

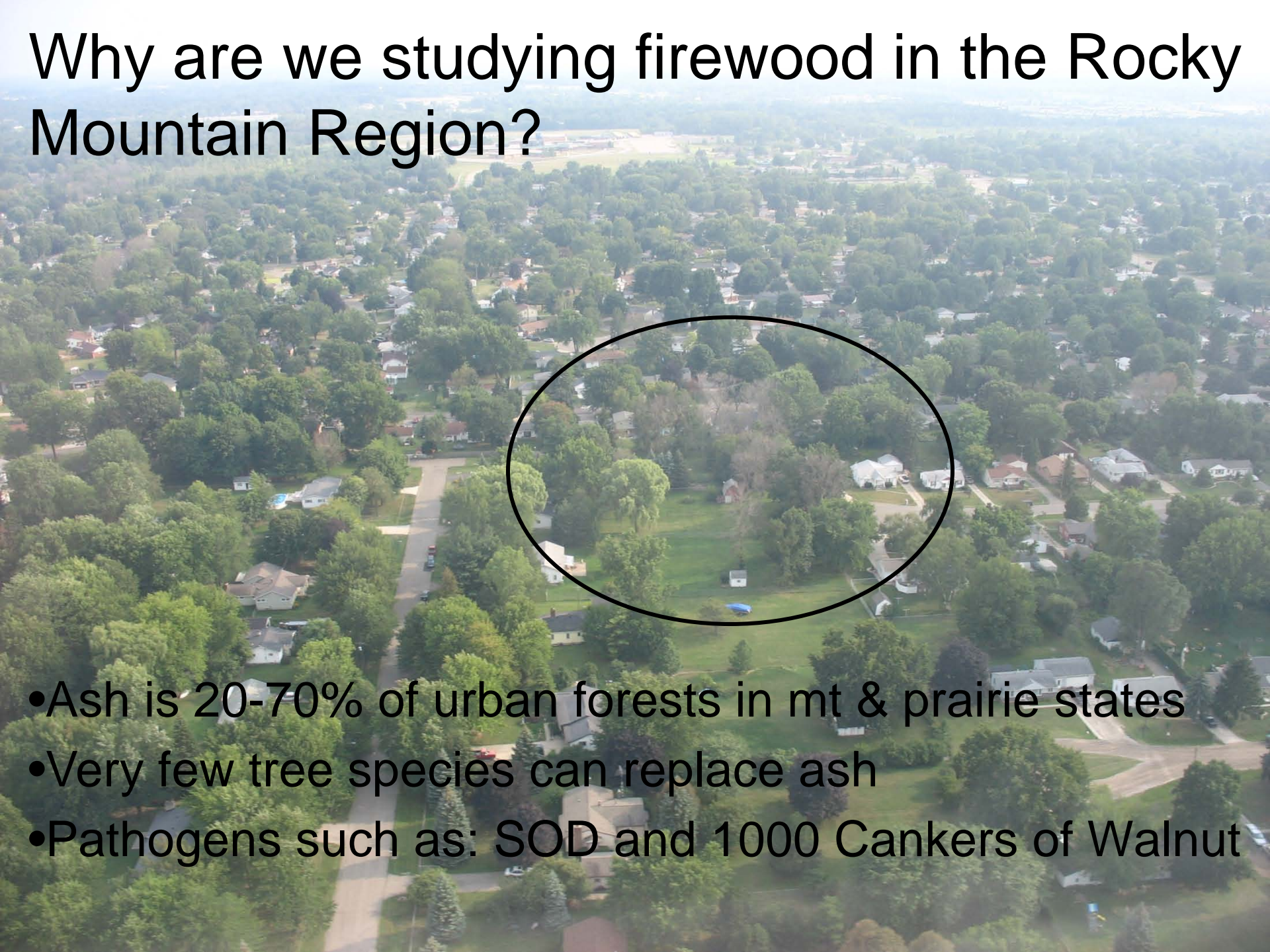
Firewood as a Potential Pathway for Exotics in the Southern Rocky Mountains

APHIS Funded Project

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Why are we studying firewood in the Rocky Mountain Region?



- Ash is 20-70% of urban forests in mt & prairie states
- Very few tree species can replace ash
- Pathogens such as: SOD and 1000 Cankers of Walnut

Study Objectives

What is the risk of firewood transporting insects and pathogens?

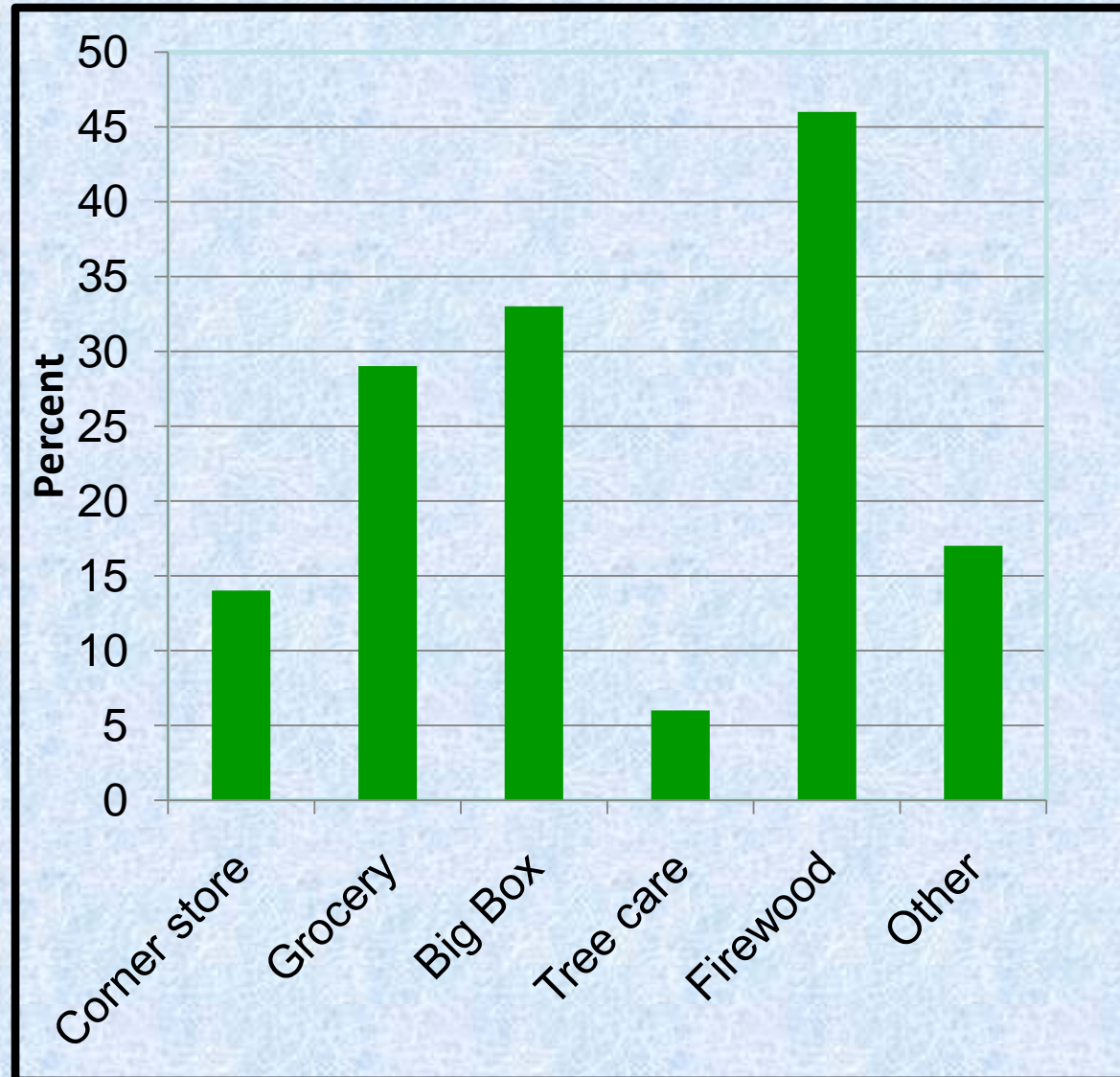
1. What retail outlets sell firewood?
2. Are there insects or fungi in retail firewood?
3. Do campers bring firewood from out of state?



Firewood Retail Phone Survey

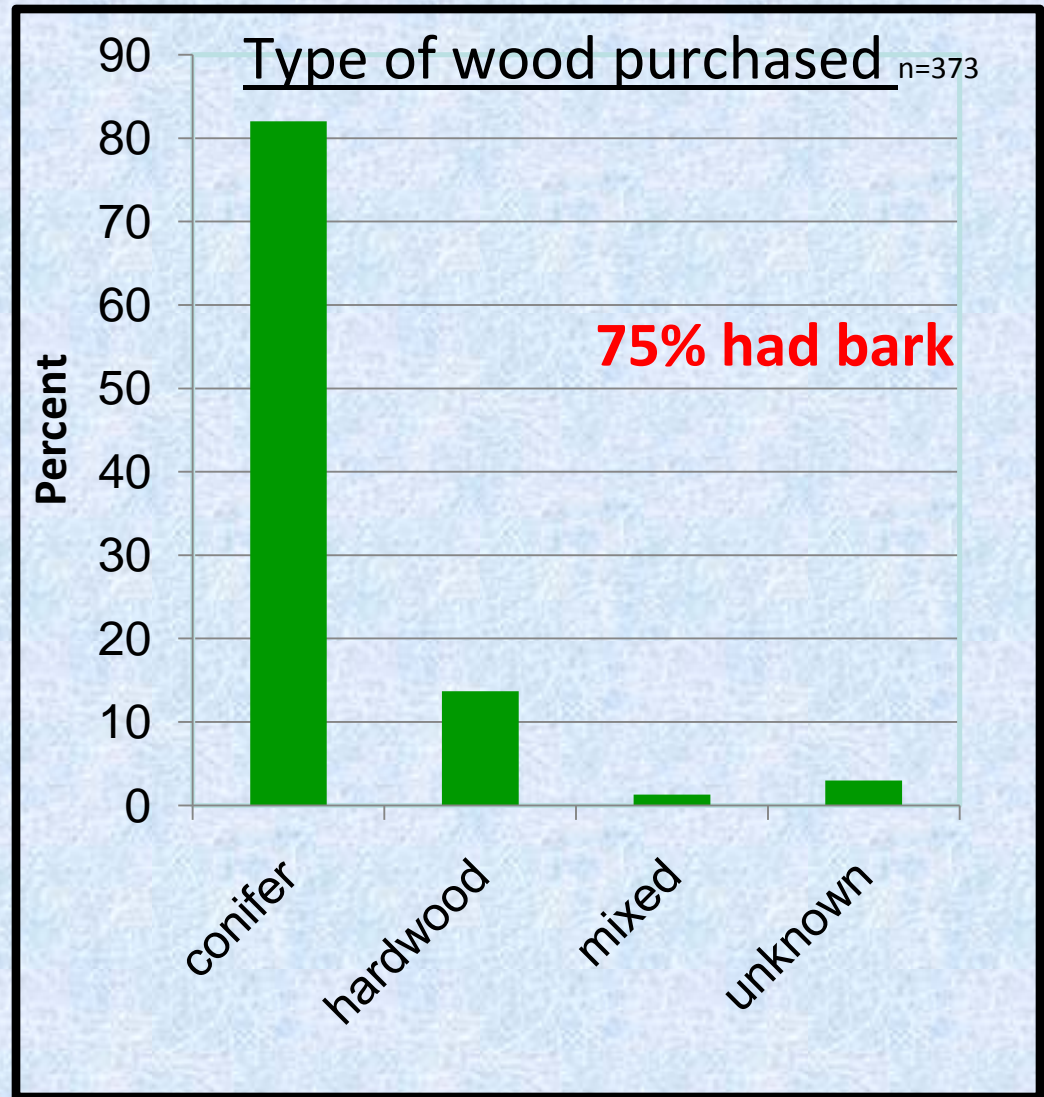
- Retailers (n=714) in six urban areas in CO, NM, UT, WY:

1. Corner store
2. Grocery store
3. Dept/big box
4. Tree care
5. Firewood dealer



Firewood Retail Purchases

- Purchased wood CO, NM, UT, WY at 4 retailer types in winter and summer 2009

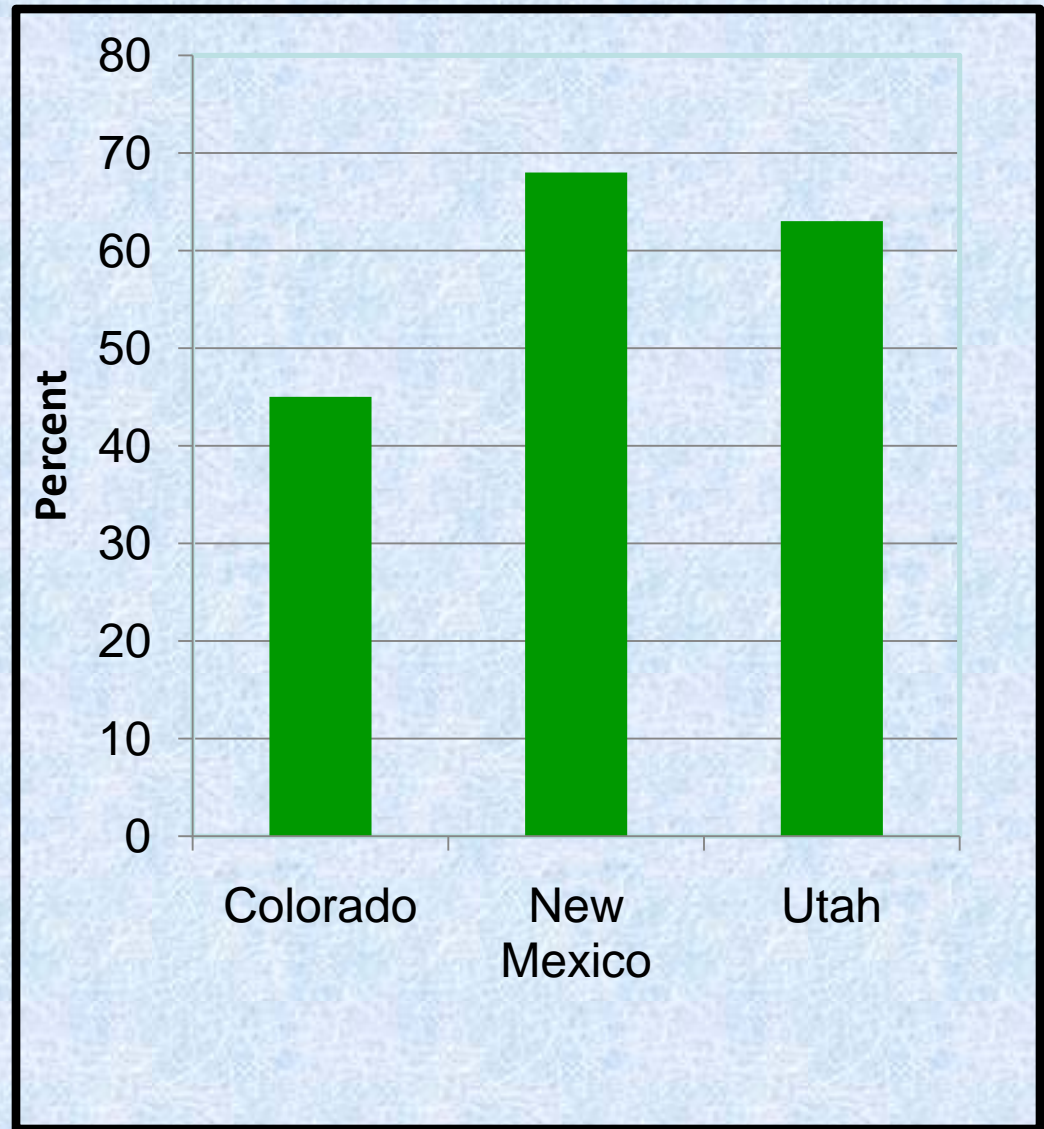


Firewood Retail Purchases

Percent of wood
from out-of-state
based on label

Label Sources:

AZ, BC, CA, CO,
FL, GA, ID, KY, LA,
MN, MO, MT, NE,
NM, OR, PA, TX,
UT, WA



Firewood Retail Purchases

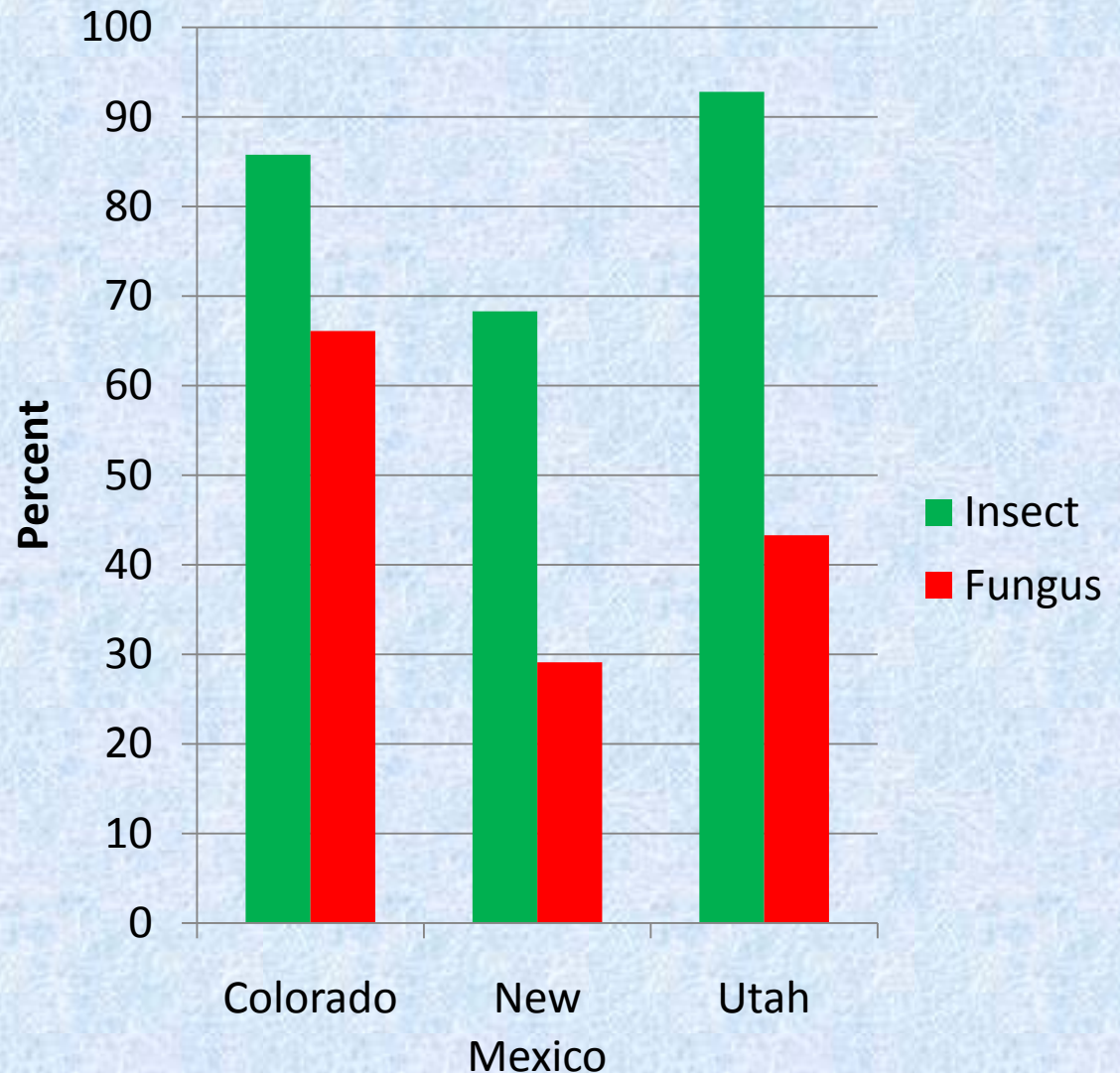
Other Risk Factors

- 55% wood outside store
- Amount of sales ?
- 75% retailers sold in winter and summer
- Walnut with 1000 cankers pathogen



Firewood Retail Purchases

- Evidence of preexisting insect or fungal infestation



Firewood Retail Purchases: Insect Rearing

- placed in rearing bins until summer 2010
- check bins every two months
- so far: scolytids, cerambycids, buprestids, wasps, carpenter ants, leaf beetles, parasitic flies, and predatory beetles



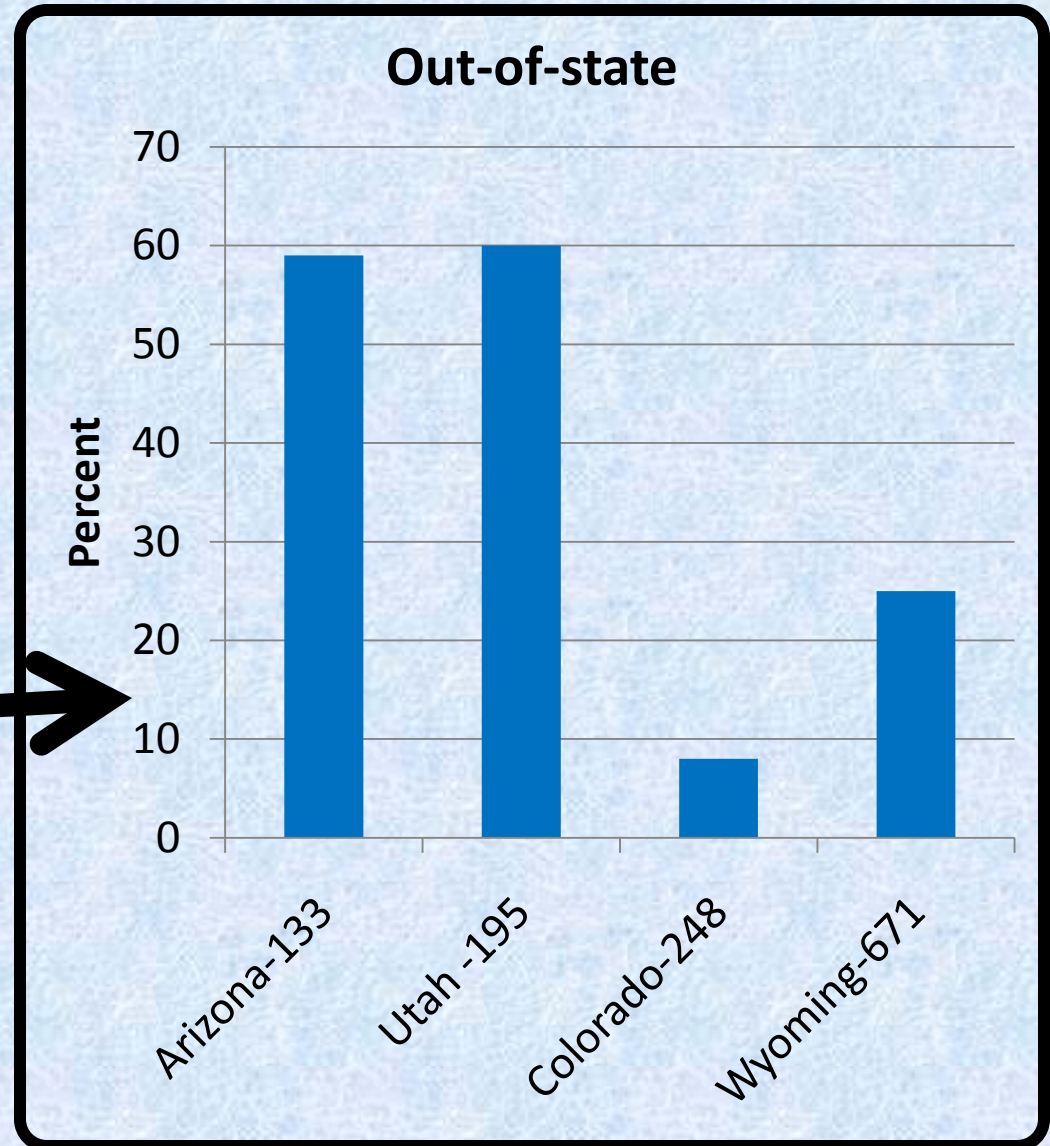
Camper Survey- 2009

Do National
Park
campers
bring
firewood
from home?



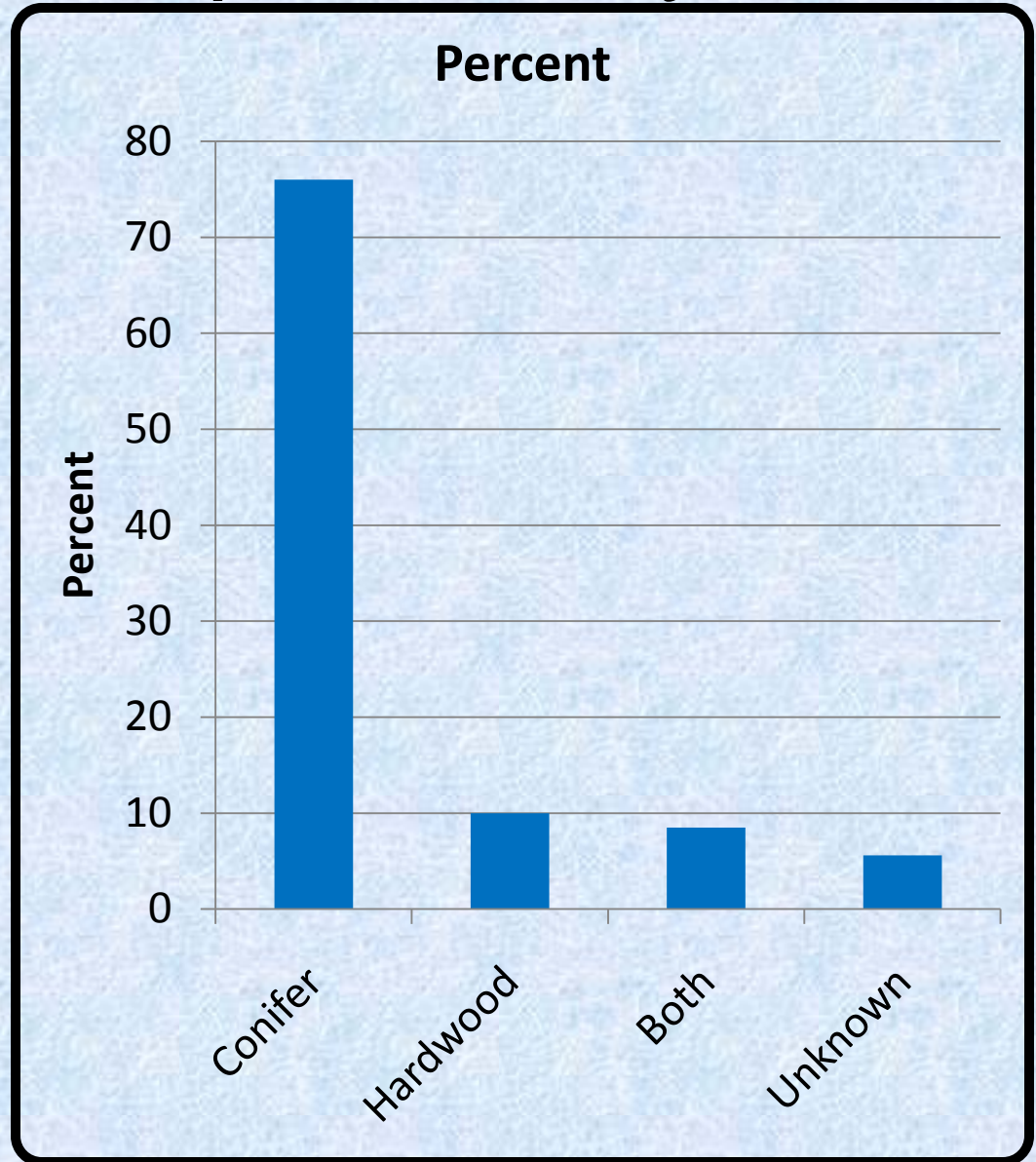
National Park Camper Survey-2009

- AZ, CO, UT, WY
- 13 Parks
- 30 campgrounds
- 1658 campers
- 67% had firewood
- NPS camper data
- 1.2 million campers bring firewood from out of state



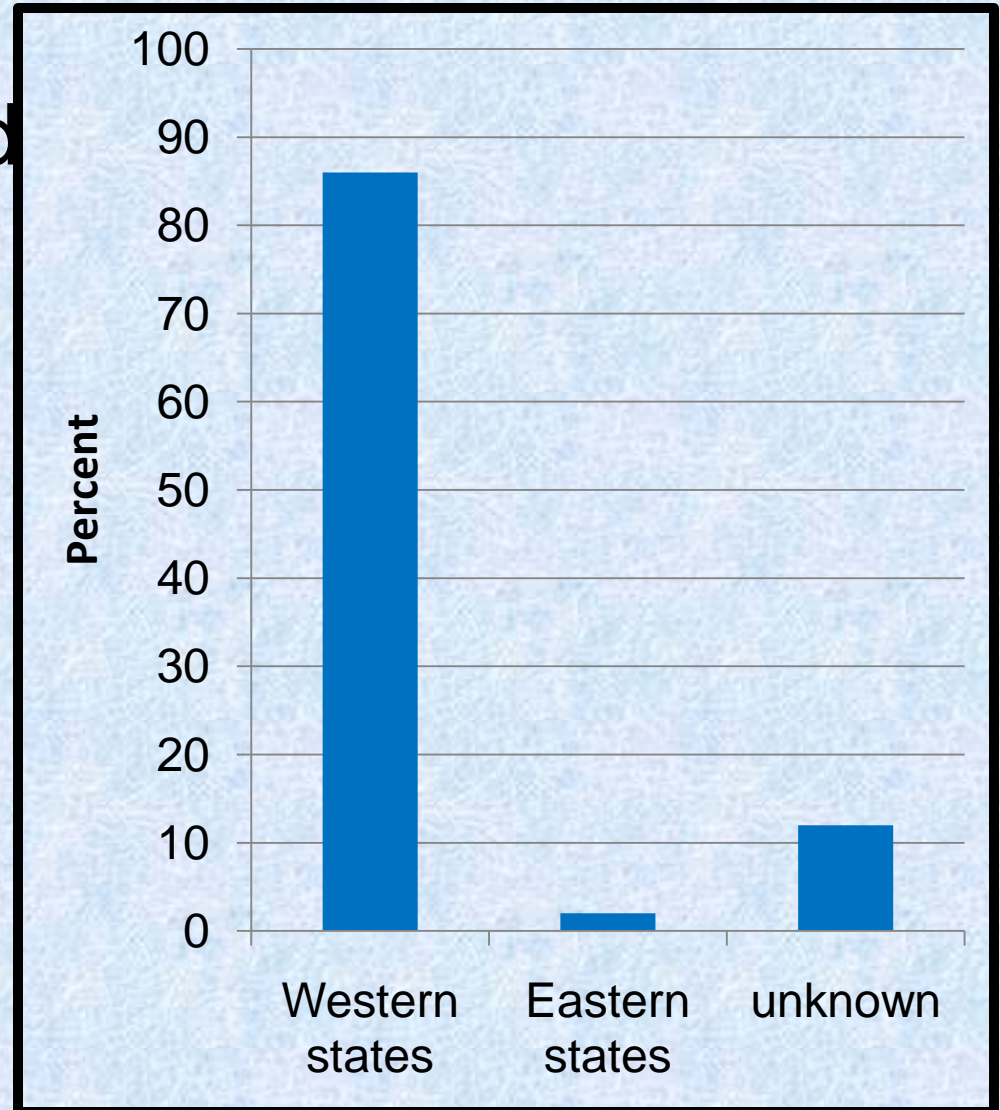
National Park Camper Survey-2009

- Type of wood
- walnut, oak, aspen, cherry, pecan, eucalyptus, elm, almond, cottonwood, mesquite, pine, fir, juniper



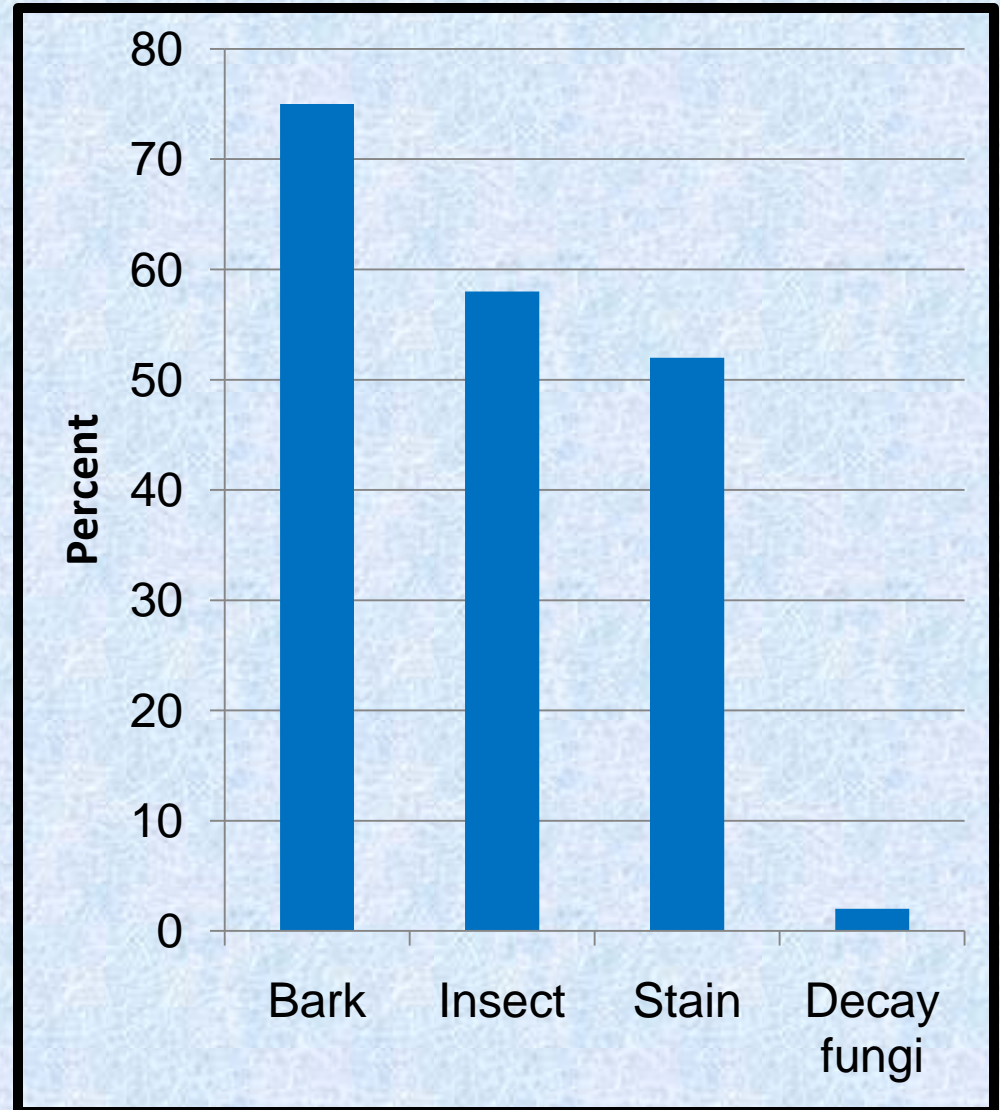
National Park Camper Survey-2009

- Source of firewood from eastern and western states
- Approximately 15,000 campers are bringing wood from east?



National Park Camper Survey-2009

- Risk Factors In Firewood
- Bark
- Previous insect and fungus evidence



Conclusions: Retail Firewood

- Most firewood is conifer with bark and 10% is hardwood
- Retail firewood from over 20 states and Canada
- Preexisting evidence of insects and fungi on 65-90%
- Insects emerge from firewood
- Longhorn and metallic wood borers, wasps, other beetles



Conclusions: National Park Camper Survey

- 8-60% campers are moving firewood across state lines
- 1.2 million campers moving firewood
- Cost of firewood induces people to bring wood
- Western campers not educated about firewood risk vs eastern?

Should firewood be moved across state lines?



Questions?



Insect Families Collected in 2008

Survey of Colorado Firewood Bundles $n=72$

- **Bark beetles and weevils**
 - Scolytidae
 - Curculionidae
- **Other beetles**
 - Scarabaeidae (scarab)
 - Elateridae (click)
 - Throscidae (throscid)
 - Tenebrionidae (darkling)
- **Wood boring beetles**
 - Buprestidae (metallic)
 - Cerambycidae (longhorn)
- **Other insects**
 - Miridae (plant /leaf bugs)
 - Chalcidoidae (wasps)
 - Coccinellidae (ladybeetles)
 - Blattidae (cockroaches)



2007-08 National firewood survey

- Data collected from **16** states (10 in 2006-07)
- 58% from an out-of-state source
- 80% had bark attached
- 37% conifer
- 56% hardwood
- 41% with evidence of borers
- 38% with evidence of bark beetles
- 17% with fungal fruiting body evidence
- 36% blue-stain fungi
- Wood in VA from Estonia, EU (European white birch)!
- Ash moving around in North Dakota only?