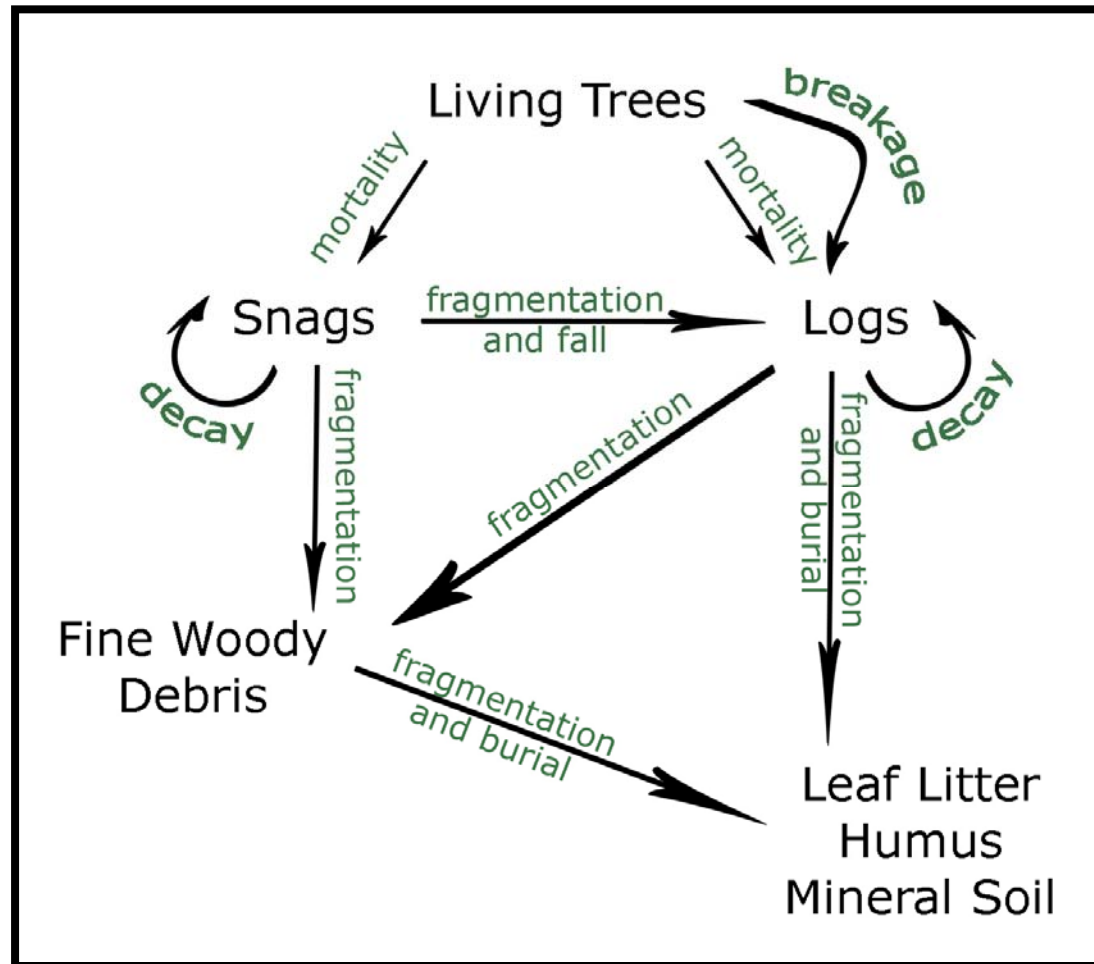


# Decay dynamics of coarsewood habitat in old-growth spruce and pine stands



Eileen L. Jones and Lori D. Daniels  
Department of Geography,  
University of British Columbia

# Coarsewood Pathways



# Terrestrial Coarsewood Functions

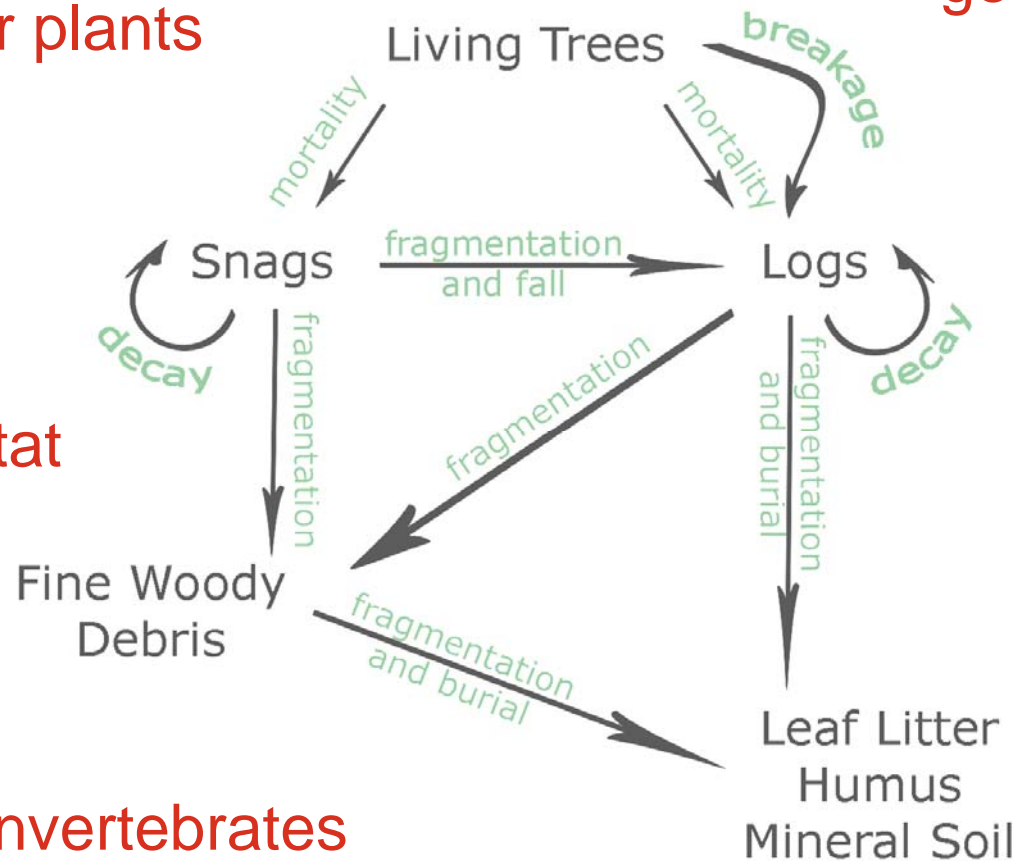
substrate for plants  
and fungus

geomorphology

wildlife habitat

habitat for invertebrates  
and microorganisms

nutrient and carbon cycles

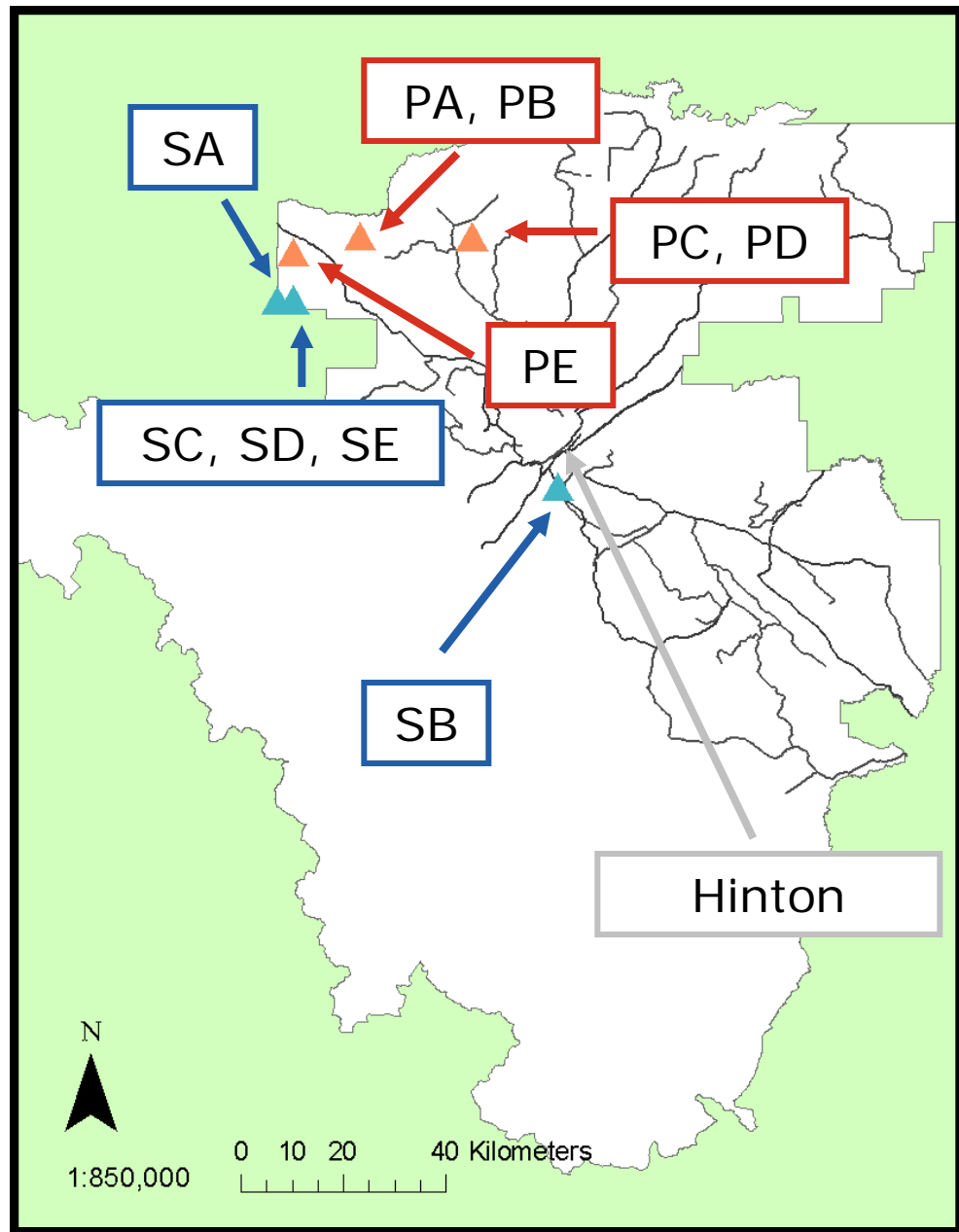


# Research Questions

1. (a) How abundant are spruce and pine snags and logs on the landscape?  
  
(b) What is their distribution of decay classes and wildlife habitat functions?
  
2. (a) When did the snags and logs die?  
  
(b) How does time since death vary among decay classes?

**Conservation and management implications?**

# Methods



# Methods



# Coarsewood Census



## SNAGS

Spruce: 508  $\pm$  188 per ha

Pine: 298  $\pm$  259 per ha



## LOGS

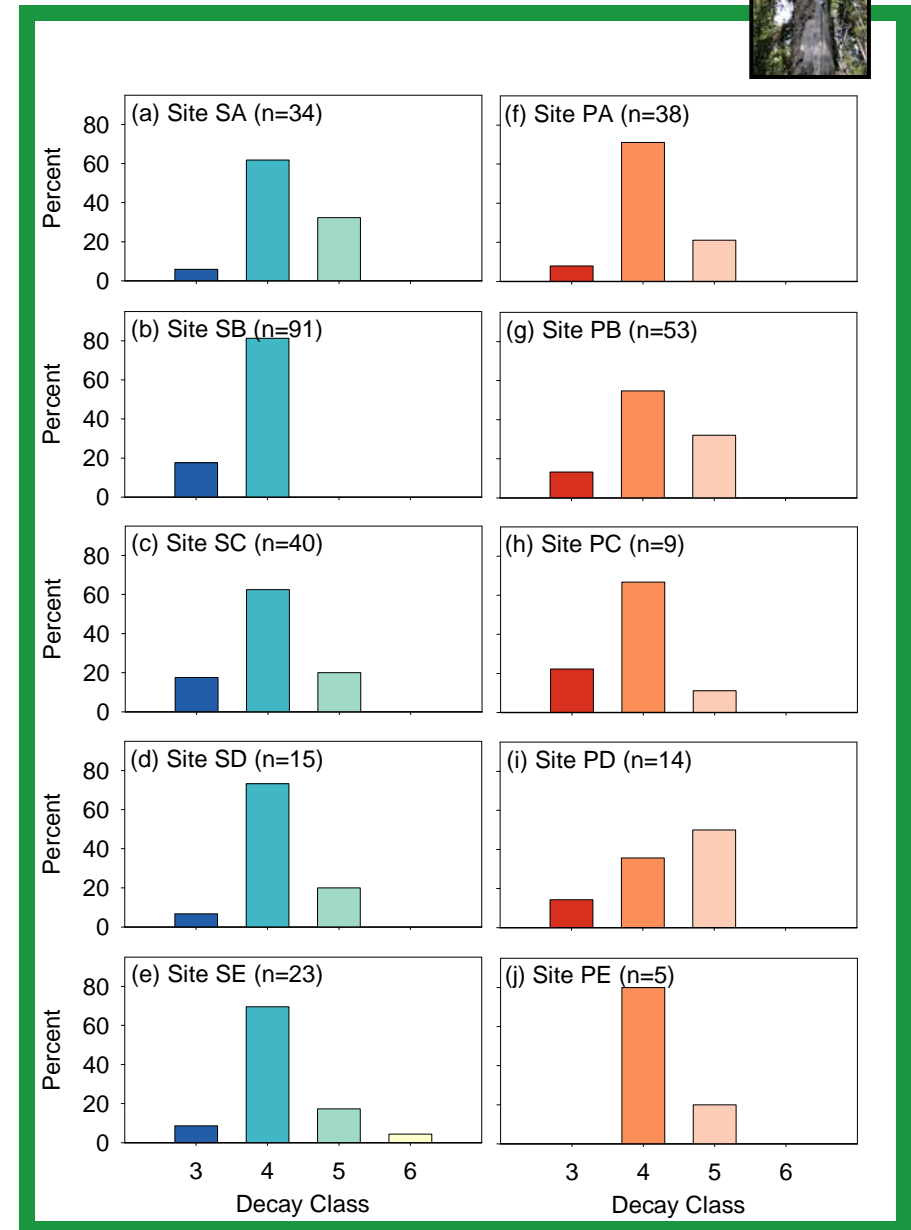
Spruce: 468  $\pm$  113 per ha

Pine: 545  $\pm$  73 per ha



# Coarsewood Census

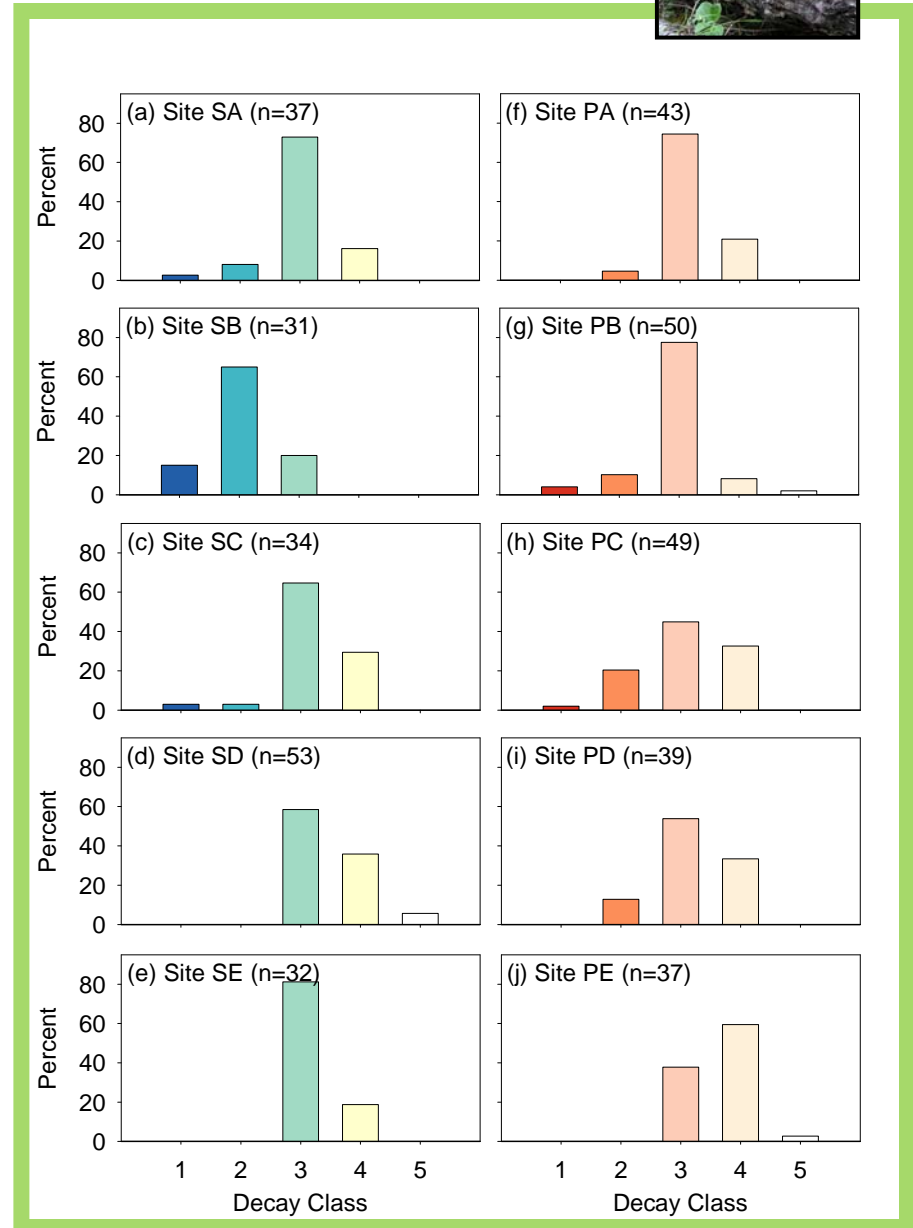
## SNAGS



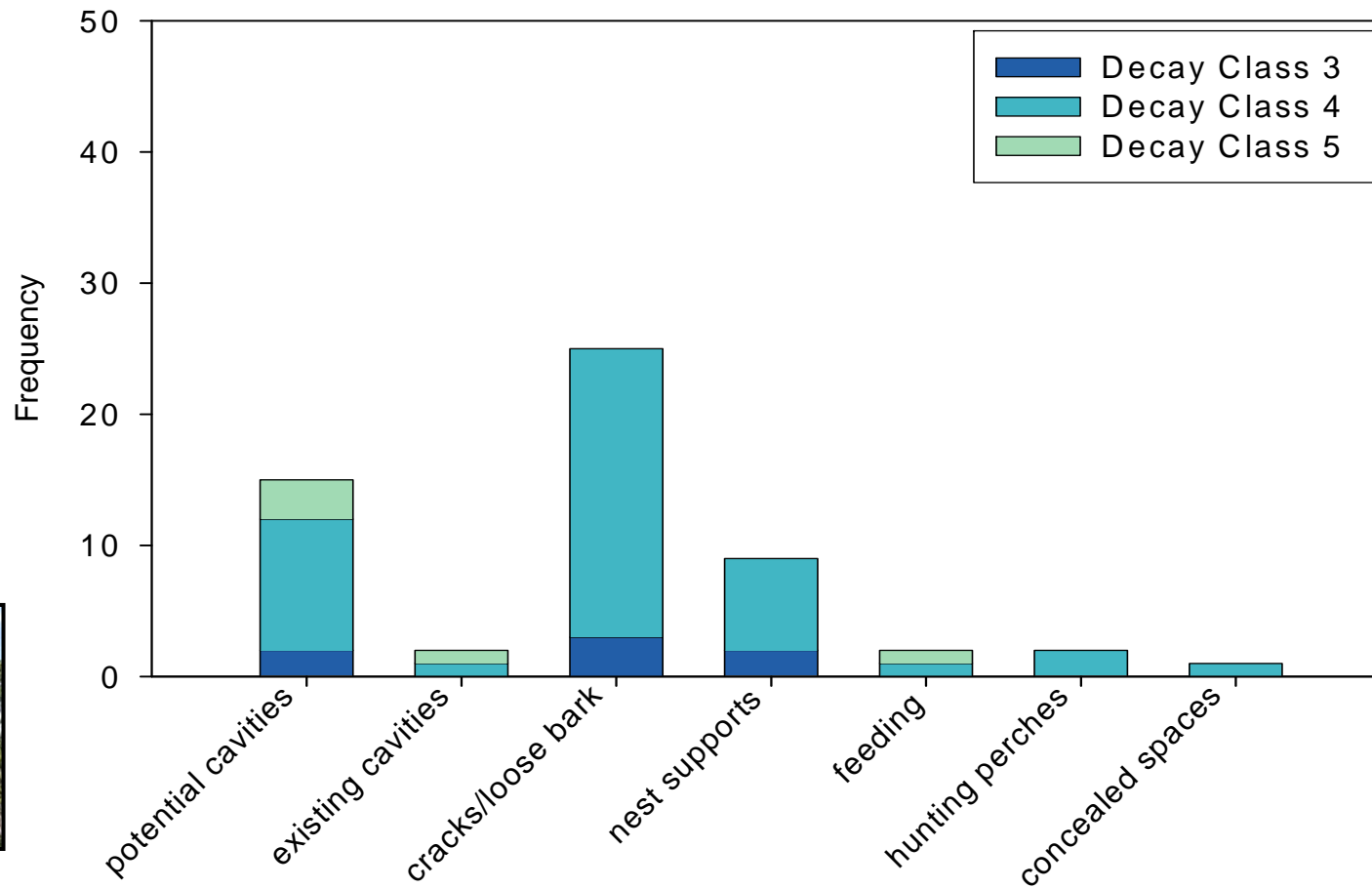


# Coarsewood Census

## LOGS



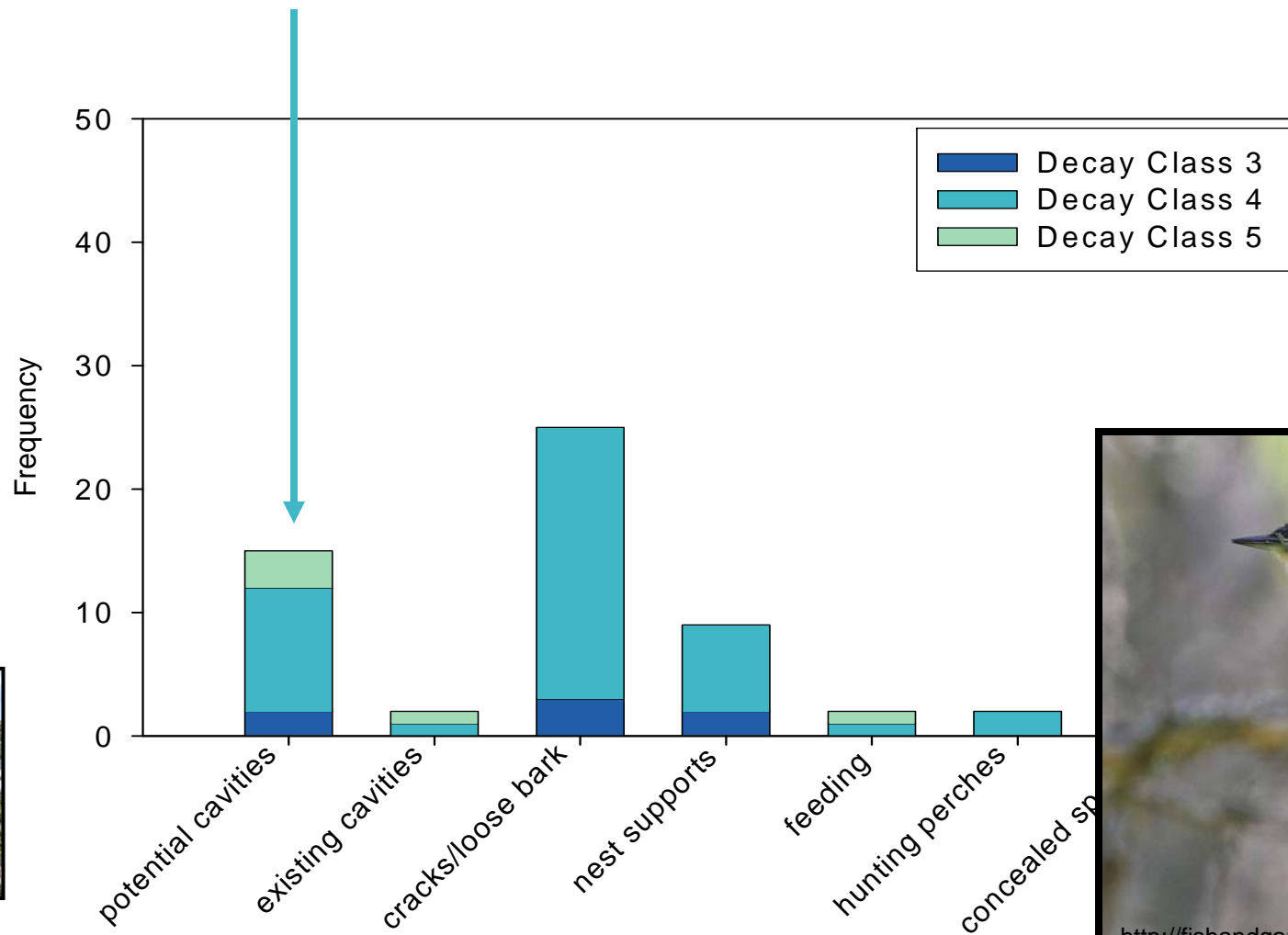
# Snag Census: Wildlife Use



**SPRUCE**

# Snag Census: Wildlife Use

decay-softened inner wood for cavity excavation

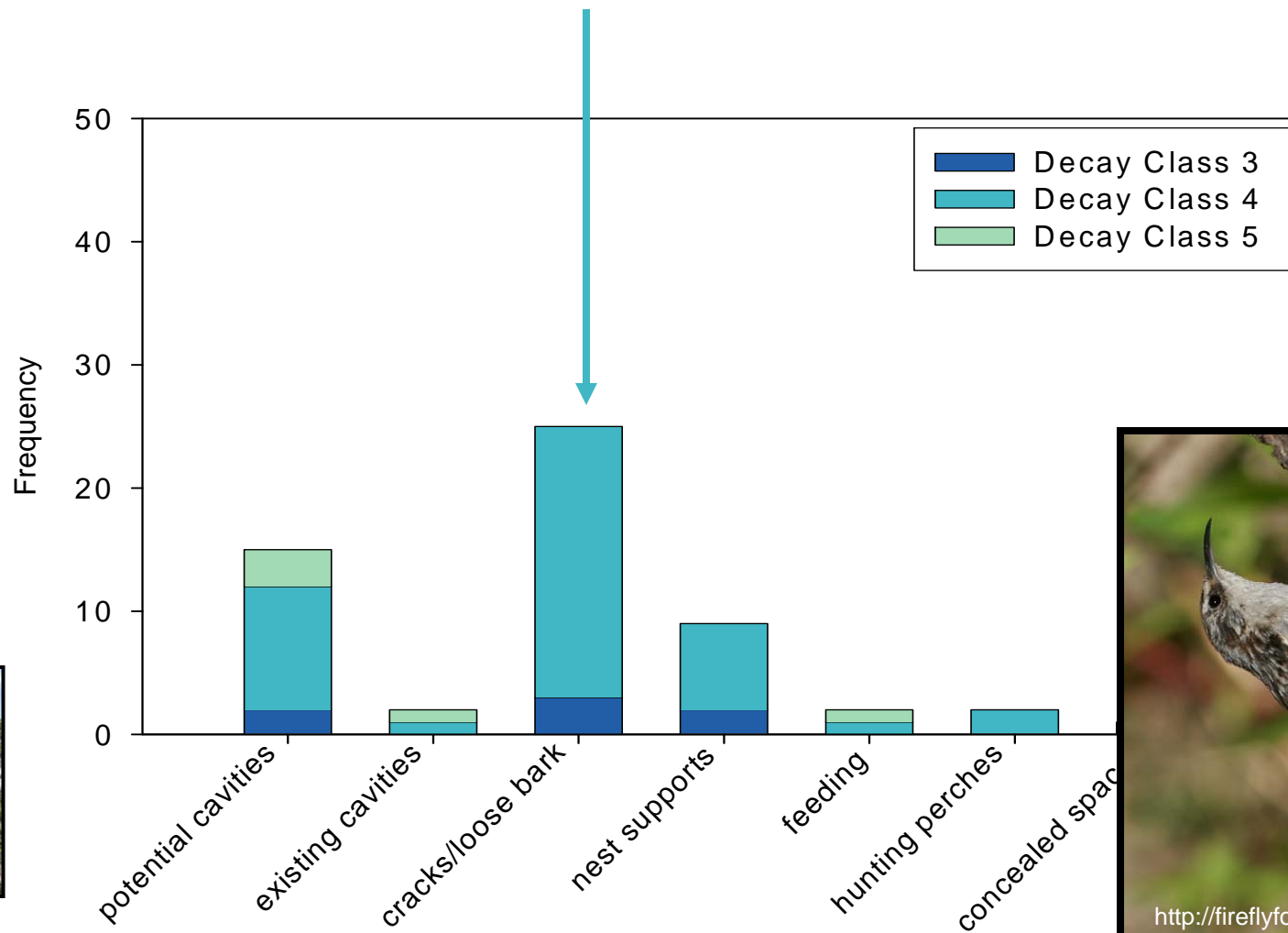


SPRUCE



# Snag Census: Wildlife Use

cracks or loose bark for reproduction and resting

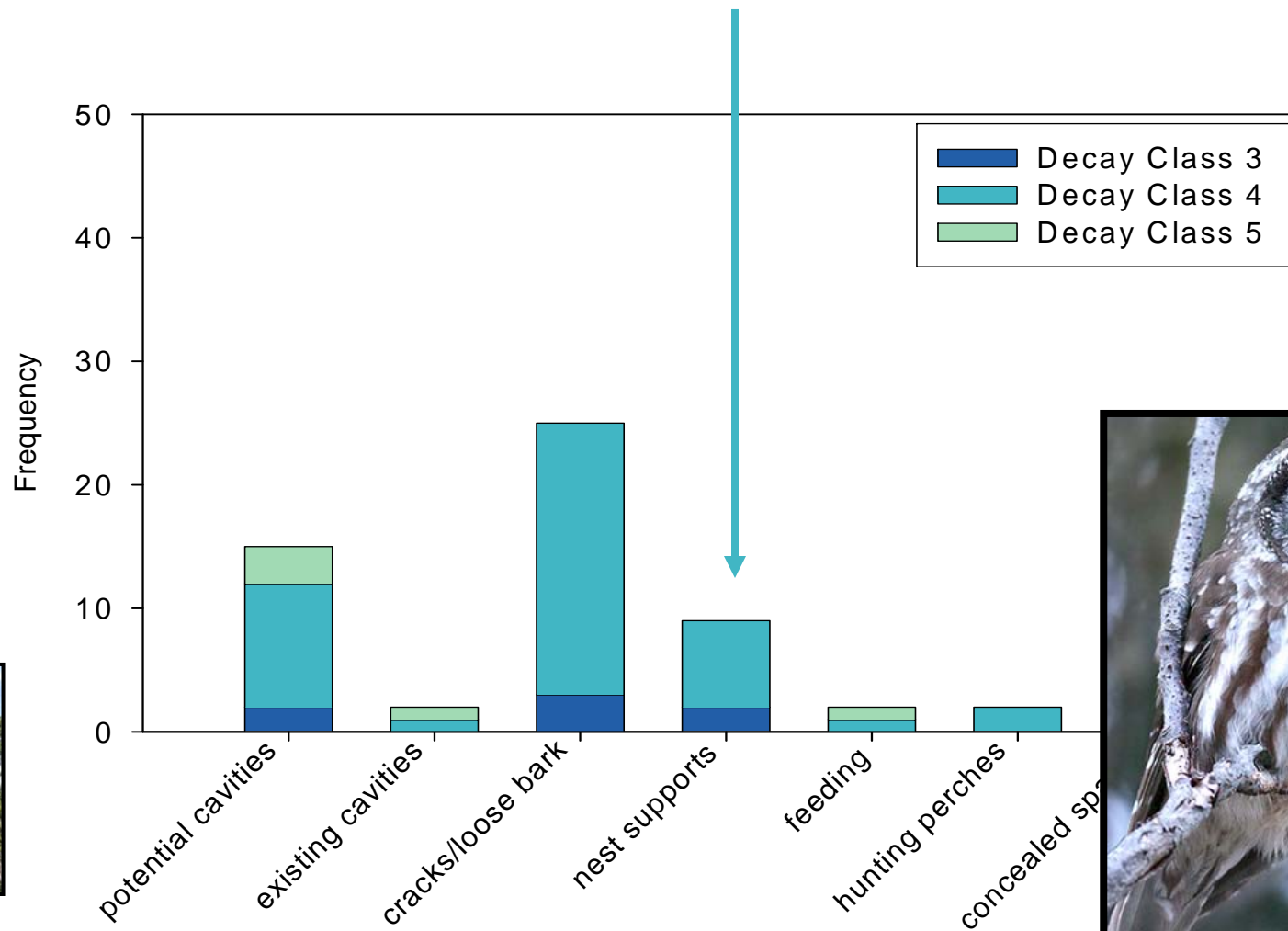


SPRUCE



# Snag Census: Wildlife Use

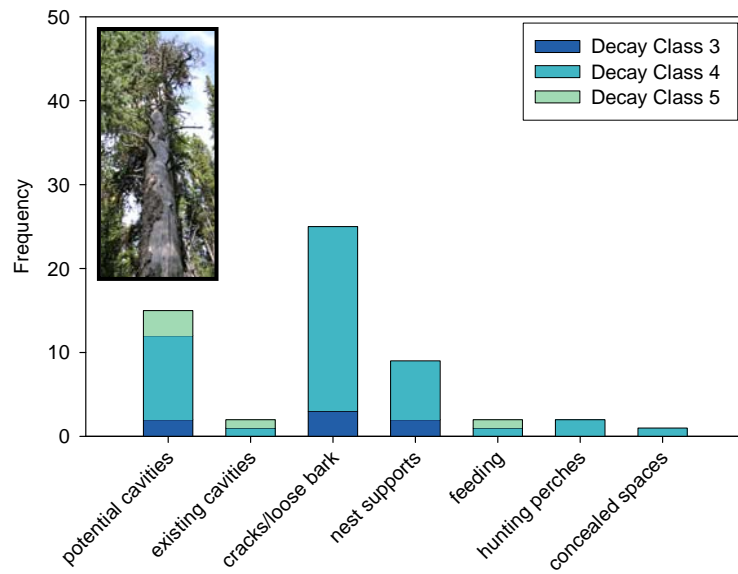
large branches or broken tops to support large nests



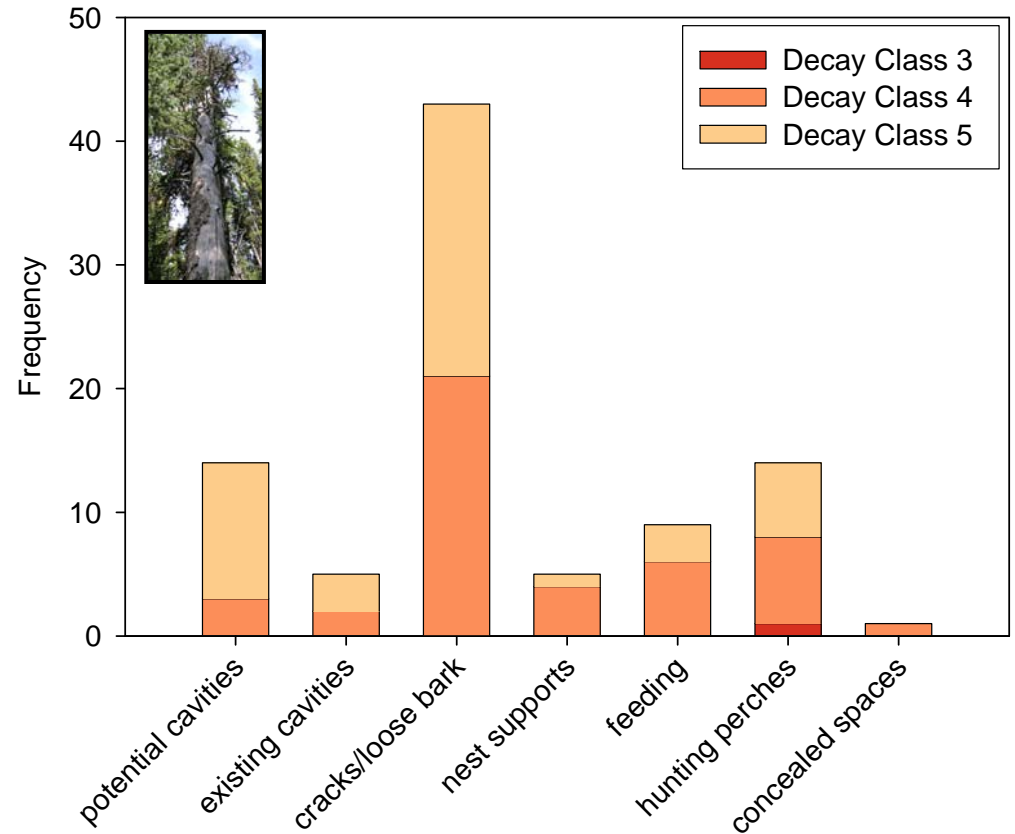
SPRUCE



# Snag Census: Wildlife Use

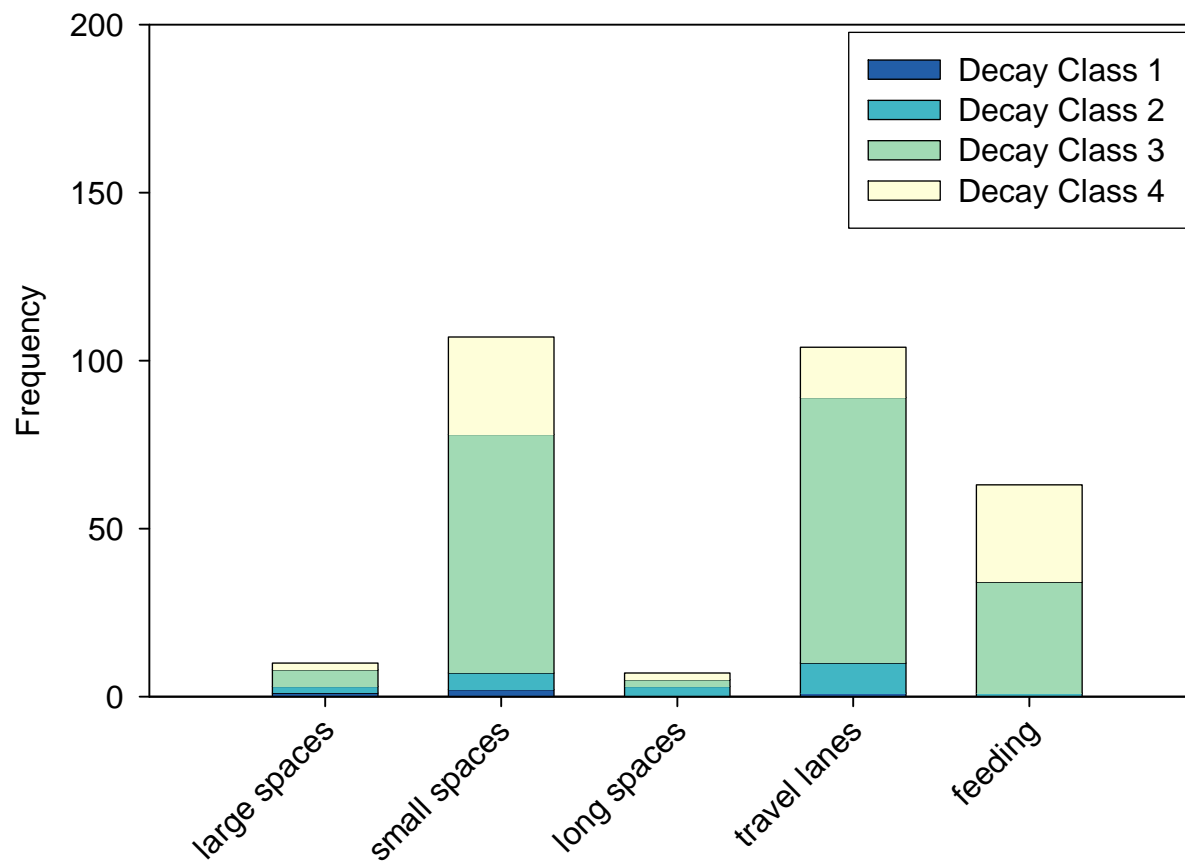


**SPRUCE**



**PINE**

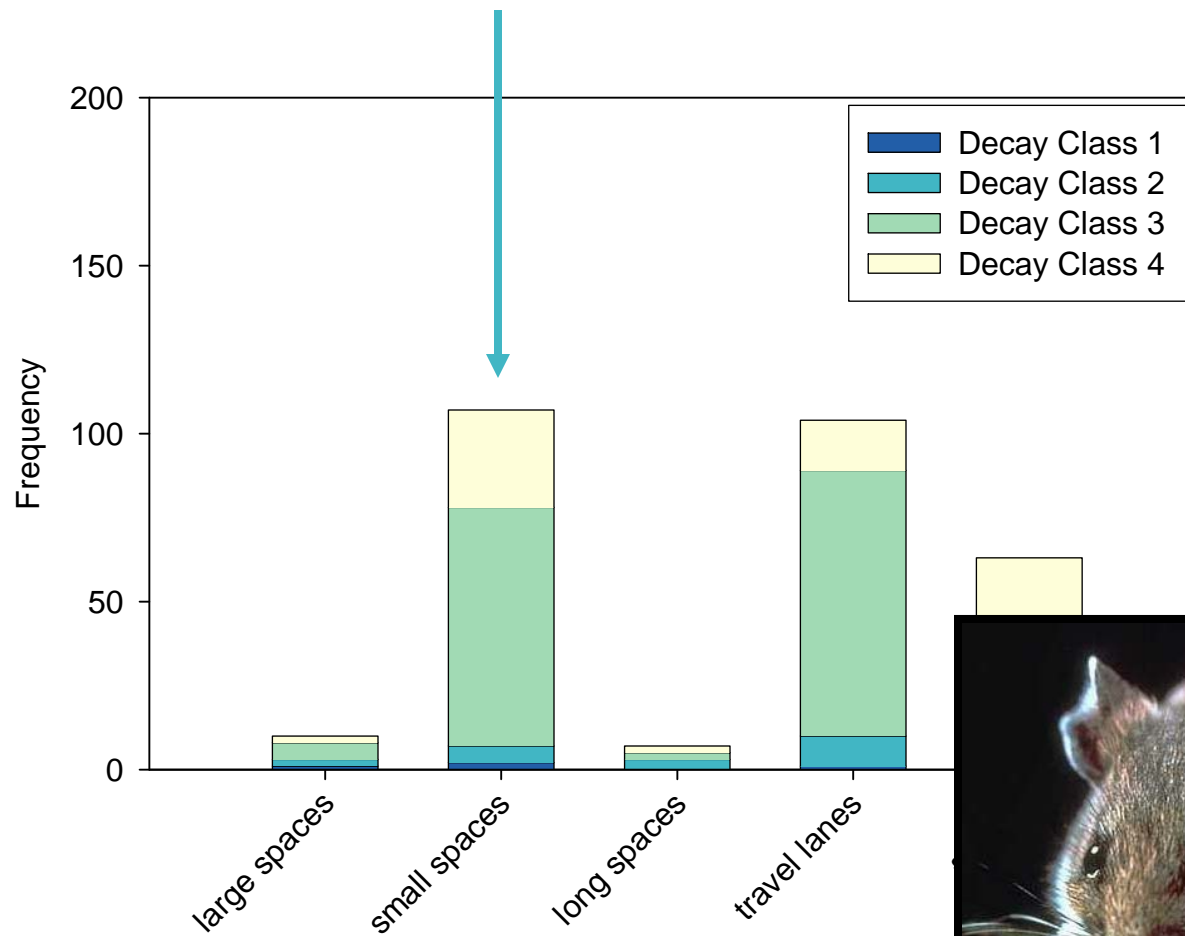
# Log Census: Wildlife Use



**SPRUCE**

# Log Census: Wildlife Use

small concealed spaces for reproduction and resting



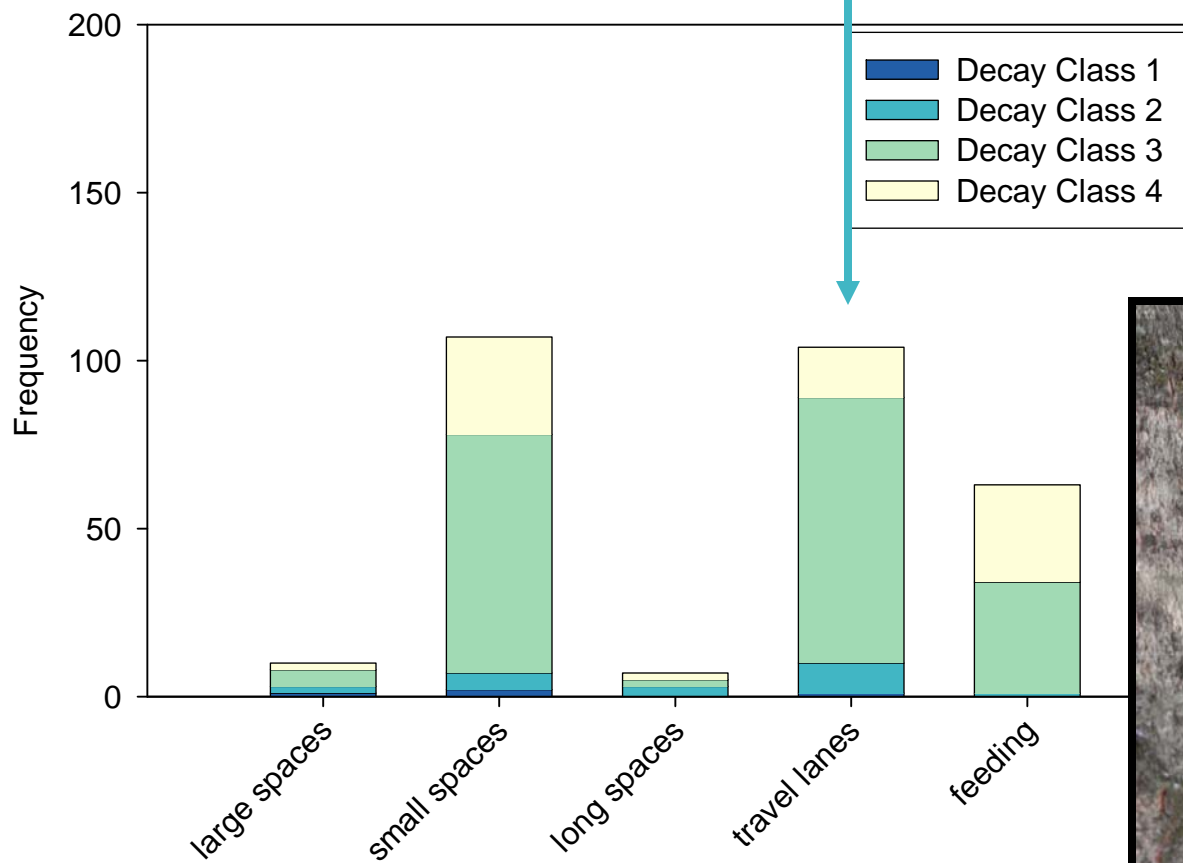
SPRUCE





# Log Census: Wildlife Use

exposed, raised travel lanes



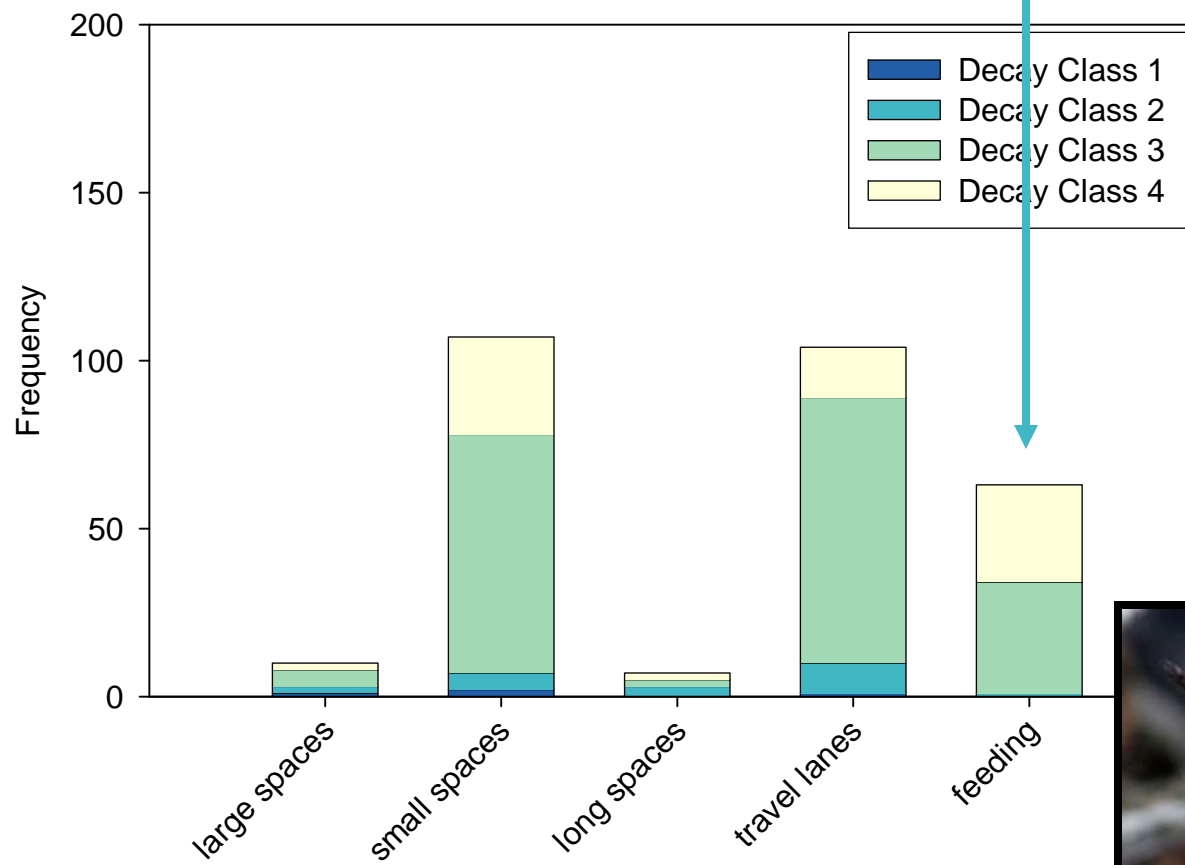
SPRUCE



<http://www.crcd.org>

# Log Census: Wildlife Use

invertebrates in wood

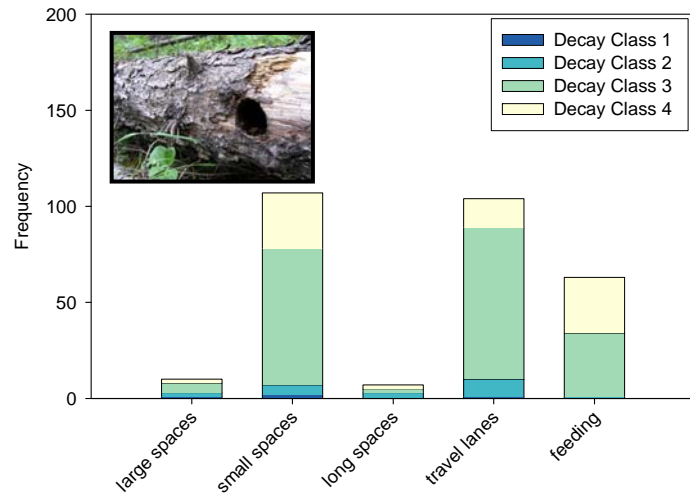


SPRUCE

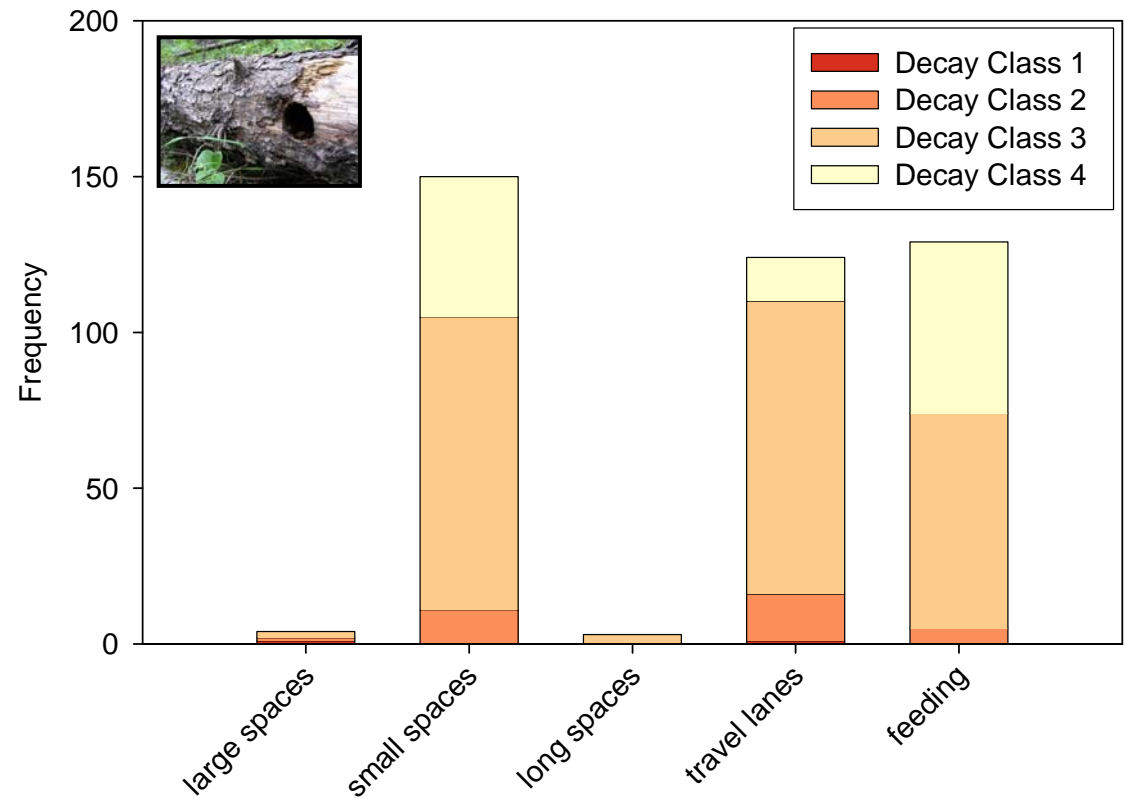


<http://shandgame.idaho.gov>

# Log Census: Wildlife Use



**SPRUCE**



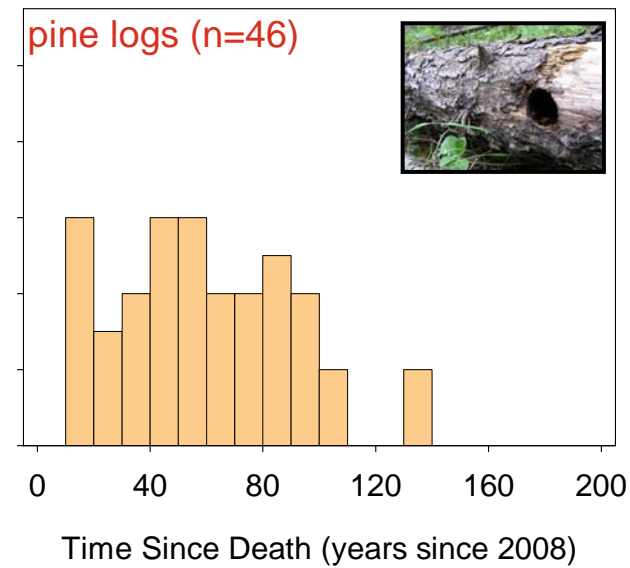
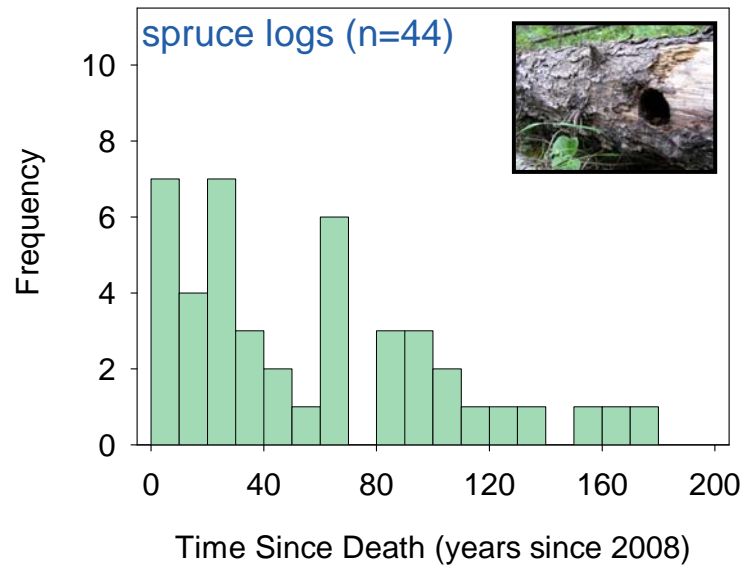
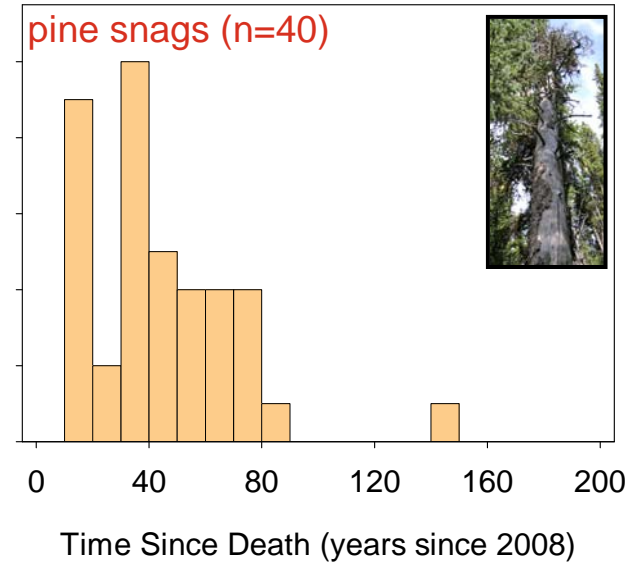
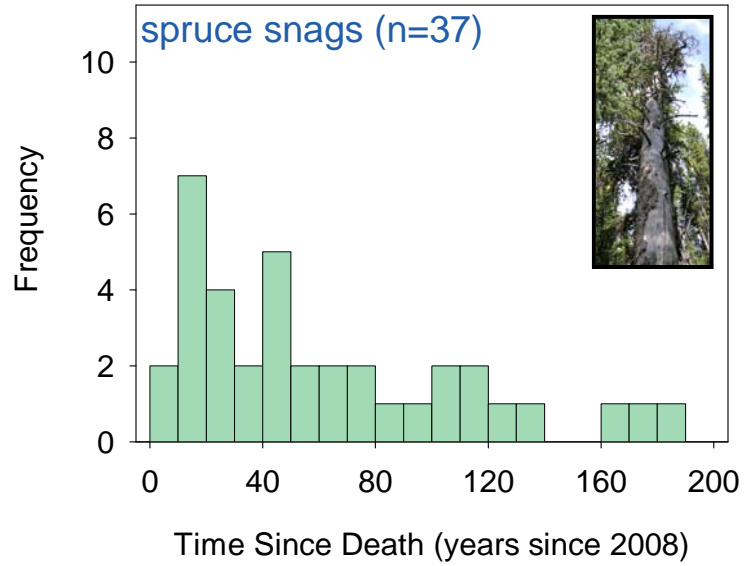
**PINE**

Year of Death (YOD) = calendar year of outer ring

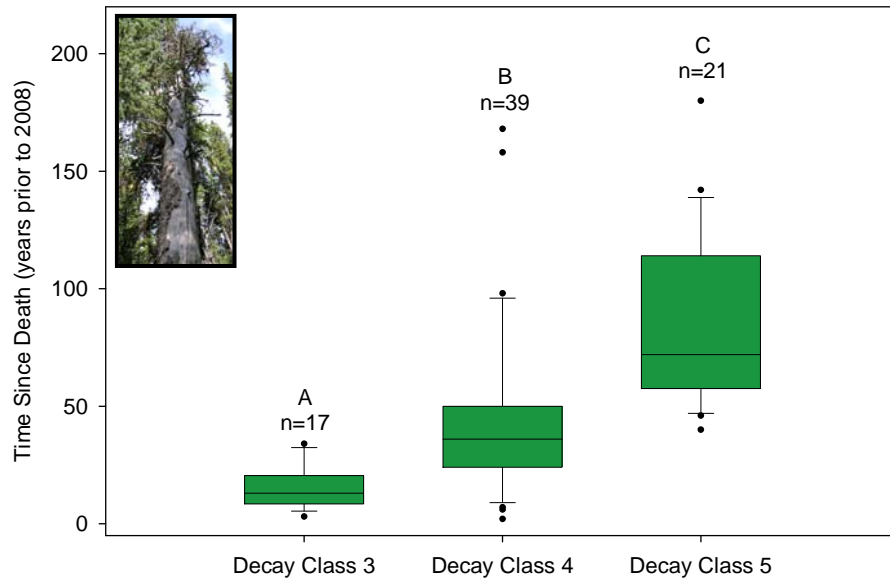
Time Since Death = 2008 – YOD = snag or log age

“old” = snag or log that has been dead for a long time

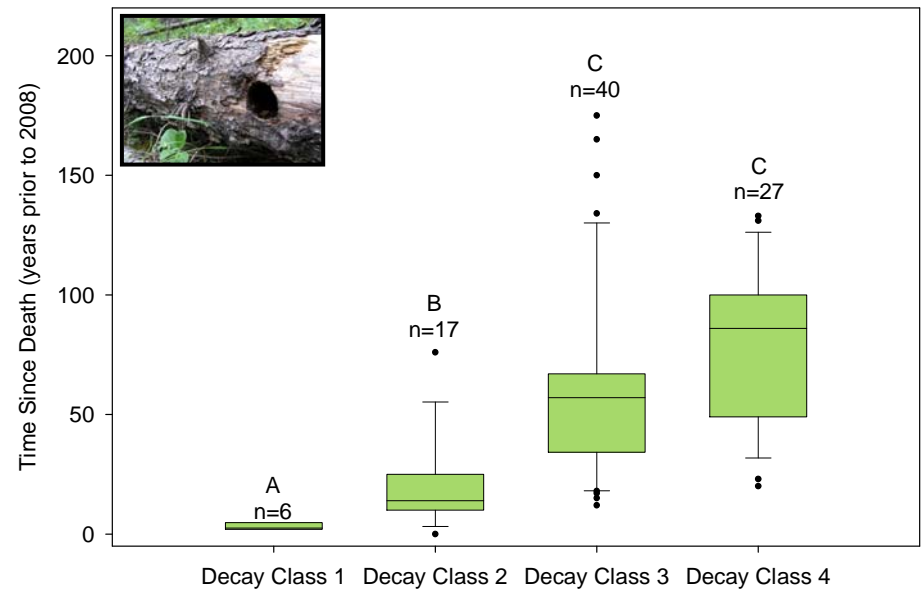
# Time Since Death



# Time Since Death: Variability Across Decay Classes



**SNAGS**

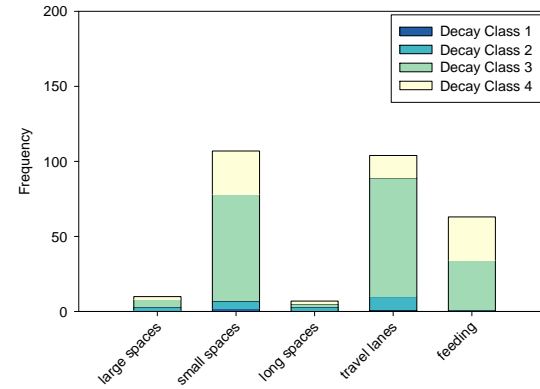
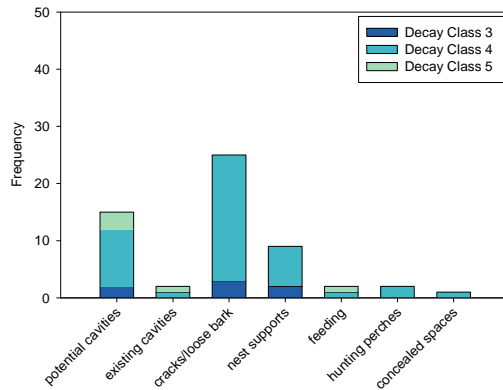


**LOGS**

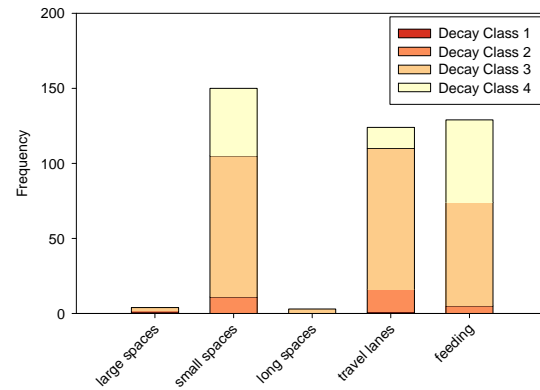
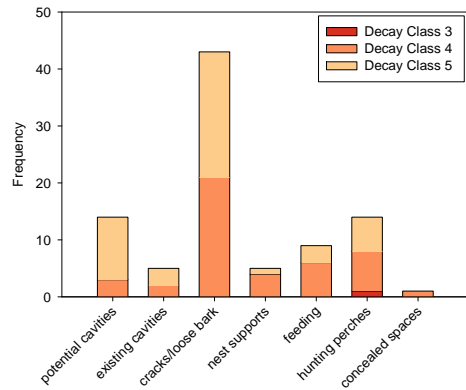
# REMINDER

## Coarsewood Census: Wildlife Use

### SPRUCE



### PINE



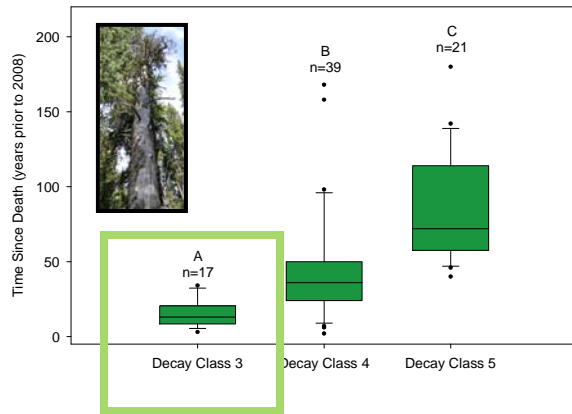
### SNAGS



### LOGS



# Snag Decay Class 2



Time Since Death:  
3-19 years

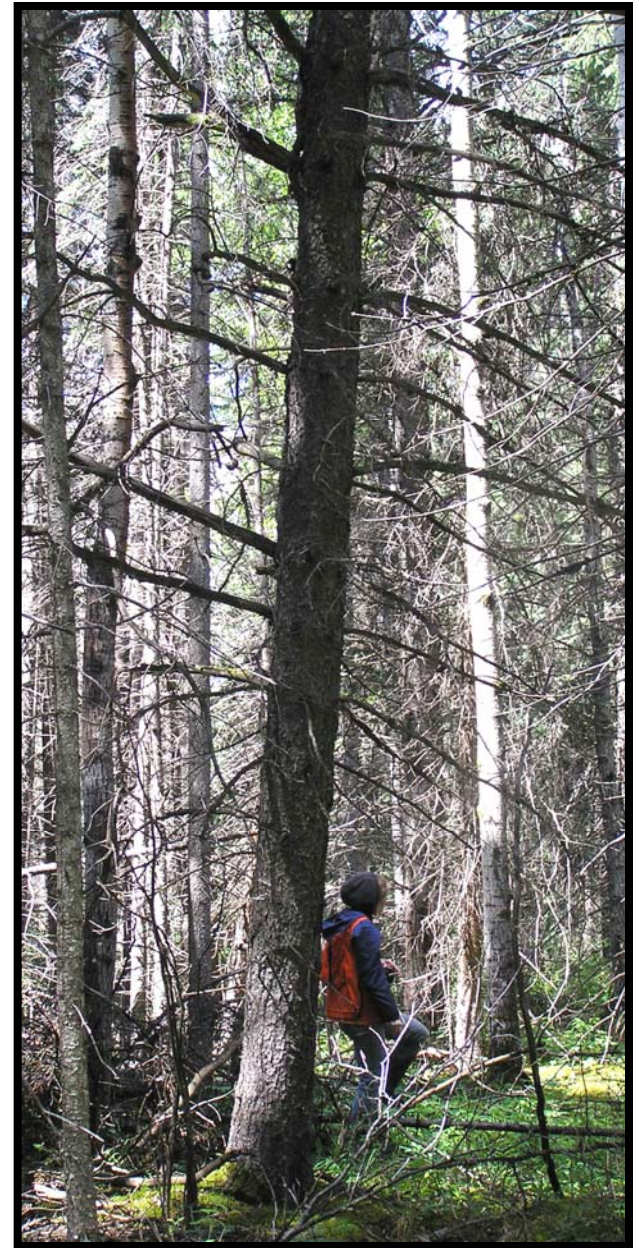
11% of habitat  
function:

- cavities for reproduction and resting
- nest supports

Time Since Death:  
7-34 years

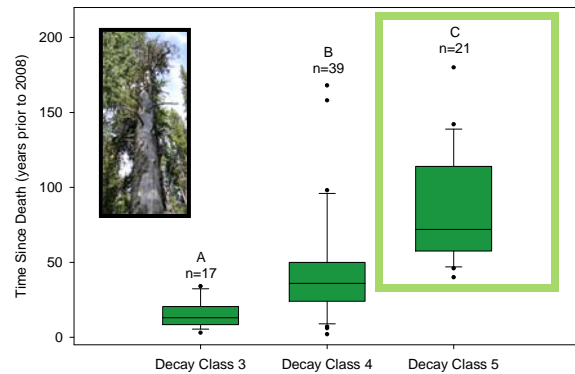
1% of habitat  
function:

- hunting perches





# Snag Decay Class 4



Time Since Death:  
54-180 years

8% of habitat function:

- cavities for reproduction and resting
- feeding substrates

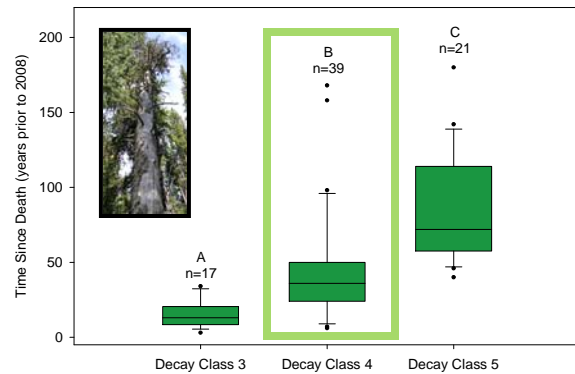
Time Since Death:  
40-142 years

51% of habitat function:

- cavities for reproduction and resting
- nest supports
- feeding substrates
- hunting perches



# Snag Decay Class 3



Time Since Death:  
2-168 years

73% of habitat  
function:

- cavities for reproduction and resting
- nest supports
- feeding substrates
- hunting perches
- concealed spaces

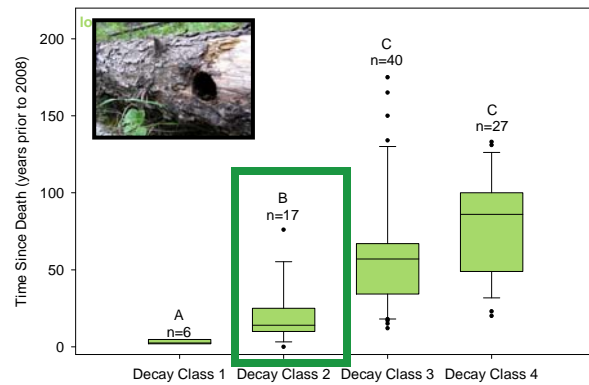
Time Since Death:  
6-64 years

48% of habitat  
function:

- cavities for reproduction and resting
- nest supports
- feeding substrates
- hunting perches
- concealed spaces



# Log Decay Class 2



Time Since Death:  
0-24 years

Time Since Death:  
6-76 years

7% of habitat function:

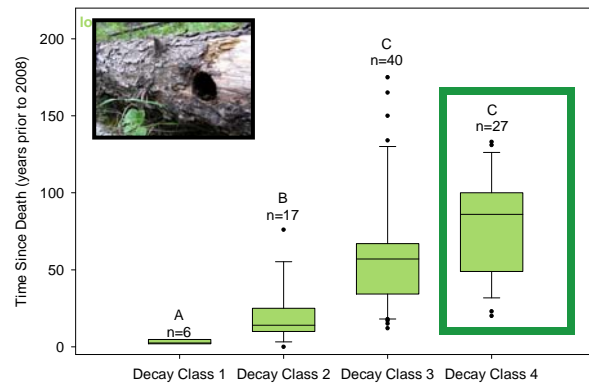
- large concealed spaces

8% of habitat function:

- large concealed spaces



# Log Decay Class 4



Time Since Death:  
20-125 years

26% of habitat function:

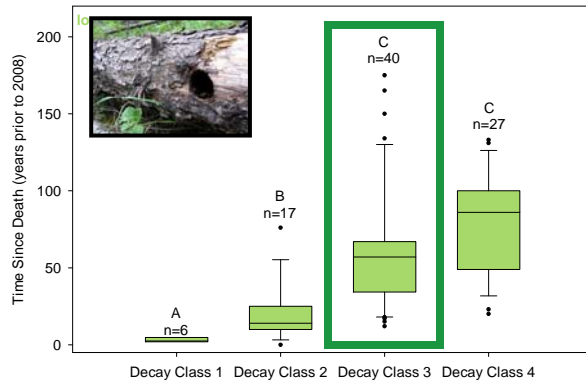
- small concealed spaces
- long concealed spaces
- feeding substrates

Time Since Death:  
23-133 years

28% of habitat function:

- small concealed spaces
- feeding substrates

# Log Decay Class 3



Time Since Death:  
15-175 years

65% of habitat function:

- small concealed spaces
- large concealed spaces
  - travel lanes
- feeding substrate

Time Since Death:  
12-95 years

64% of habitat function:

- small concealed spaces
- large concealed spaces
  - travel lanes
- feeding substrate



# Habitat Conservation



intermediate decay classes = most function  
94% logs, 33% snags at least one function

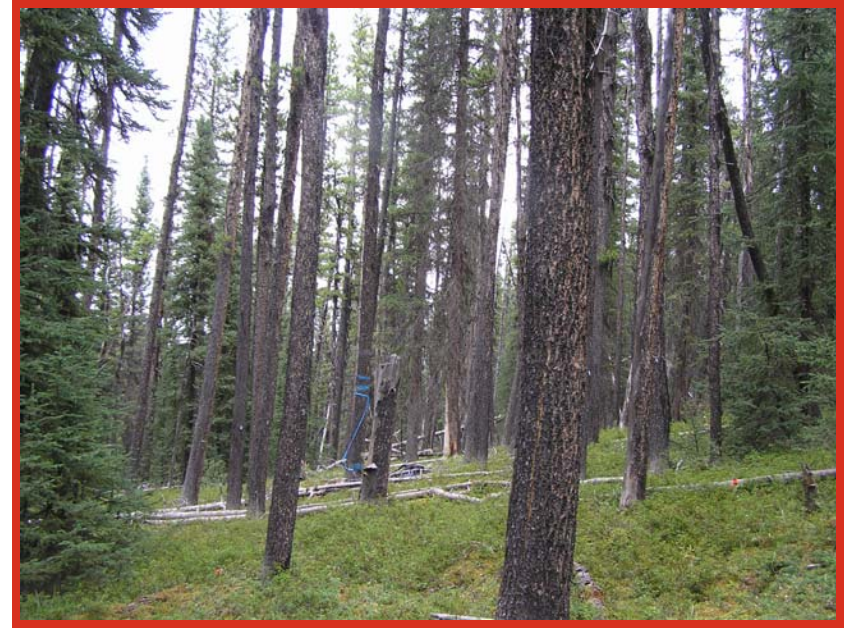
.... 91% logs have more than one function

....only 11% snags have more than one function

# Habitat Conservation



- abundance and diversity
- rare functions



## Management Implications

- long-term planning
- decision-support tool
- old forests



# Acknowledgements

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Lori Daniels, Valerie LeMay, R. Dan Moore

