



Importance of Cavity Trees to Woodpeckers and Other Forest Wildlife

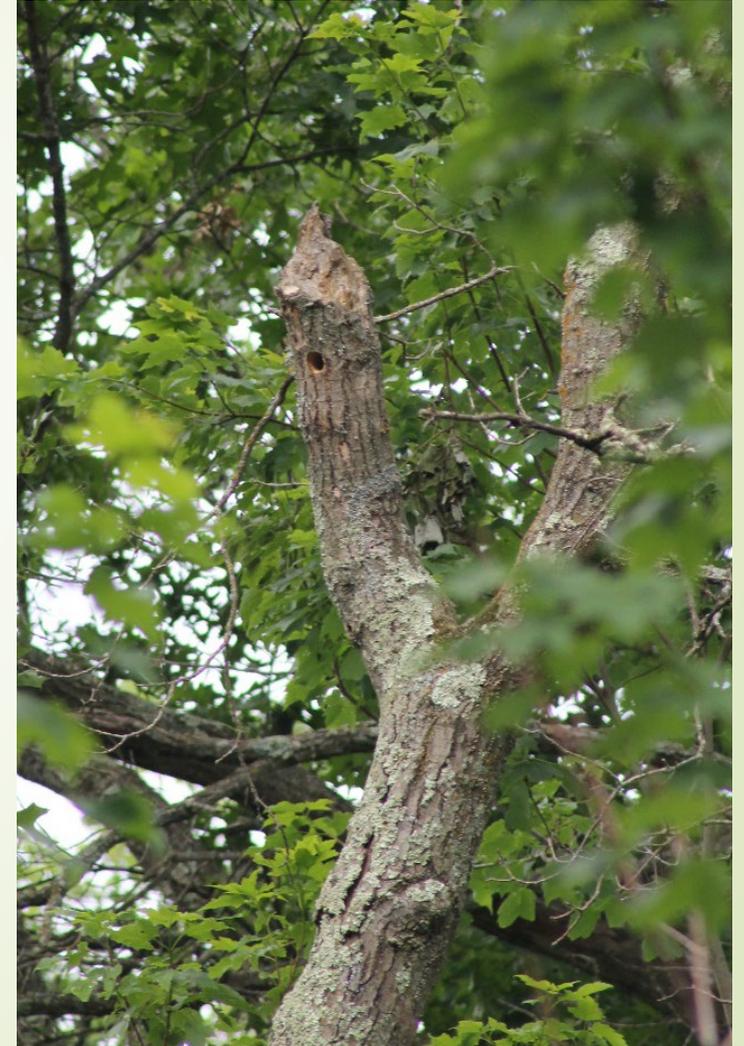
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Minnesota DNR Forest Wildlife Habitat Program

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Woodpeckers as Ecological Keystone Species

Primary Excavators



Internal heartrot indicated by
Phellinus tremulae and *Fomes* spp.



Secondary Users of Woodpecker Cavities



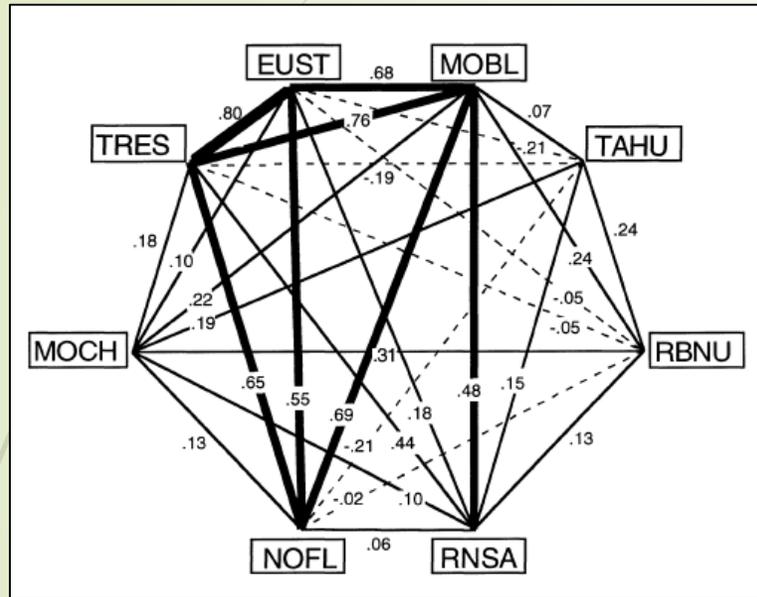
Wood Ducks
Buffleheads
Hooded Mergansers
Common Goldeneyes
Owls
American Kestrels
Great Crested Flycatchers
Tree Swallows
Purple Martins (historically)
Chickadees
Nuthatches
House Wrens
Bluebirds
Flying Squirrels
Gray Squirrels
Bats
Deer Mice
Fishers
Pine Martens
Tree Frogs

Once on ground become available to:



- Weasels
- Mice
- Salamanders
- Snakes
- Other Frogs

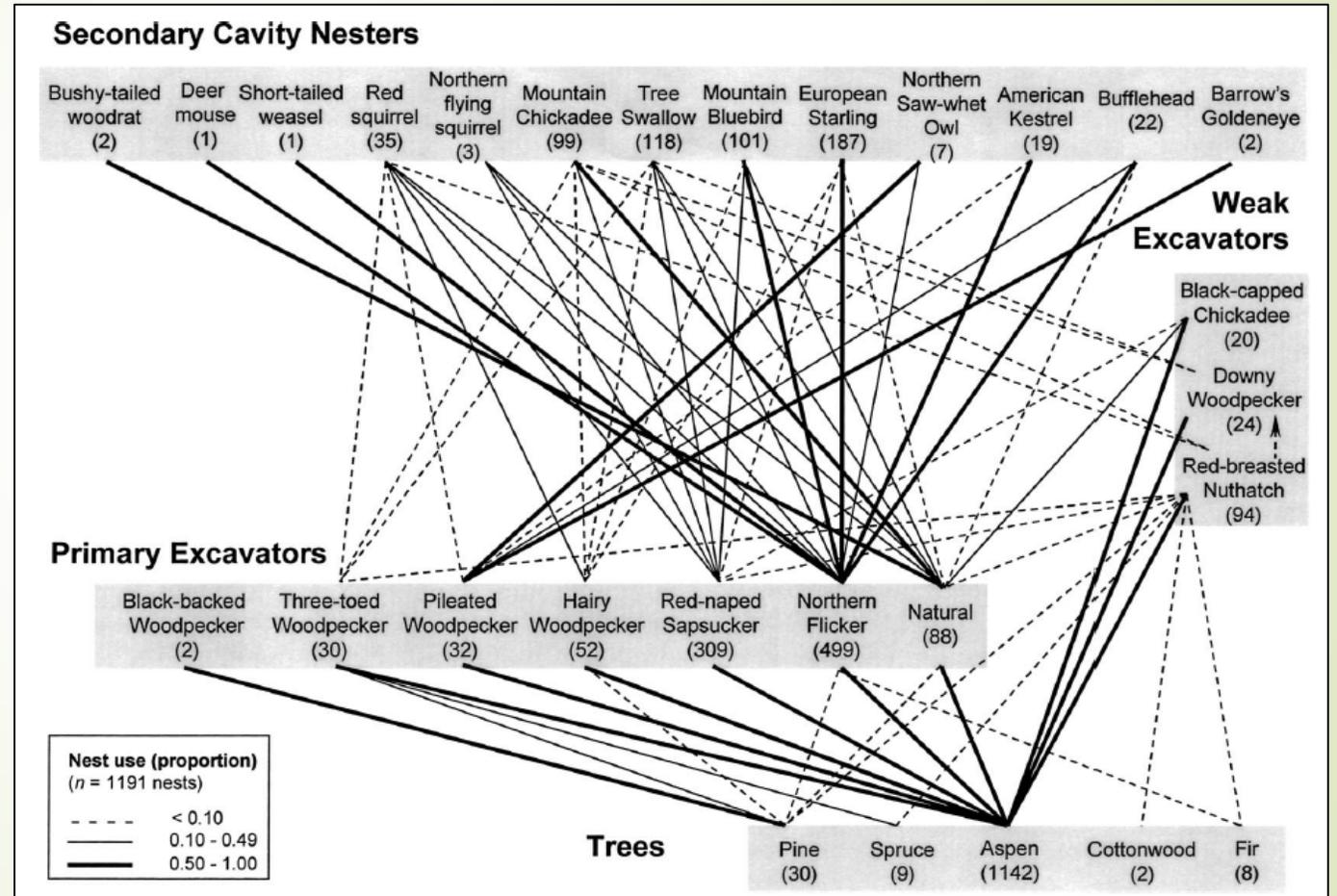
Nest Web, British Columbia



Sources:

Martin and Eadie 1999
 Martin, Aitken, and Wiebe 2004

- 1142 of 1191 in aspen (96%)
- Aspen = 15% of trees



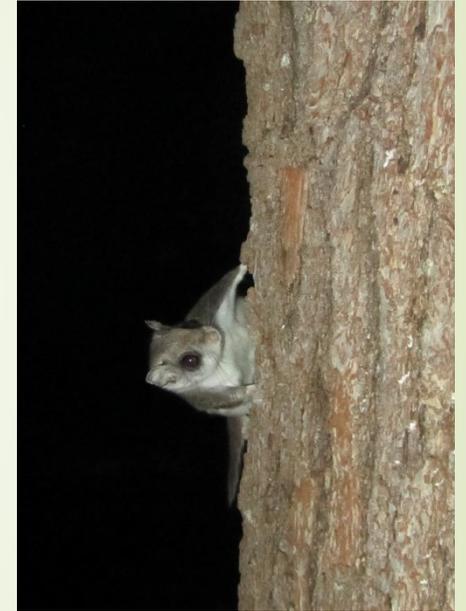
Nest Web, Central Ontario (Holloway and Malcolm 2007)



Large diameter
trees
limiting factor in
recently
harvested sites

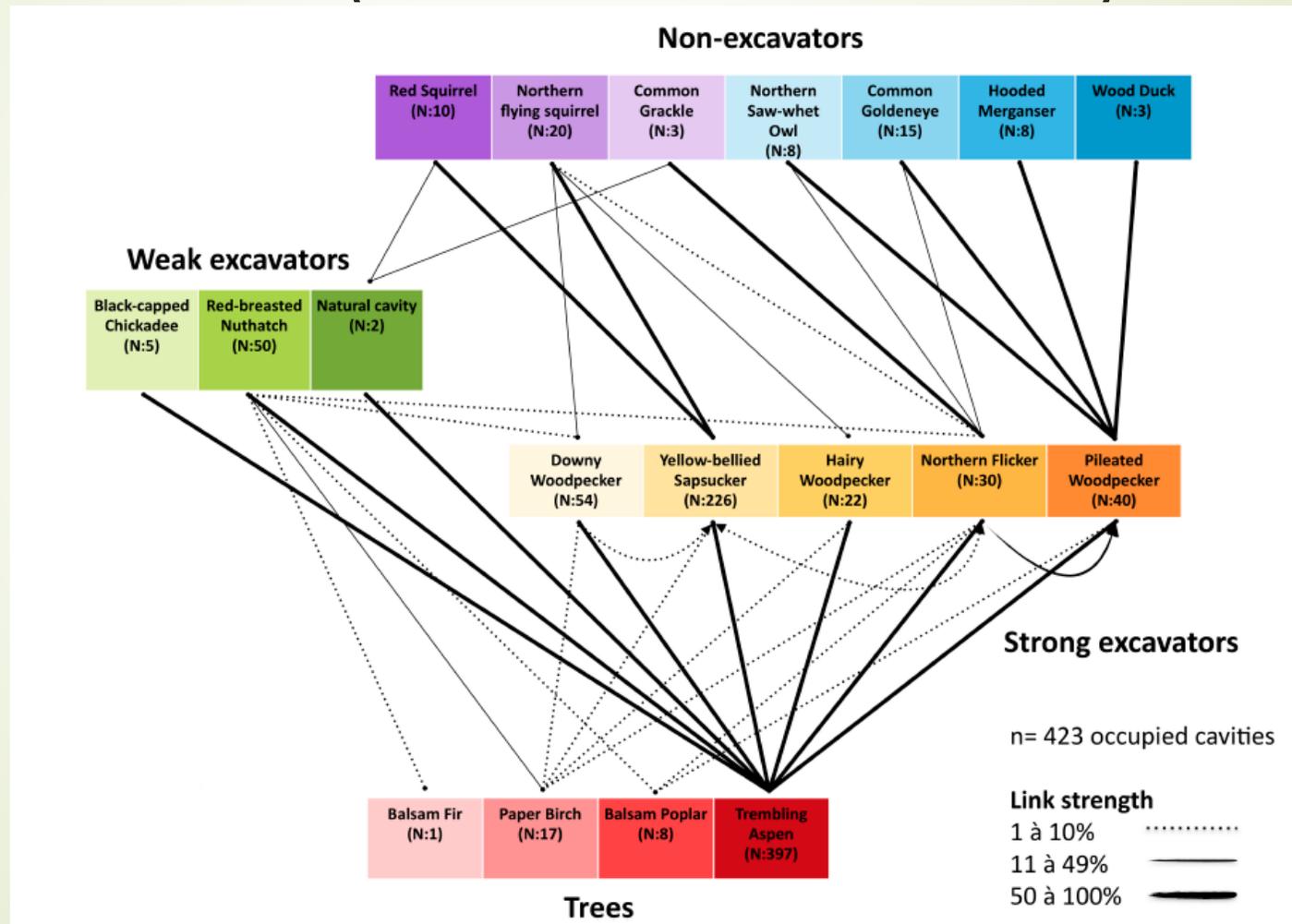


Yellow-bellied Sapsucker—
keystone species



Replaces natural
cavities for
Southern Flying
Squirrel

Nest Web, Quebec-Ontario border region (Cadieux et al. 2023)



94%
Aspen

Aspen Most Important Cavity Tree in Minnesota (MRN data, n=235)

	YBSA	HAWO	DOWO	NOFL	PIWO	RBWO	RHOWO	BBWO	TTWO	
Aspen	81	40	17	17	6	3	2	_*	-	71%
Oak	2	8	6	1	-	2	3	-	-	9%
Birch	-	-	-	6	-	2	1	-	-	4%
Maple	-	-	4	-	-	-	1	-	-	
Basswood	-	-	-	1	-	-	-	-	-	
Cottonwd	-	2	1	-	-	-	-	-	-	
Bal. Poplar	1	-	2	-	-	-	-	-	-	
Ash	1	3	-	-	-	-	-	-	-	
Cherry	-	1	-	-	-	-	-	-	-	
Hackberry	-	-	-	-	-	1	-	-	-	
Conifers	-	-	-	4	3	-	-	11	2	



Generalized Tree DBH Thresholds for Use by Cavity-Dependent Wildlife

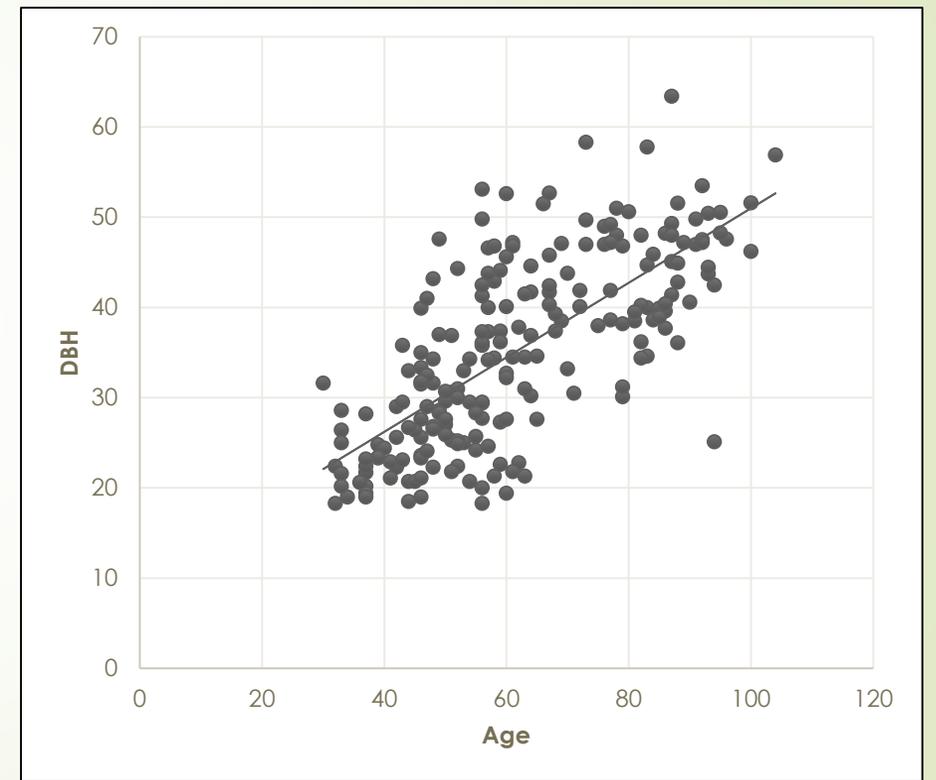
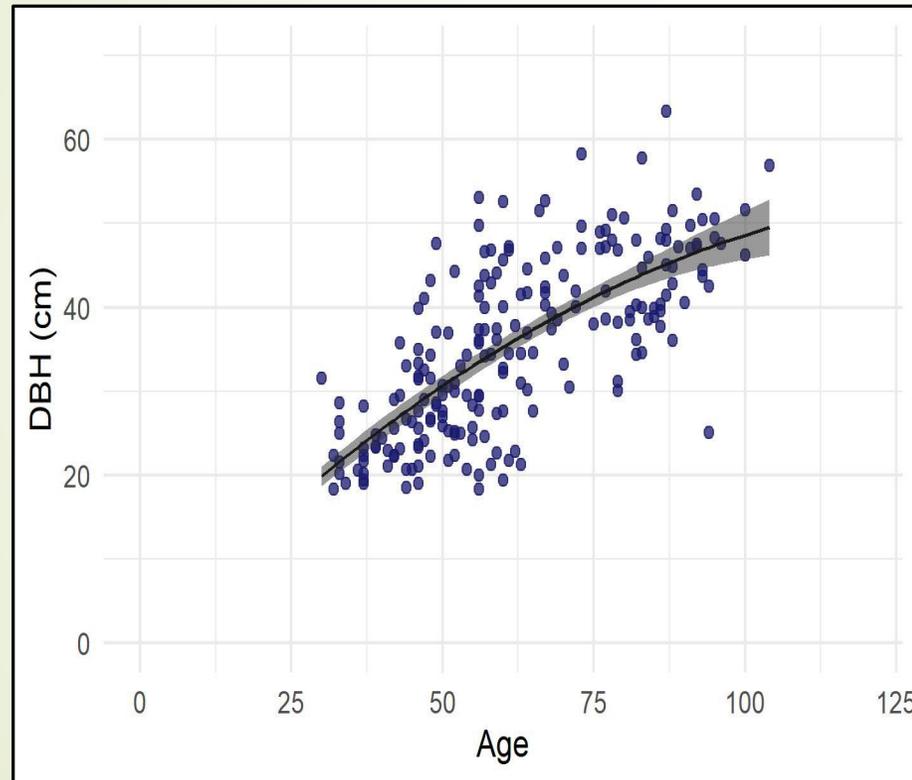
Species	Minimum dbh (cm)	Mean dbh (cm)
Downy Woodpecker	15 cm	27 cm
Hairy Woodpecker	17 cm	30 – 35 cm
Yellow-bellied Sapsucker	19 cm	30 – 35 cm
Northern Flicker	21.5 cm	35 cm
Bats	25 cm	30 – 35 cm
Pileated Woodpecker	25 cm	40-45 cm
Red-bellied Woodpecker	26.8 cm	37.8 cm
Wood Duck	40 cm	
Pine Marten	26.4 cm	40.4 cm
Fisher	34.5 cm	50.3 cm
Barred Owl	50.8 cm	

How Long Does it Take to Grow Aspen to Sizes Suitable for Cavity-Dependent Wildlife?

- ▶ Cored 211 solid Quaking Aspen in Agassiz Lowlands
 - ▶ 109 MHn44, 102 FDn32/33 NPCs
 - ▶ 3 or 4 per stand, away from edge
- ▶ Mounted cores and read rings under microscope in Tree Ring Lab at BSU
- ▶ DBH's ranged from 18.3-63.5 cm
- ▶ Used linear and quadratic regression analysis
- ▶ Co-authors: Dr. Samantha Jones, G. Mehmel, Dr. Veronique St-Louis



Age – DBH Relationship



$$DBH=9.7+0.413(\text{age})$$

Aspen Growth Rates as They Relate to Wildlife-use Thresholds

DBH Range (cm)	Representative Species	N	Min. Age	Max. Age	Mean Age	Standard Deviation
55-63.5		4	73	104	86.7	12.92
50-54.9	Fisher, Wood Duck, Barred Owl	11	56	100	79.5	15.31
45-49.9	Fisher (minimum), Pine Marten	31	49	100	77.7	13.7
40-44.9	Pine Marten, Pileated Woodpecker	31	47	94	71	14.51
35-39.9	Pileated Woodpecker (minimum)	28	43	88	67.8	14.5
30-34.9	Yellow-bellied Sapsucker (mean) Hairy Woodpecker (mean), Northern Flicker (mean), Bats	29	30*	83	58	12.69
25-29.9	Downy Woodpecker (mean), Bats	33	33	94*	50	10.98
20-24.9	Sapsucker/Hairy/Flicker (minimum)	36	32	63	45.8	8.92
18.3-19.9	Downy Woodpecker (minimum)	8	32	60	43.2	10.29

Management Recommendations: any or all

- ▶ Extend rotation ages
- ▶ Retain diverse sizes of aspen (old trees will persist, and what you leave is all there will be for 40 years)
- ▶ Reserve sapsucker foraging trees; retain some aspen “leave trees” near sapwell trees
- ▶ Retain snags, “wolfy” trees
- ▶ Reserve >5% “leave trees” if stand diversification is a goal (e.g., 5% for diversification, 5% aspen for cavities)

