Wildlife implications on the loss of ~~beach~~

Amber Roth, University of Maine

Ryan Robicheau, Maine Department of Inland Fisheries and Wildlife

Wildlife implications on the loss of beech

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Beech importance to wildlife

Structural role

- Canopy structure
- Nest sites
- Dead wood

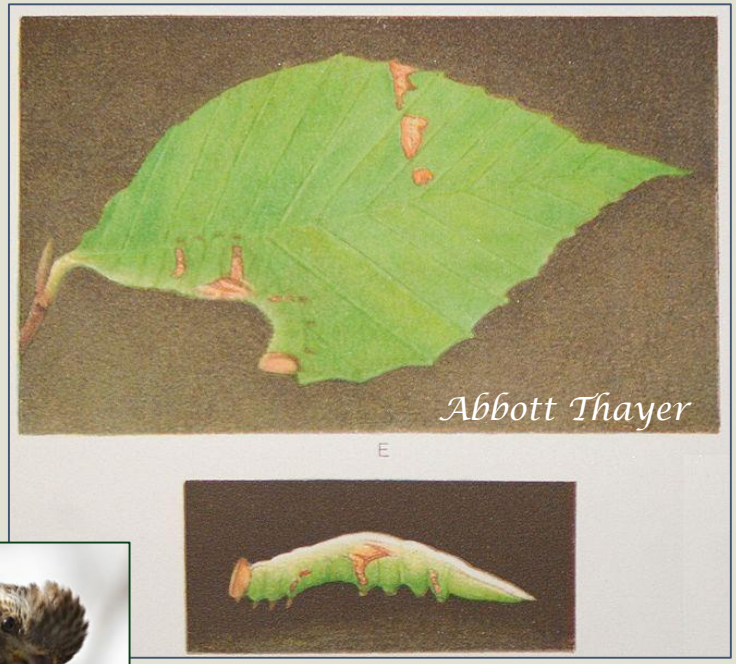
Beech importance to wildlife

Ecosystem role

Beech importance to wildlife

Food resource

- Leaves (poor deer browse; but delicious to some caterpillars!)
- Catkins and buds
- Sap
- Mast



Beech importance to wildlife

Top mast producing plant families and genera

Rose family (*Amelanchier* sp.; shadbush)

Rose family (*Aronia* sp.; chokeberries)

Walnut family (*Carya* sp.; hickories)

Beech family (*Castanea dentate*; Am. chestnut and its hybrids)

Birch family (*Corylus* sp.; hazelnuts)

Walnut family (*Juglans* sp.; walnuts)

Beech family (*Fagus* sp.; beeches)

Rose family (*Malus* sp.; apples)

Mulberry family (*Morus* sp.; mulberries)

Rose family (*Prunus* sp.; cherries)

Beech family (*Quercus* sp.; oaks)

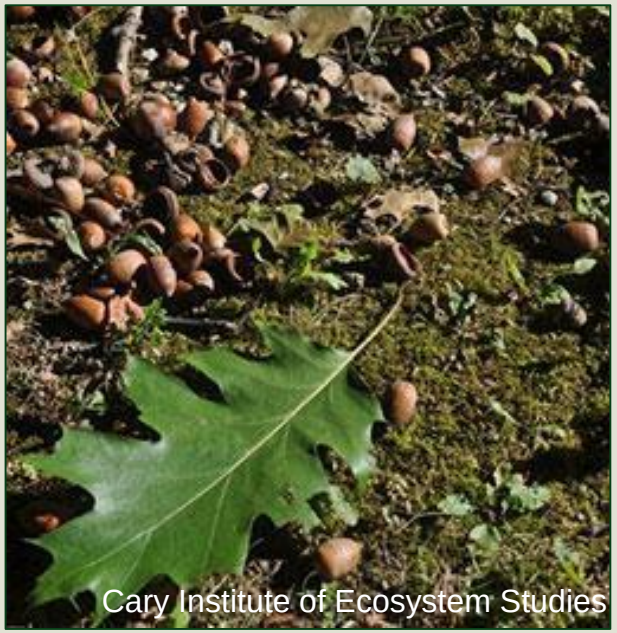
Rose family (*Rubus* sp.; raspberries)

Moschatel family (*Sambucus* sp.; elderberries)

Heath family (*Vaccinium* sp.; blueberries)

Moschatel family (*Viburnum* sp.; viburnums)

Hard mast species in red.



Beech importance to wildlife

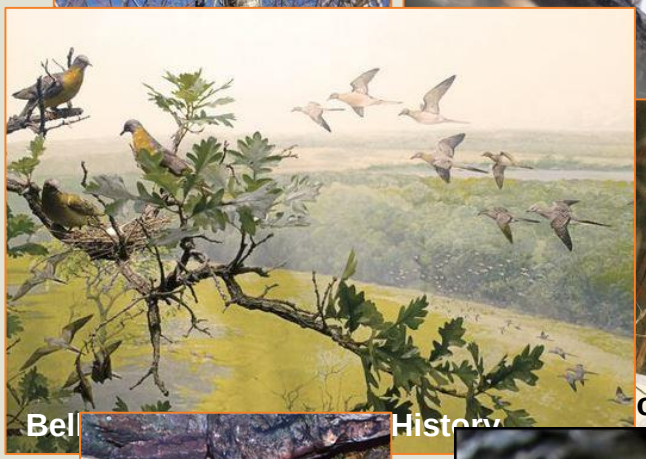
Hard mast nutritional value (Krochmal and Krochmal 1982)

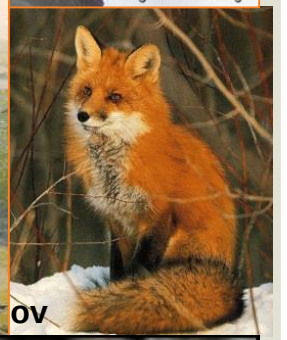
- Based on 100 g edible portion

Nut	Protein (g)	Fat (g)	Calories
Acorns (mixed species)	3.5	2.5	260
Beechnuts	19.4	50.5	568
Butternuts	23.7	61.2	629
Chestnuts	2.9	1.5	194
Hazelnuts	12.6	66.9	634
Hickory nuts	13.2	68.7	673

Beech importance to wildlife

- Fat reserves for deer and bear
- Raccoon, fox, porcupine
- Birds (ducks, blue jay, wild turkey, ruffed grouse, extinct passenger pigeon)
- Small mammals (squirrels, woodrats)
- Invertebrates (e.g. Early Hairstreak)





Are we amidst a hard mast crisis?

- Loss of mature, mast-producing American beech
- Ecological extinction of American chestnut
- Decline of oak species (gypsy moth, oak wilt)
- Decline of butternut (canker)

Outdoorlife.com

Recommendation: Find and grow seeds from resistant trees.

Implications of hard mast tree decline

- Smaller wildlife populations and trophic cascades
- Greater fluctuations in wildlife populations
- Poorer body condition entering winter = higher mortality
- Lower reproductive rates and offspring survival in spring
- Changes to reproductive timing

Wildlife Implications: the loss of Beech

Impacts to wildlife: what can be done?

MDIFW Management Guidelines

Ecosystem function

- measurable – weight of female bears, cub production; or inverse correlation of pine marten trapping with good beech nut years

- ***To maximize wildlife values, landowners should dedicate as much growing space to beech of good form and vigor as their overall goals will allow***

- Intended for landowners who want to manage beech to benefit wildlife

Toby Alexander – USDA-NRCS

MDIFW Management Guidelines

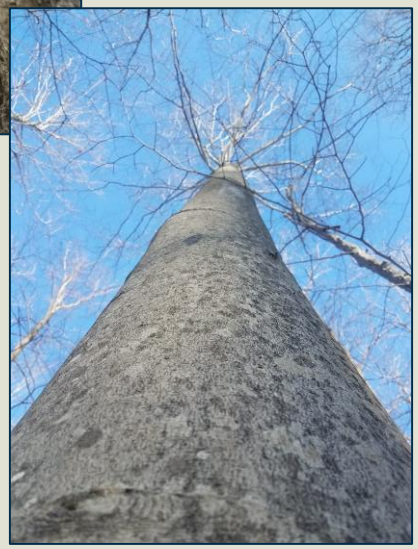
- Desired stocking of beech depends on landowner goals

- wildlife primary

- Timber production/wildlife

- Uneven-aged management recommendations
- Even-aged management recommendations

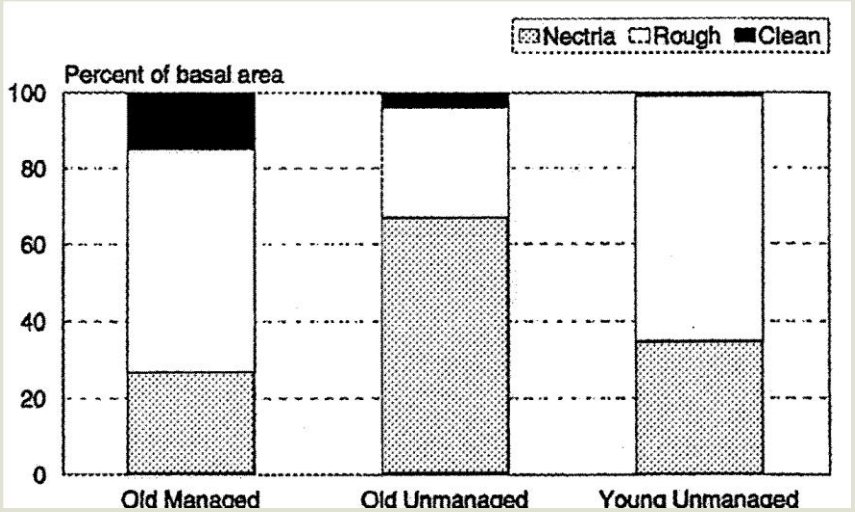
Leigh E. Hoar, MDIFW



Leigh E. Hoar, MDIFW

Beech and Wildlife – what can we do?

- Management of beech can be effective in reducing nectria damaged and rough stems
- Increased percentage of clean stems
- 50 year single tree selection appears to have improved disease resistance and merchantability of the stands

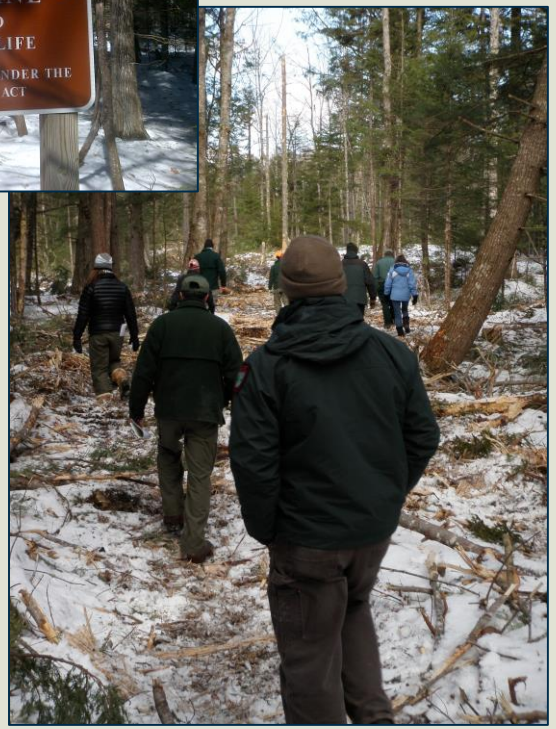


Leak 2006

MDIFW Conserved Land – Wildlife Management Area's

- ***106,000 acres, all counties***
- ***Primary objective is wildlife habitat***
- ***Secondary objective is public recreational use***

R. Robicheau, MDIFW



R. Robicheau, MDIFW

MDIFW Conserved Land – Wildlife Management Area's

- ***WMA management approach***
  - ***Prescribe compartments with a review of current conditions, habitats and known species occurrences***
- ***Plans developed by Regional Wildlife Biologists, implementation by Lands Program***
  - ***Prescription reviews by species specialists, ES coordinator, MNAP, tribal review and USFWS (Section 7)***

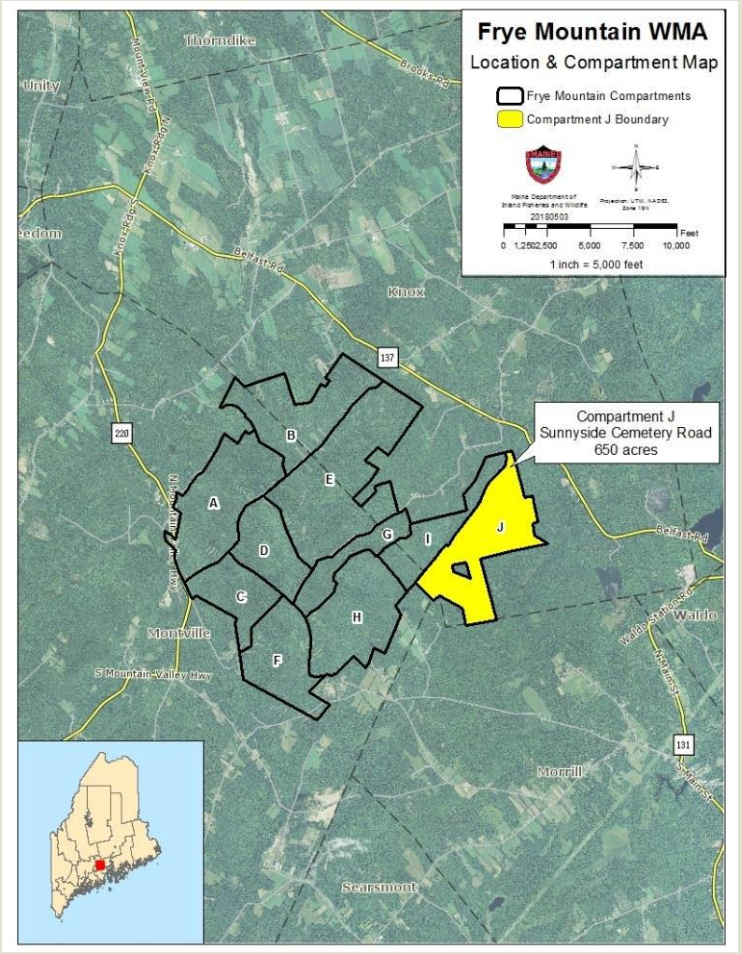
R. Robicheau, MDIFW

R. Robicheau, MDIFW

R. Robicheau, MDIFW

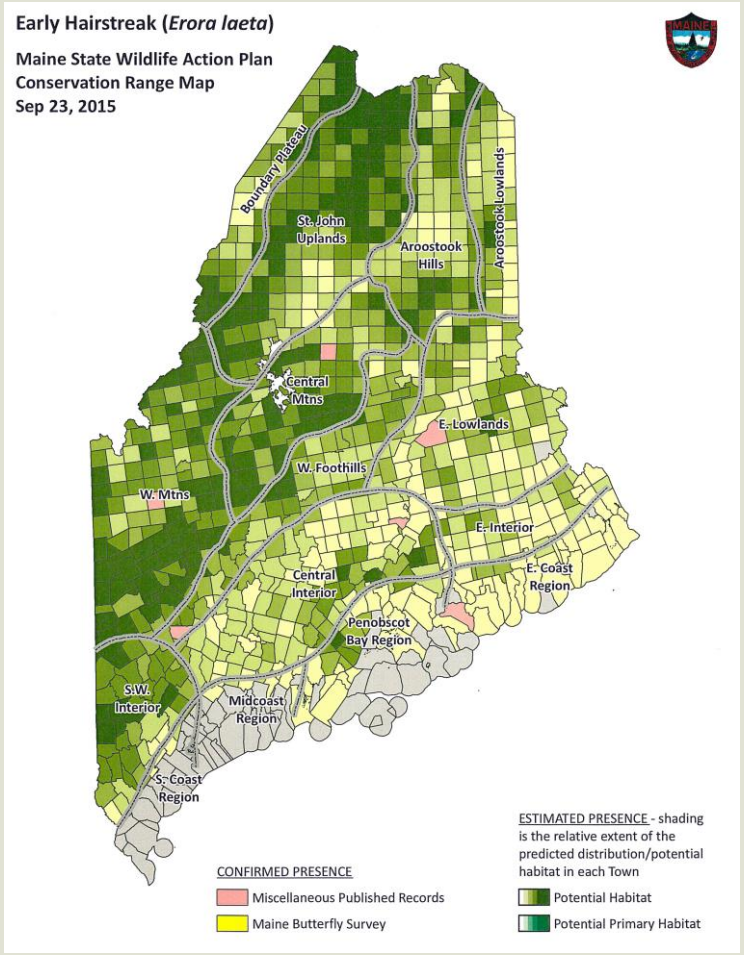
MDIFW Conserved Land – Wildlife Management Area's

- ***Frye Mountain WMA – Montville, Morrill, Knox***
  - ***Farmland abandonment 1930's***
  - ***MDIFW maintained openings***
  - ***Historical management for ruffed grouse/woodcock***
    - ***1970's***
  - ***Planning compartment J (643 ac)***
  - ***Considerations for Beech Management***
    - ***Specifics to SGCN***



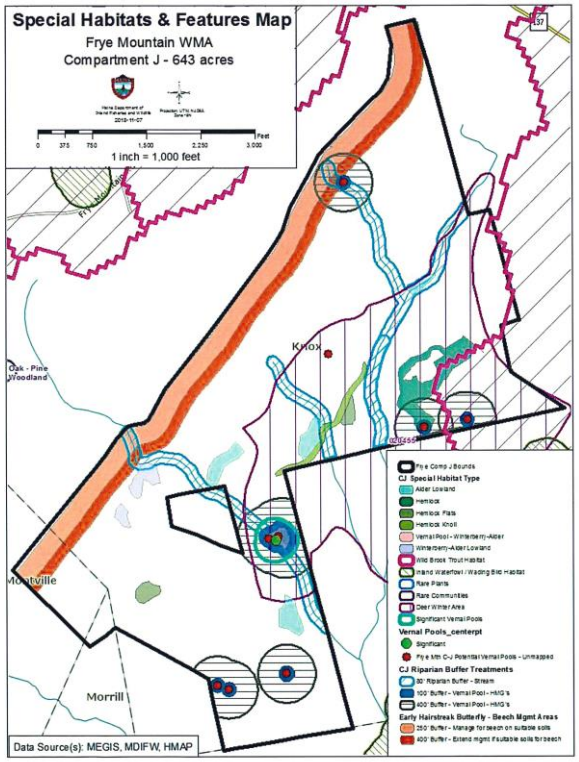
MDIFW Conserved Land – Wildlife Management Area's

- ***Frye Mountain WMA***
  - ***Considerations for Beech Management***
    - ***Identified in prescription review***
    - ***Species of Greatest Conservation Need***
      - ***2015 SWAP***
  - ***Early Hairstreak***
    - ***Priority 2 species***
    - ***Threats***
      - ***Lack of knowledge***
      - ***Logging and wood harvesting***
      - ***BBD, habitat loss***



MDIFW Conserved Land – Wildlife Management Area's

- ***Frye Mountain WMA***
  - ***Minor adjustment in draft prescriptions to maintain beech component (mature)***
  - ***Subset of acres where prescription changed, no change over large percentage***
  - ***Slight adjustment retains and promotes favorable habitats***



MDIFW Conserved Land – Wildlife Management Area's

- ***Bud Leavitt WMA – Charleston, Atkinson, Dover, Garland***
  - ***Even-aged management to improve species composition***
  - ***Past management***

Stocking:		
1	SM	41%
2	BE	22%
3	WA	14%
4	YB	8%
5	HE	5%

  - ***130 acres – 30 CC/100 GSEL***
  - ***Maintenance of diversity and set the stage for future management***

R. Robicheau, MDIFW

Resources

Mast Tree Network: http://www.mast-producing-trees.org/

Maine Department of Inland Fisheries and Wildlife: https://www.maine.gov/ifw/about/contact/index.html

Our Mission

Maine Department of Inland Fisheries & Wildlife protects and manages Maine's fish and wildlife and their habitats, promotes Maine's outdoor heritage, and safely connects people with nature through responsible recreation, sport, and science.

Overview

Maine Department of Inland Fisheries of Wildlife (MDIFW) preserves, protects, and enhances the inland fisheries and wildlife resources of the state. Established in 1880 to protect big game populations, MDIFW has since evolved in scope to include protection and management of fish, non-game wildlife, and habitats, as well as restoration of endangered species like the bald eagle. In addition to its conservation duties, MDIFW is also responsible for enabling and promoting the safe enjoyment of Maine's outdoors — from whitewater rafting to boating, snowmobiling, hunting, fishing, and wildlife observation. The agency's constituents include the fish, wildlife, and people who call Maine home, as well as the visiting outdoor enthusiasts and ecotourists who call Maine Vacationland and contribute hundreds of millions of dollars each year to the state's economy.