

# Firewood Transport of Tree Insects and Diseases

Continental Dialogue    October 2011

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# Assumptions About Firewood

1. People like fires
2. People will move firewood
3. People want cheap firewood
4. People want hardwoods
5. Western parks & mountains draw millions of campers & hunters each year
6. Firewood may carry insects and pathogens
7. We should not move exotic or native pests





# We have moved many pests by firewood or unprocessed wood

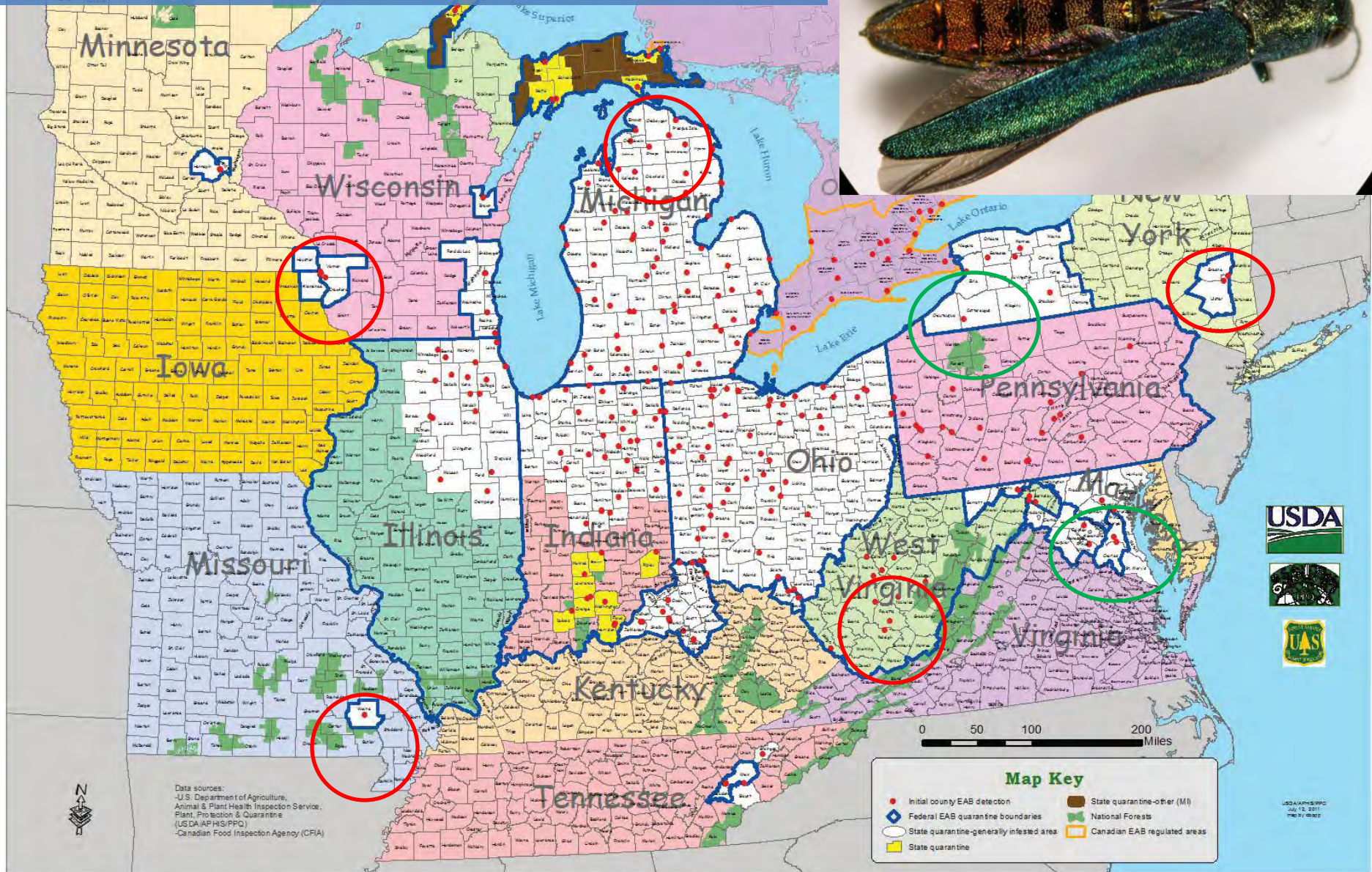
## “Poster children”

1. Emerald Ash Borer
2. Dutch Elm Disease
3. 1000 Cankers of Walnut
4. Laurel wilt
5. Mountain Pine Beetle





# Emerald Ash Borer is Moving via Wood and Nursery Stock





# How Does Firewood Move Across State Lines?

1. Retail firewood
2. Small specialty firewood dealers
3. Hunters
4. Second-home owners
5. Campers



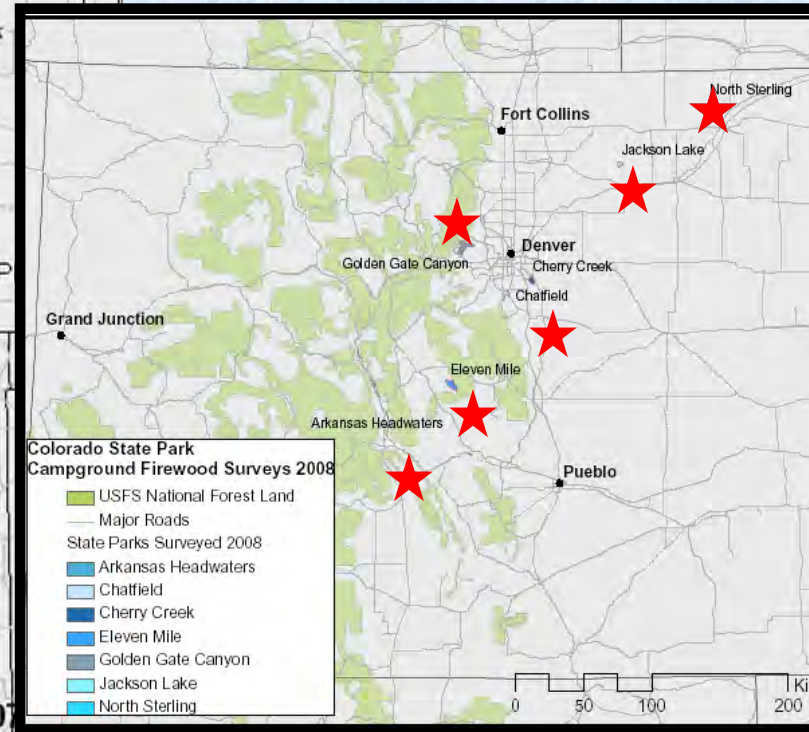
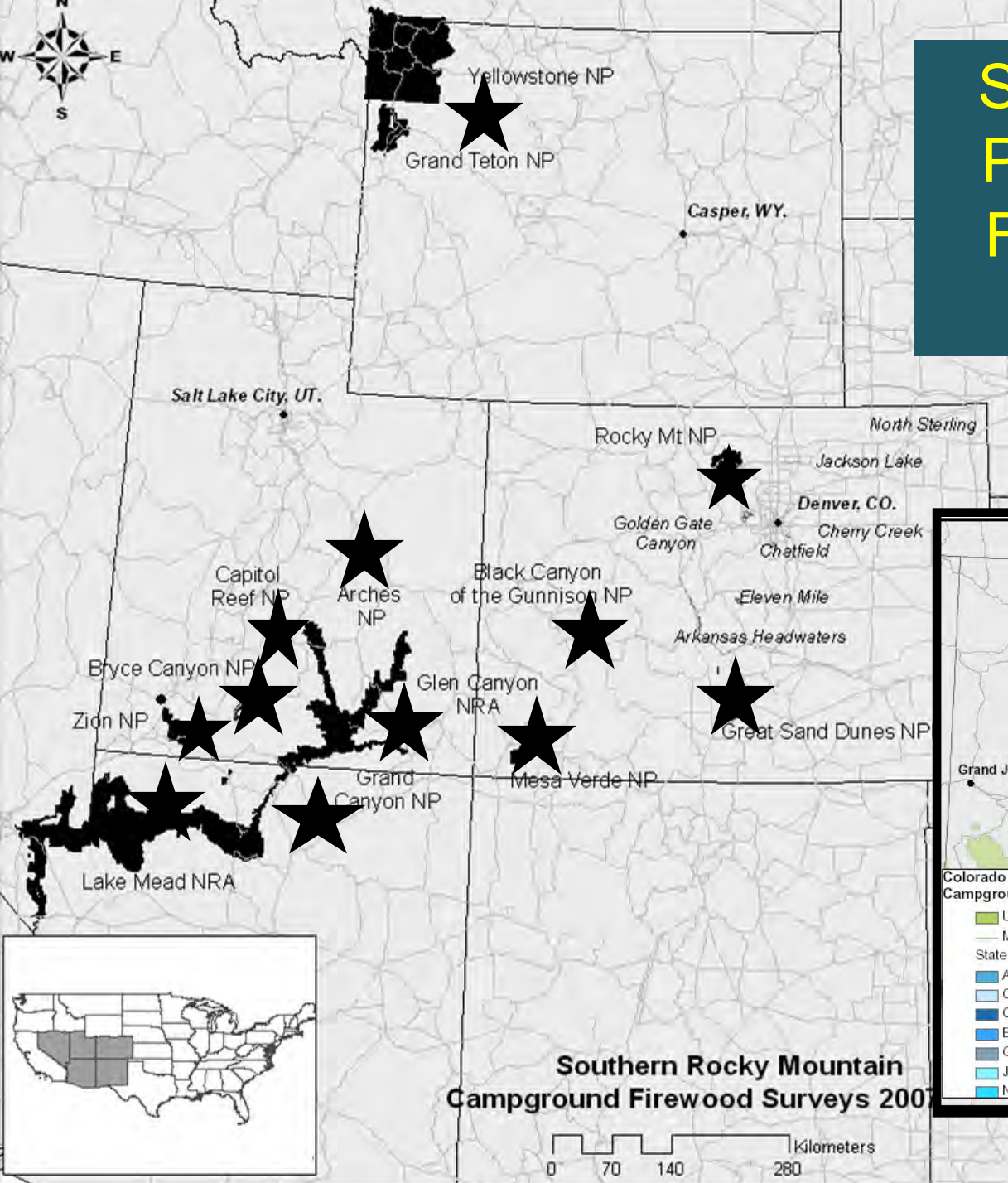


# Colorado Firewood Studies

1. Do campers bring firewood from out of state?
2. Who sells firewood and where is it from ?
3. Are there insects in retail firewood?



# State and National Park Campground Firewood Surveys 2007-09





# National and State Park Camper Survey

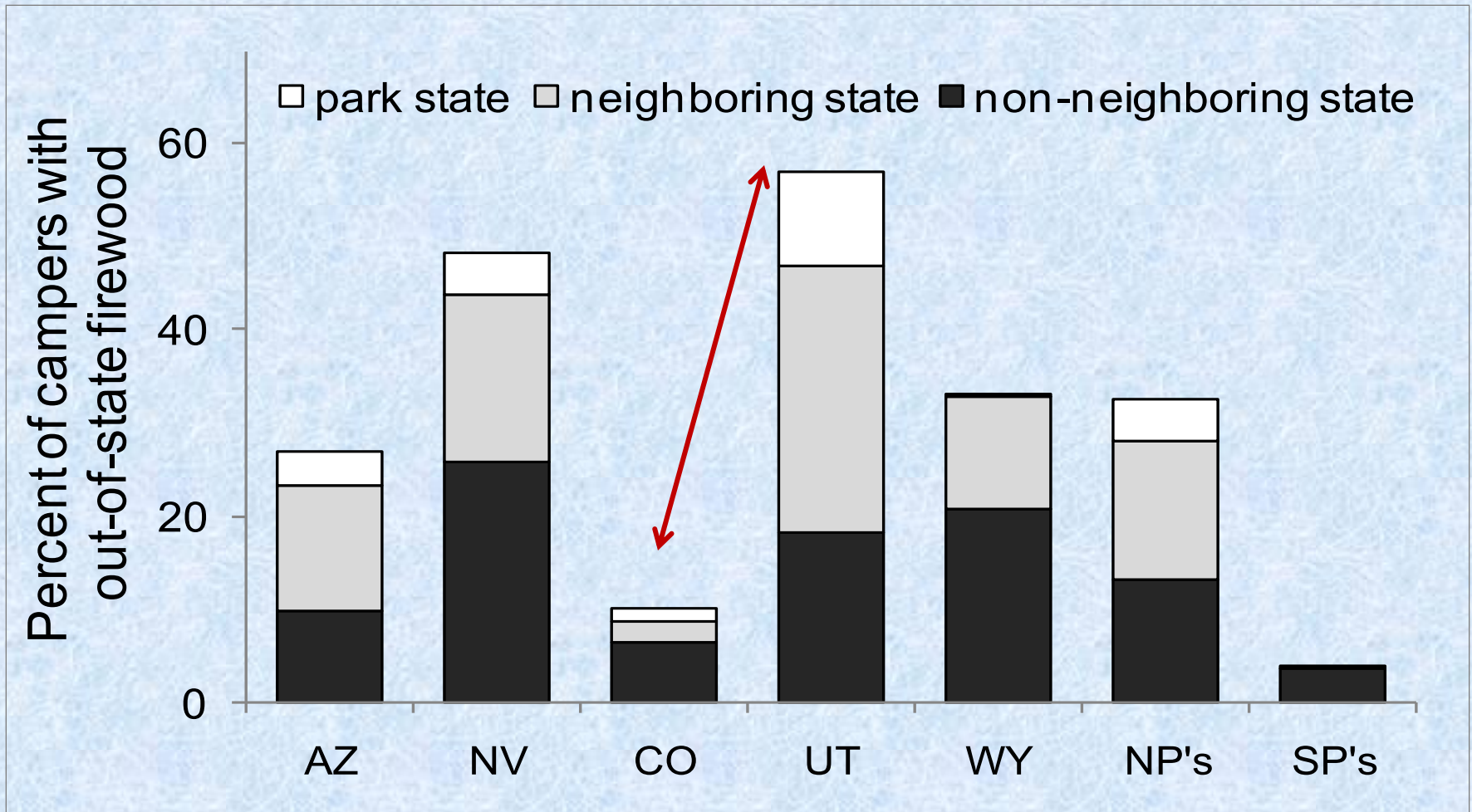
## 2007-2009

- National parks in NV, AZ, CO, UT, WY
  - 30 campgrounds in 13 Parks
  - 1,658 campers
- Colorado state parks
  - 15 campgrounds in 7 parks,
  - 304 campers
- NP results weighted by NPS 2008 camper data



# Out-of-state Firewood in National Parks

- 60% of NP campers had firewood
- 39% of NP campers had out-of-state firewood
- 330,000 chances for a non-native pest introduction





# Camper Survey Results Continued:



- 41% of out-of-state wood came from non-neighboring states
- Of all firewood in parks:
  - 32% was from the park
  - 25% was from outside park
  - 17% was brought from home
- More information:

Jacobi, W.R., Goodrich, B.A. and Cleaver, C.M.  
2011. Arboriculture and Urban Forestry 37:126-138



# Who Sells Firewood and Where Is It From?

- Site visits to retailers by cooperators around nation ( 18 states - 241 retailers)
- Site and phone survey in Colorado (138 retailers)
- Phone survey of New Mexico, Colorado, Utah and Wyoming (567 retailers)





# Retail Firewood Surveys

2007-2009

## National Survey:

- 52% out-of-state wood
- 50% conifer

### Who carried wood?

- 33% Corner stores
- 38% Grocery stores
- 20% Dept stores

## Southern Rocky Mt States Survey:

### Who carried wood?

- 31% Corner stores
- 57% Grocery stores
- 53% Dept stores
- 38% Other



Regional differences exist between and within states



# Are there insects in retail firewood?





# Retail Firewood Purchased for Insect Rearing

State	Out-of state wood (%)	Source States (#)
Colorado	29	9
New Mexico	68	10
Utah	63	12



- 19 different species of wood
- 70% pine and fir



# Insects in Retail Firewood

(373 bundles from UT, CO, NM, WY)

- 47% bundles had live insects
- Insects emerged for 560 days
- Over 4,000 insects
  - Bark beetles/wood borers
  - Herbivores/detrivores
  - Predators, parasites
  - No exotics but new state records
- 13-520 insects/bundle
- Both tree and herbaceous insects
- All wood types contained insects





# Insects in Retail Firewood

Wood Genus (common name)	State sources of firewood (from label)	Order	Family	Genus	No. of individuals
oak	unknown	Coleoptera	Buprestidae	Agrilus bilineatus*	4
pine / oak	WY, CO	Coleoptera	Buprestidae	Chrysobothris	4
pine	CO, MT, TX, UT	Coleoptera	Scolytidae	Pityophthorus	360
pine	AZ, CO, NM, UT	Coleoptera	Scolytidae	Ips	160
pine / fir	CO, MT, UT, BC	Coleoptera	Scolytidae	Pityogenes	330
apple / maple/ fir	CO, OR, CA	Coleoptera	Scolytidae	Scolytus	28
pine	UT	Coleoptera	Scolytidae	Polygraphus	977
pine	NM, OR	Coleoptera	Scolytidae	Gnathotrichus	92
pine	UT	Coleoptera	Scolytidae	Carphoborus	13
pine	OR, UT, CO, BC	Coleoptera	Scolytidae	Dendroctonus	26
pine	UT	Coleoptera	Tenebrionidae	Corticeus	16
juniper	NM	Coleoptera	Cerambycidae	Callidium	13
pine	UT	Coleoptera	Cerambycidae	Tetropium	15
pine	CO, BC	Coleoptera	Cerambycidae	Monochamus	2
oak / cherry	NE, unknown	Coleoptera	Cerambycidae	Neoclytus	4
pine /juniper	CA, UT	Hymenoptera	Siricidae	Sirex	4

\* First record for Colorado (personal communication B. Kondratieff, C.P. Gillette Museum, CSU)

# Other Risk Factors

## Insects and Retail Firewood

- Wood was from 48 companies, 21 states and provinces
- 79% of the sampled companies had wood with insects
- 3:1 more bundles outside vs. inside stores
- Presence of bark not related to insect emergence
- Insects vs. evidence of current/previous infestation:

Beetle	93%
Borer	77%
Stain/fungi	38%





# Conclusions

- Campers move out-of-state firewood to national /state parks in the West
- 60% of retail firewood is from out of state
- 47% non-treated retail firewood had live insects
- Firewood dry enough to sell, releases insects for 1.5 years after purchase
- Uniform standards are needed on treatment and movement of firewood and unprocessed wood

# Questions?

