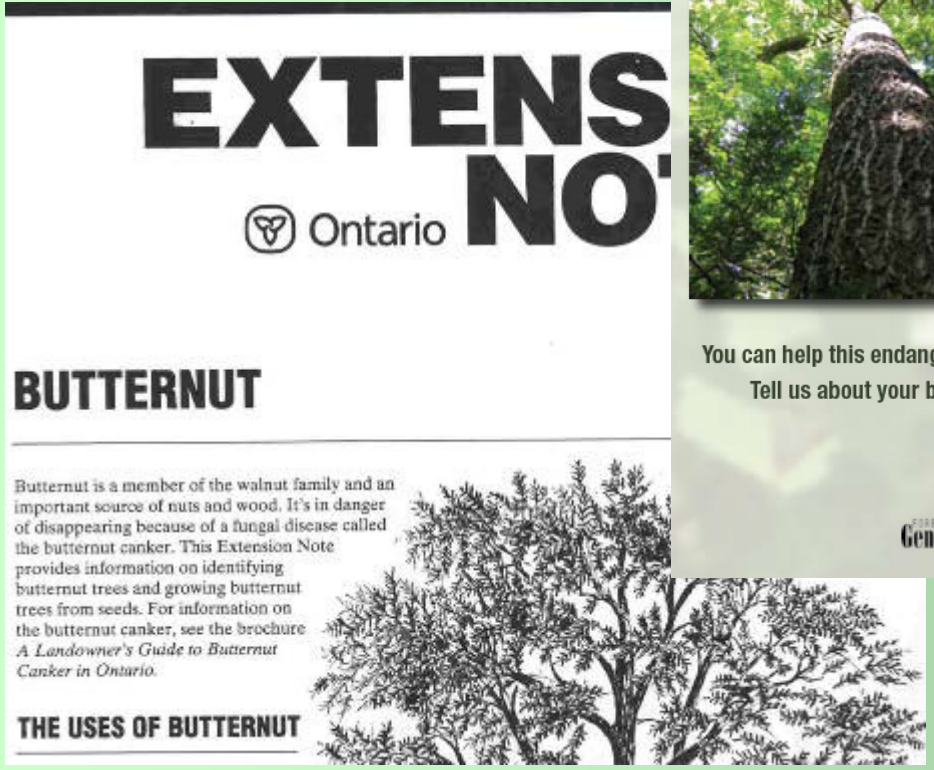
Resources For Landowners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BUTTERNUT

Butternut is a member of the walnut family and an important source of nuts and wood. It's in danger of disappearing because of a fungal disease called the butternut canker. This Extension Note provides information on identifying butternut trees and growing butternut trees from seeds. For information on the butternut canker, see the brochure *A Landowner's Guide to Butternut Canker in Ontario.*

THE USES OF BUTTERNUT


A Landowner's Guide to

Butternut and Butternut Canker

in Ontario

You can help this endangered species
Tell us about your butternut

Forest Gene Conservation Association


Butternut—Strategies For Managing A Threatened Tree

M. E. Ostry, M. E. Mielke, and D. D. Skilling

Managing ice or wind damaged forests

- Natural cycle of succession
- Crown breakage or bent trees
- Management action

1. Consider your goals
2. Wait first

   Assess the damage
3. Determine what to do

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Managing ice or wind damaged forests

- Assessment
  - Define stands, sample, species, size, damage
  - Bending damage, crown damage

- Determine what to do
  - Straighten bent trees, harvest trees, encourage sprouting, wildlife value, monitor

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Simple strategies to manage woodlots

- Have a management plan
  - Objectives, inventory, operating plan, evaluation
- Work with a forester you've carefully selected
- Get involved with woodlots owners groups
- Get engaged with your woodlot Enjoy the many benefits that are all possible from the forest
- Say NO to high-grading and diameter limit cutting

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Resources

- Extension Notes
  - Caring for Ice-damaged Woodlots and Plantations
  - Promoting a Healthy Forest Through Tree Marking
  - Managing Young Hardwood Stands for Sawlog Production
  - Do You Have a Healthy Woodlot?
- Guide to Stewardship Planning for Natural Areas
- A Landowners Guide to Selling Standing timber
- A Landowners Guide to Careful Logging (available March 2009)
- Woodlot Management Best Management Practices (OMAFRA)

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Resources

- Forest Health Guides
  - A Landowner's Guide for Woodlots Threatened by Emerald Ash borer
  - When Invasive Species Threaten Your Woodlot
  - Hickory Bark Beetle
- A Guide to Improving and Maintaining Sugar Bush Health and Productivity

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Web resources

- Ministry of Natural Resources - Private Land and Forest Health http://www.mnr.gov.on.ca/en/STEL02_168317.html
- Ontario Woodlot Association http://ontariowoodlot.com/
- Ontario Forestry Association http://www.oforest.on.ca/
- Ontario Stewardship http://www.ontariostewardship.org/ontarioStewardship/home/
- Extension Notes http://www.lrconline.com/EN_splash.html
- Eastern Ontario Model forest http://www.eomf.on.ca/
- Canadian Forest Service http://cfs.nrcan.gc.ca/general
- Forest Landowners Guide to Internet Resources http://na.fs.fed.us/pubs/misc/flg/

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