EFFECTS OF DEER BROWSING ON BIRD HABITAT FOLLOWING FOREST MANAGEMENT PRACTICES

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POTENTIAL NEGATIVE IMPACTS OF FOREST CUTTINGS ON SONG BIRD HABITAT

- Fragmentation/Patch Size Reduction—affects “area-sensitive” species that are typically long-distance migrants, obligate forest interior inhabitants, and low-level, open nesters.

Examples of “losers” are:

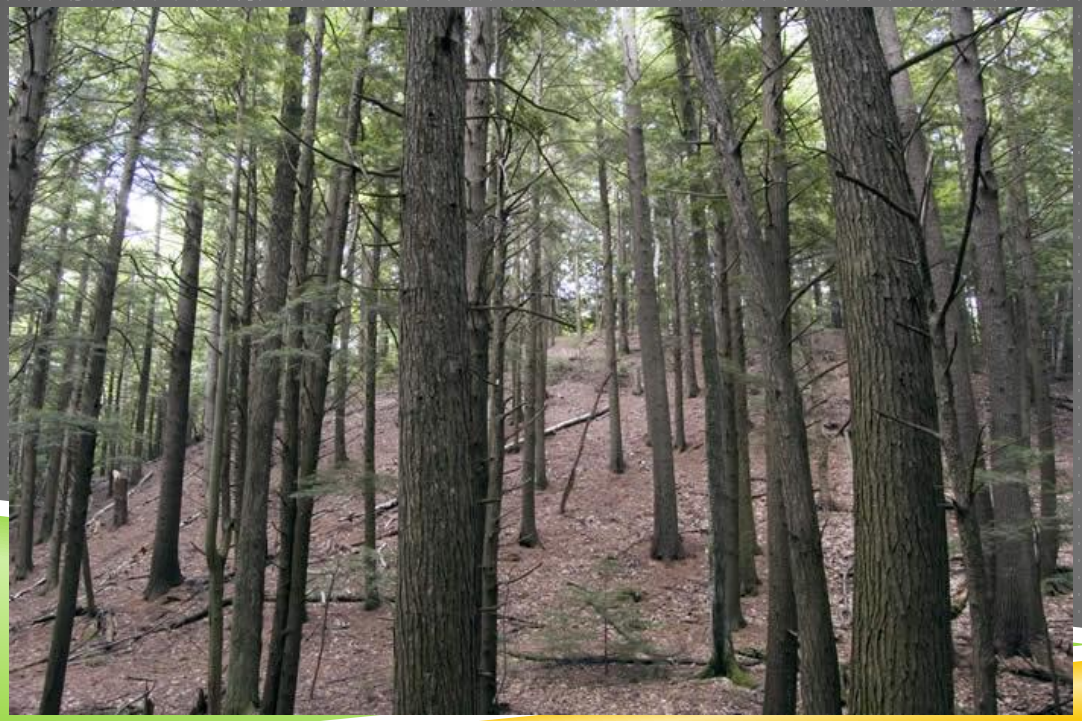
- Louisiana Thrush
- Wood Thrush
- Cerulean Warbler
- Scarlet Tanager
- Pileated Woodpecker
- Blue-Gray Gnatcatcher
- Ovenbird
- Eastern Wood-Pewee
- Acadian Flycatcher
- Hooded Warbler
- American Redstart
- Red-eyed Vireo
- Whip-Poor-Will (maybe)

POTENTIAL NEGATIVE IMPACTS…

- Loss of Important Microhabitats (e.g., outstanding specimen trees, snags)—affects cavity nesters such as various woodpeckers.

POTENTIAL NEGATIVE IMPACTS…

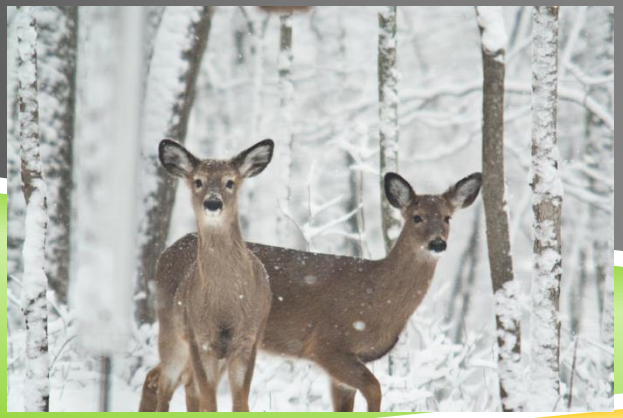
- Changes in Tree and Shrub Species Composition and Structural Diversity—affects a variety of species that depend on multi-layered forest habitat for nesting sites and feeding on insects.
- Changes in Stem Densities--affects many low-level nesters subject to ground predators.



PREVENTION/MITIGATION OPTIONS

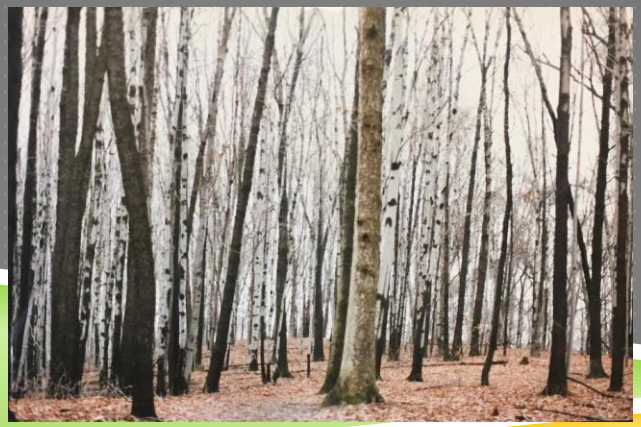
- Carefully Select Where and What to Cut – Larger but fewer clear-cuts, longer rotations, buffers, shelterwood and seed tree cuts
- Save or Create Microhabitats (U.S. Forest Service's Animal Inns Program)
- Control Deer Browsing

"SOME OF OUR BEST PLANS AND DESIGNS HAVE BEEN EATEN BY DEER"



DEER BROWSING OFTEN DETERMINES PATTERNS OF FOREST REGENERATION FOLLOWING TIMBER HARVESTS—THIS IN TURN IMPACTS BIRD USE

- Reduces or Eliminates Regeneration of Palatable Species
- Increases Invasion or Regeneration of Less-palatable Species
- Reduces Stem Density in Understory and Ground Cover
- May Result in Dense Growth of Ferns or Woodland Sedge That Out-competes Woody Plants



SOME WOODY PLANT SPECIES HEAVILY BROWSED BY DEER

- White Cedar
- White Oak
- Basswood
- Red Oak
- Yellow Birch
- Aspen
- Red Maple
- Black Cherry
- Juneberry
- White Oak

SOME WOODY PLANT SPECIES LESS PREFERRED BY DEER

- Sassafras

- Jack Pine

- Buckthorn

- Witch Hazel

DENSE COVERS OF FERNS OR WOODLAND SEDGE CAN DEVELOP AFTER OVERSTORY THINNING IF DEER BROWSING HAS REDUCED REGENERATION OF WOODY PLANTS

BIRD SPECIES THAT MAY LOSE WHEN DEER BROWSING IS SIGNIFICANT:

- Ground nesters that seem to need high stem densities to help escape predation.
- Some ground nesters that may lose:
  - Ovenbird
  - Wood thrush
  - Canada warbler
  - Hermit thrush
  - Hooded warbler
  - Veery
  - Connecticut warbler
  - Black-and-white warbler
  - Black-throated blue warbler

STUDIES SUGGEST VEGETATION DENSITY –

- Conceals nests
- Reduces predator (e.g., raccoon) search efficiency

“Predation probability may decrease with increases in density of the particular foliage types that are used as nest sites; such increases may reflect the number of potential nest sites that predators must examine which reduces their chances of finding the actual nest.” (Source: Thomas E. Martin, Dept. of Zoology, Arizona State U.)

- The basic notion has been supported by experiments with raccoons and bird eggs in cages where understory vegetation density (foliage) was artificially increased.

- Literature also shows nesting in sub-optimal habitat (e.g., edges) impacts some forest birds.

- Structural diversity is also likely important—the sizes of stems and timing of foliage may be critical to nesting success. That implies that if non-palatable (to deer) species and/or invasive, exotic species replace the “normal” vegetation of the ground-cover and understory, the nesting habitat may become sub-optimal.

WHAT CAN BE DONE? DEER POPULATION REDUCTION, REPELLENTS, AND EXCLOSURES OFFER SOME HOPE. RETENTION OF LOGGING DEBRIS IS THE MOST COST-EFFECTIVE IN MOST SITUATIONS.

RETENTION OF LOGGING DEBRIS

- In New York, a three-year comparison in northern hardwoods of three treatments: open – cleared of logging debris; tops – tree tops and debris-covered; or fenced – cleared of debris and fenced to exclude deer found that:
  - “The degree of protection from deer browsing by tree tops WAS INTERMEDIATE BETWEEN UNPROTECTED AND FENCED AREAS. Measures were levels of deer browsing, tree seedling growth, and natural vegetation richness.”
  - Strong negative correlation between the percent of seedlings browsed and mean seedling height.

RETENTION OF LOGGING DEBRIS

- In the open plots, much of the increased seedling production was composed of non-timber seedling species.

- Tops treatments especially benefitted black cherry and red oak seedlings, and “superior growers” (those most likely to be important in establishing future forests.)

THE NY STUDY SUPPORTED LONG –TERM (TEN-PLUS YEARS) UNPUBLISHED OBSERVATIONS IN NEW YORK AND MICHIGAN.

CONCLUSIONS

- The negative impacts of logging on area-sensitive birds can be reduced by partially-excluding deer through retaining logging debris. However, some selective cuttings may not result in enough overlapping material to prevent significant browsing, especially when and where deer are highly-motivated. Supplemental hinge-cutting of trees and/or herbicide treatments of ferns or sedges may be necessary to meet management objectives.
- Long-term research/demonstration projects are needed to determine which bird species will benefit from this approach. Such studies are difficult because some area-sensitive birds are hard to detect.
- Ignoring the impacts of deer on re-generation following cuttings will likely negate some of the benefits of various “new forestry” strategies.

- For references on this topic, feel free to contact:
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