Forest Structure Important to Birds

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Avian communities respond to the heterogeneity of forest vegetation on several levels.

- Horizontal habitat diversity- variations in land surface cover within a stand
- Vertical habitat diversity- layering of vegetation within a stand
- Patchiness and size of habitats- size and configuration of patches of different forest types in the landscape

Horizontal habitat diversity

- Openings within a large cover-type block producing different stages of vegetative growth and increasing cover type diversity.
- A mosaic of openings within a forest type may increase the diversity of mast producing plants such as raspberry, hazelnut etc. while allowing birds to remain close to protective cover.
- A combination of different cover-type patches allows birds to meet all their needs without traveling too far.

Vertical habitat diversity

- Diversity within the canopy, including retaining underrepresented species. The number of bird species using a forested stand is generally related to the diversity of trees in the overstory. One way of promoting tree species diversity in many cover types is to favor underrepresented species for retention.
- Under story layers including **understory conifers, shrub & herbaceous layers.**
- **Mast** producing shrubs and trees
- **Super canopy** trees (large diameter trees emerging above the main canopy of the stand).
- Some nesting woodland raptors need mature, forked hardwoods to build heavy stick nests.
- **Cavity trees** standing dead wood and downed dead wood (Segue to discussion re. Cavity nesting birds)

Cavity nesting birds

Cavity nesting birds are insectivorous and are important in the control of insect pests in forest. Most cavity nesting birds are year round residents and may exert a strong influence during the winter periods when insects are largely inactive.

Cavity nesting birds are an integral part of natural communities and have an intrinsic value in the continued well being of those ecosystems. Cavity nesters are probably the most seriously affected group of species by logging practices because dead trees may be knocked down to comply with safety regulations and declining trees may be preferentially removed.

The presence of dead or dying trees suitable for cavity excavation is the single most important factors limiting the numbers of cavity nesting birds.

Primary cavity nesters excavate their own cavity. Secondary nesters utilize old excavated holes or natural cavities. In general, if we provide for woodpeckers as primary excavators and protect natural cavities as they are discovered, most secondary species will also be taken care of.

Snags and Living Cavity trees

Snags are completely or partially dead trees that are still standing. There is a direct relationship between numbers of snags in an area and the numbers of cavity nesting birds present. The process of some trees dying is a normal continuous part of stand dynamics even in managed stands.

Retaining declining trees with living cavities is important as well as those trees that are already dead.

Each species of cavity nesting bird has its own requirements in terms of the diameter of snag required and the height above ground needed. In general, diameter is more critical.

- Larger snags are necessary for large birds. Small birds use these as well but,
- Smaller snags are preferred by smaller birds.
- Living trees with heart rot are particularly valuable to woodpeckers.
- Hard snags have solid exteriors but soft interiors. Over a period of time they undergo further decay to become soft snags, but only a percentage remain standing long enough to do so. Soft snags are critical as nesting sites and feeding sites and should be preserved.
- Cavity nesting birds using snags include- wood duck, common goldeneye, hooded & common merganser, bufflehead, American kestrel, Eastern screech-owl, barred owl, saw-whet owl, yellow-bellied sapsucker, downy & hairy woodpecker, black-backed woodpecker, pileated woodpecker, northern flicker, black-capped chickadee, tufted titmouse, red-breasted nuthatch, white-breasted nuthatch, house wren, winter wren, eastern bluebird, and prothonotary warbler.

Downed woody debris

Logs on the forest floor are used by numerous birds as lookout posts, as drumming sites (ruffed grouse), as perches (woodland raptors) as nesting sites or nesting cover, as dusting sites, as thermal shelter in winter and by woodpeckers as food sources. The removal of logs and slash or intensive site preparation is not beneficial to cavity nesting birds.

Other issues

- Timing of harvest- Limiting harvest activities between March1- June 30 would eliminate potential impacts on nesting woodland birds.

Features at Lower Tahquamenon Falls

Yellow Birch- Curling bark used by brown creepers behind which to build their nest, bats will roost under bark as well.

Hemlock- woodpecker holes indicating birds foraging for insects, bark with deep crevices in which nuthatches, b. creepers can forage for insects, bats nesting under bark

Over-mature aspen- trees with heart rot that can be more easily excavated by large woodpeckers, woodland raptors such as N. Goshawk may use to build large stick nests

Coniferous inclusion/dense undergrowth at bottom of trail by falls- Mourning warbler nesting area…at base of shrub on or close to ground, forages low in thickets.

Uprooted trees- Winter wren builds nest in root wad, Northern waterthrush nesting under roots of uprooted tree close to water.

Downed woody debris- drumming logs for grouse, perches, nesting etc… Windthrow events create both DWD and canopy gaps (horizontal diversity) and their benefits (increased light to the forest floor, change in vegetative structure etc...).

Mast trees

- Birch- redpolls in winter almost each birch exclusively, pine siskin, ruffed grouse, spruce grouse, chickadee, sapsucker
- Beech- wood duck, spruce & ruffed grouse, chickadee, purple finch, white-breasted nuthatch, rose-breasted grosbeak, yellow-bellied sapsucker, downy & hairy woodpecker.

- Pine- crossbills, pine warbler, spruce grouse, chickadee, evening & pine grosbeak, pine siskin, nuthatches
- Spruce- spruce grouse, crossbills, red-breasted nuthatch, pine siskin, pine grosbeak
- Hemlock- ruffed grouse, chickadee, crossbills, pine siskin
- Aspen- ruffed grouse, purple finch
- Mountain ash- ruffed grouse, cedar waxwing, catbird, evening & pine grosbeak
- Maple- ruffed grouse, purple finch; evening, pine & rose breasted grosbeak, red-breasted nuthatch, sapsucker
- Wild Cherry- ruffed grouse, bluebird, catbird, flicker evening & Rose-breasted grosbeak, robin, sapsucker, brown thrasher cedar waxwing, pileated woodpecker

References

James, Ross D. Habitat Management Guidelines for Cavity Nesting Birds in Ontario. Ontario Ministry of Natural Resources. March 1984. OMNR # 51604 ISBN 0-7794-2351-8 (Internet)

James, Ross D. Habitat Management Guidelines for Ontario's Forest Nesting Accipiters, Buteos, and Eagles. March 1984. OMNR MNR # 51607 ISBN 0-7794-2357-7 (Internet)

James, Ross D. Habitat Management Guidelines for Warblers of Ontario's Northern Coniferous Forests, Mixed Forests, or Southern Hardwood Forests. Ontario Ministry of Natural Resources. March 1984 MNR # 51605 ISBN 0-7794-2353-4 (Internet)