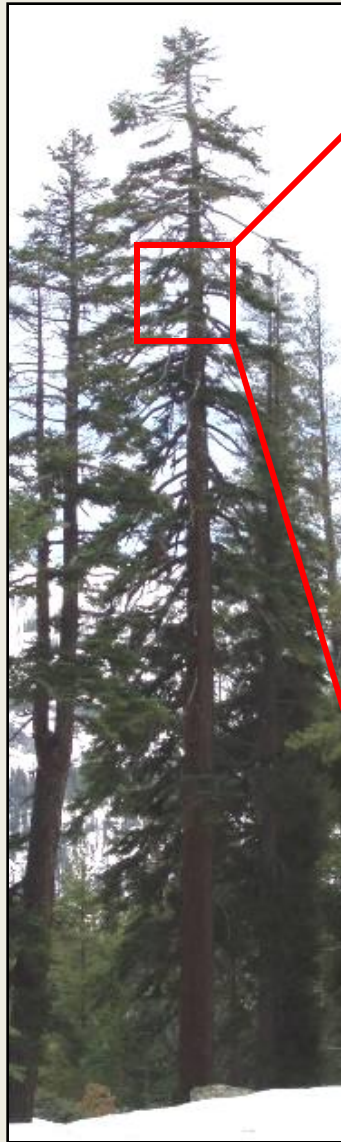


# Are Sierra Sooty Grouse Associated With Big Trees?



# Habitat associations of Sierra Sooty Grouse (SSG) are misunderstood:

## Seasonal biases

Condor (1917)

*"... they seldom resort to the larger conifers except to roost ..."*

*"... their favorite habitat is ... aspen thickets and ... brush ..."*

- Period of study: summer only -
- Common perception of hunters and hikers -

## Reliance on external data

CA Wildlife Habitat Relationships Manual (1990)

*"... does well in second-growth stands following logging."*

- Studies on BC islands documented positive associations with logging -
  - SSG response to logging never studied -
- Only one previous (pre-quantitative) study has focused on SSG habitat -

## Growing recognition

Zwicker and Bendell (2004)

*"... further work is needed ... for our observations ... are in agreement with the suggestion that [sierrae] is seldom found outside older aged forest."*

I began documenting SSG habitats throughout CA in 1992



Overall assessment

SSG are associated with mature forest throughout the year,  
but also use shrub associations in summer and fall

An association with mature forest is not unique among sooty grouse:

*D. f. sitkensis*, southeast Alaska

Brown 1966: mature forests used in summer, not clear-cuts

Doerr et al. 1984: male densities 45x higher in mature forest than in clear-cuts

Overall objectives of the study:

- Document the association of SSG with big trees and mature forest
- More broadly, model seasonal habitat associations of SSG

Today's topic: Initial findings on use of big trees

Objective:

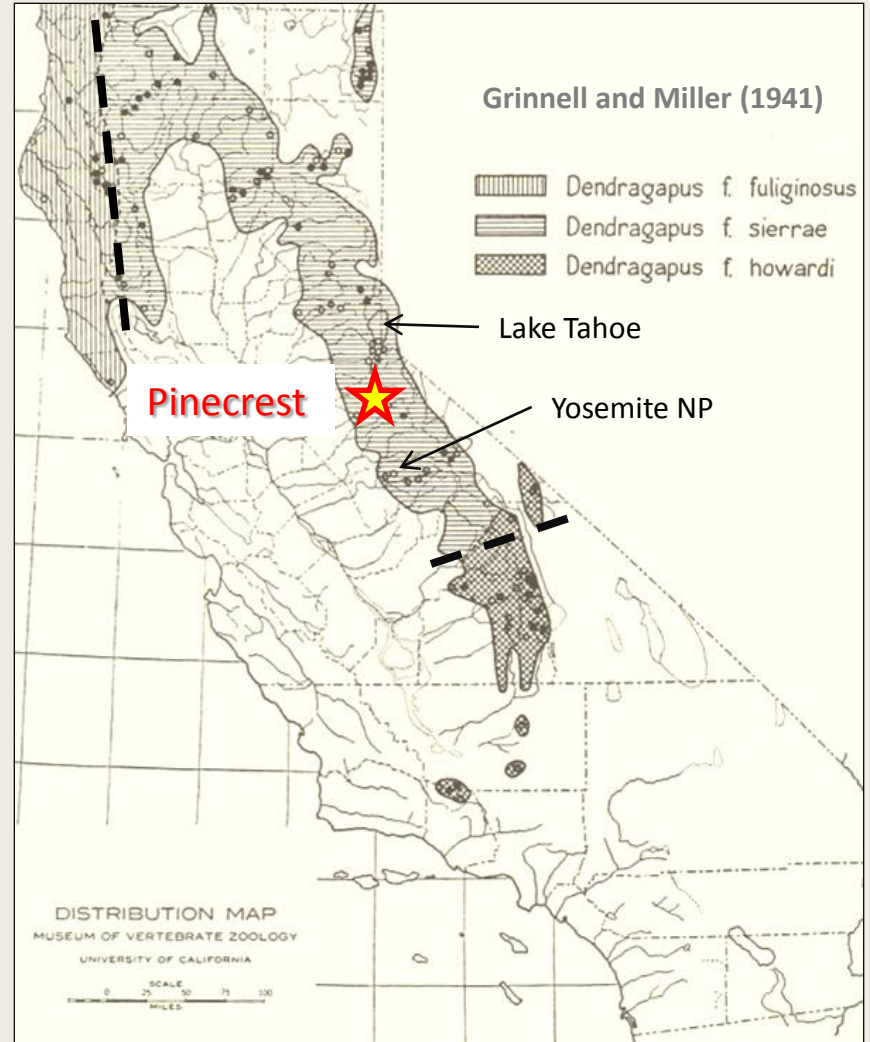
Provide simple and conclusive evidence that will help “clear the slate” regarding SG habitat associations



# Study area

Pinecrest, California

Centrally located in *sierrae* range



## Methods

### **Radiotelemetry**

Used to sample:

- frequency of occurrence in trees
- size of perch trees
- height of perch branches

Sampled weekly, year-round

Current analysis based on 9 males



### **Fecal accumulations**

An index of tree use ( $\text{cc}/\text{m}^2$ )

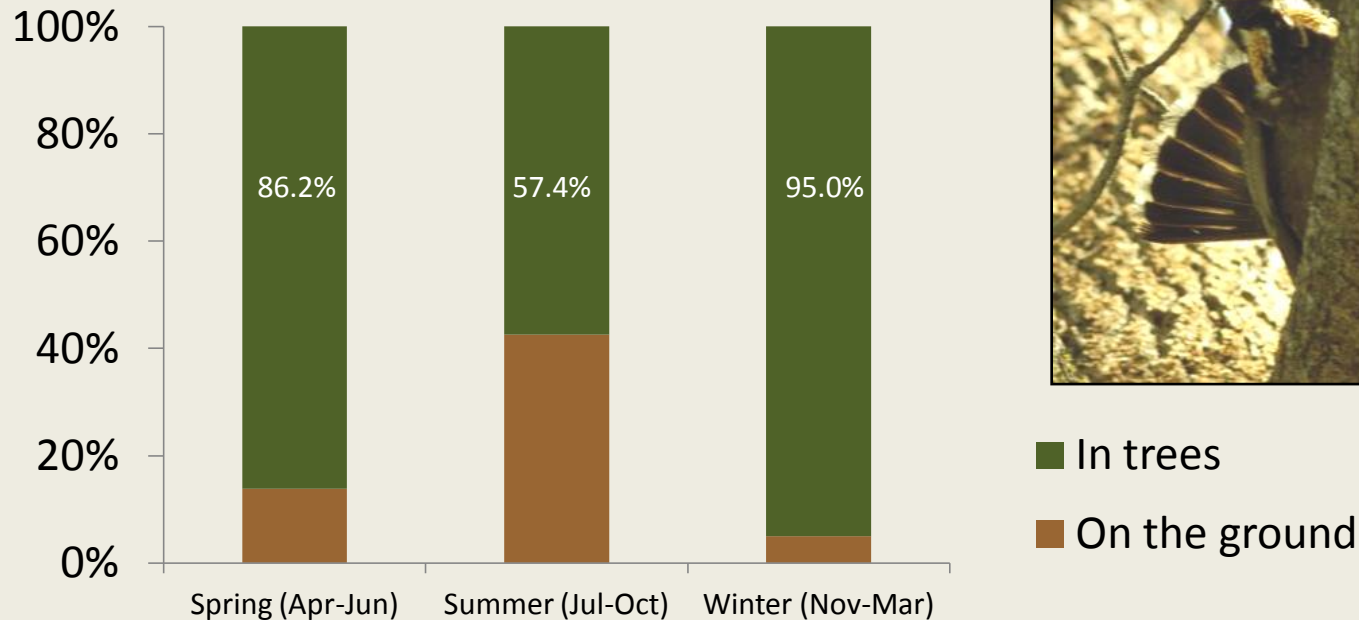
Sampled within 30 male territories  
(1 perch/territory)



## Findings

### **SSG may be the most arboreal of all grouse**

#### Detections of radio-marked males in trees



In spring, 86.2% of male detections were in trees (n=58)

The average hooting male was perched 26.7 m up a tree

In summer, male detections in trees dropped to 57.4% (n=94)

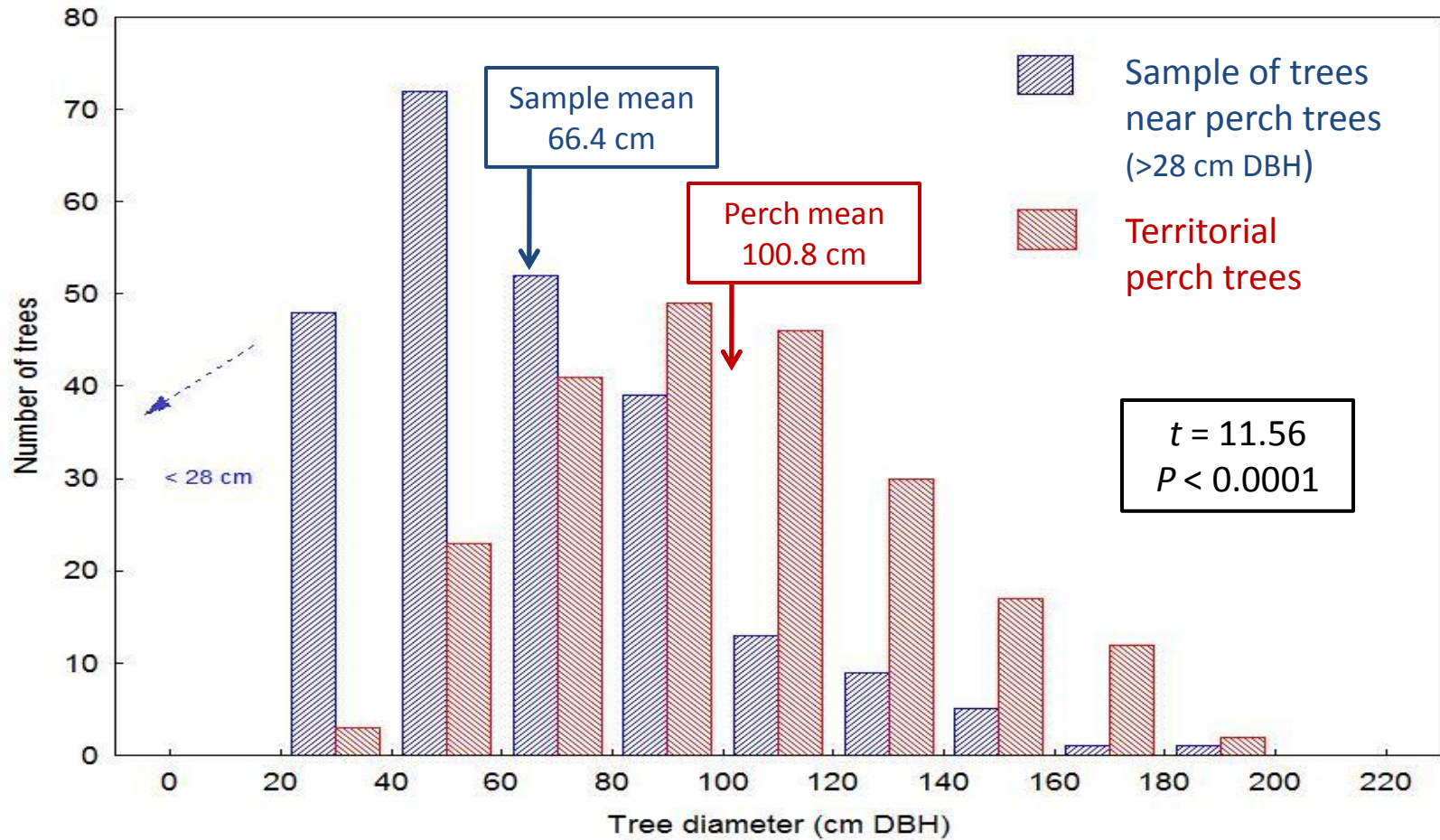
2 brood females were in trees only 33.3% of detections (n=21)

In winter, male detections in trees increased to 95.0 % (n=20)

## Territorial males select particularly large trees for perches

Average perch tree: **100.8** cm DBH ( $n = 223$ ,  $SD = 33.7$ )

Much larger than nearby trees  $>28$  cm DBH ( $P < 0.0001$ )



Outside the breeding season, both sexes continued to perch in trees larger ( $\bar{x} = 80.4$  cm) than a sample of trees  $>28$  cm DBH ( $t = 3.4$ ,  $P < 0.001$ )



# How big is a 100 cm DBH tree?

CAWHR Medium

CAWHR Large

28 cm (11 in) DBH

61 cm (24 in) DBH

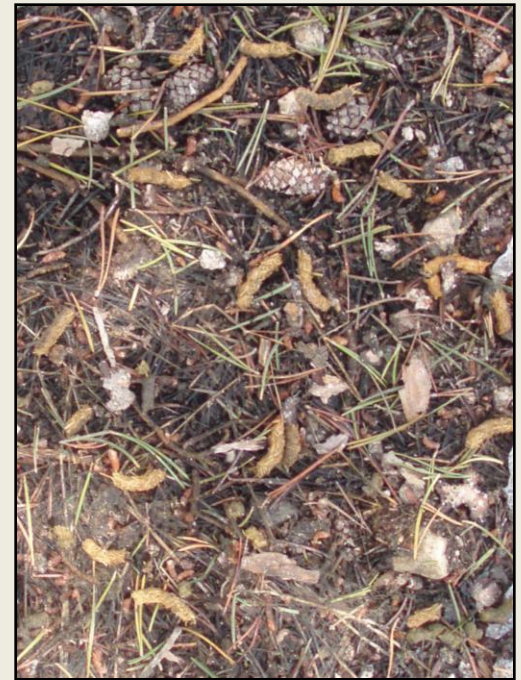
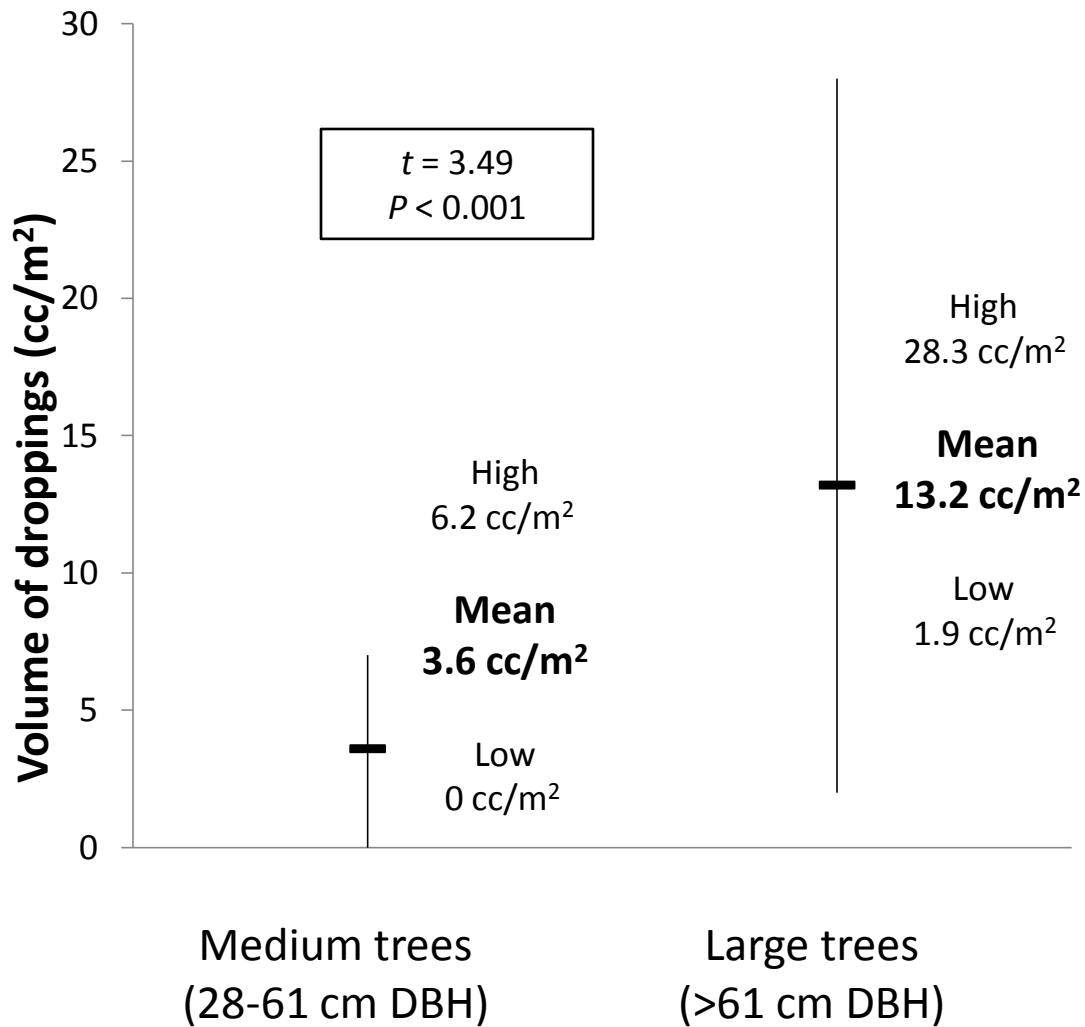
100 cm (39 in) DBH



Average height: ~ 30 m (98 ft)

Average age: 125-175 years

# 4x more droppings accumulated under large trees



## Discussion

An on-going study: sample sizes will increase

Pinecrest findings support observations throughout California

### Why are big (old) trees selected?

Big trees provide:

Rigid horizontal branches

3-D patchwork of foliage & openings

Greater height for projection of songs

Recognized previously for capercaillie



Old tree



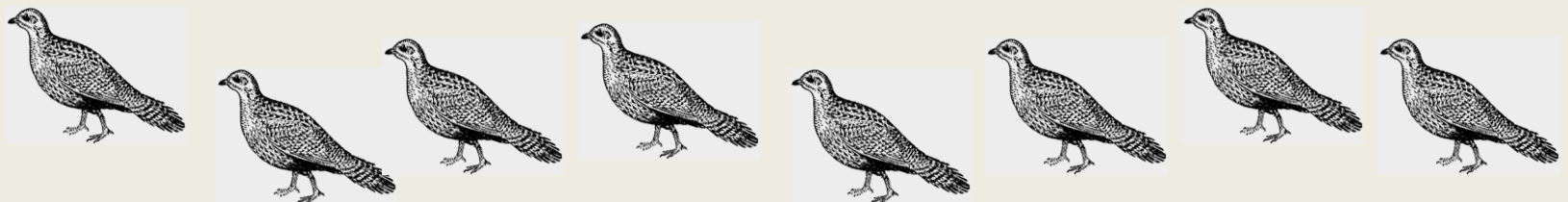
Younger tree

### Does big tree use infer an association with mature stands?

Topic of on-going multi-scale habitat study

USFS now considers SSG an “open-canopy late-seral” indicator species

But “old-growth” animosity abounds



## Management Implications

A 100 cm fir is worth ~\$1,900 as Home Depot 2x4s  
Removal of too many large trees can degrade SSG habitat  
May be why *howardi* is a Species of Special Concern

### Good news:

Plantation forestry is out on public lands  
Moratorium on cutting trees >30"

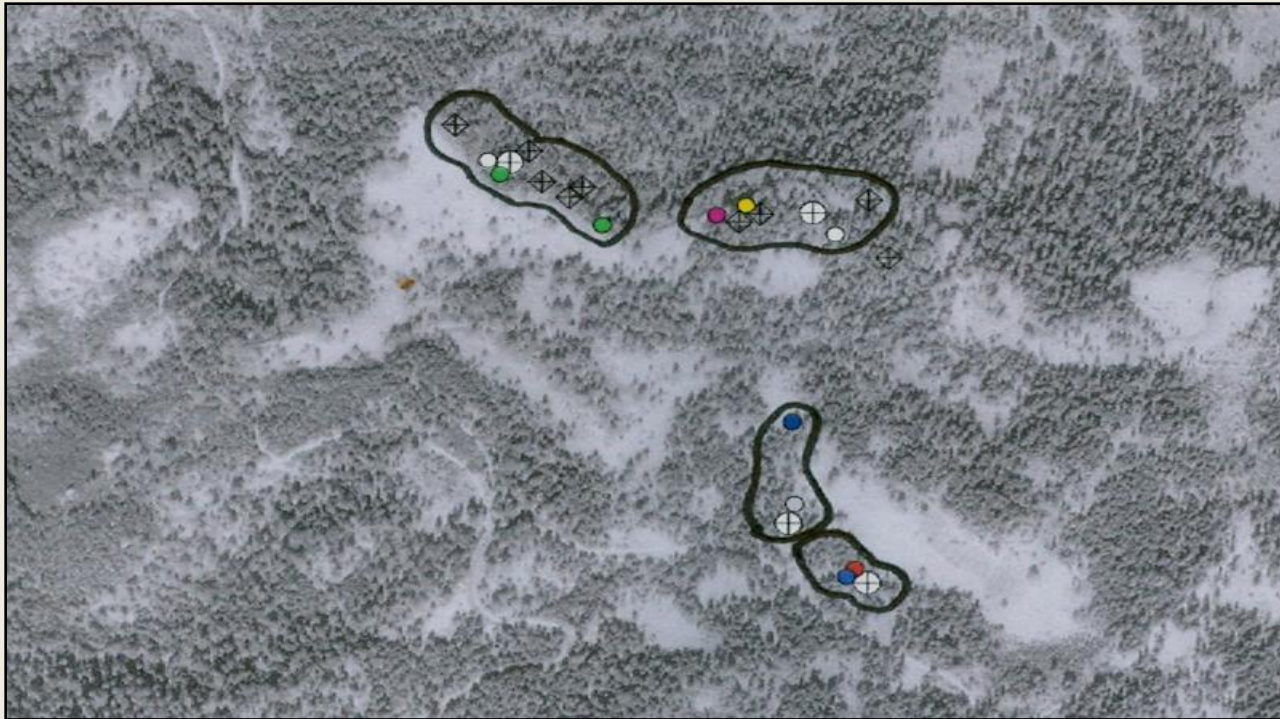
### Bad news:

Harvest ("thinning") is moving into fir zone  
Ban is circumvented for "hazard" trees  
Ban could be abridged or lifted  
An administrative guideline  
Intended for spotted owl /mixed conifer



## Future research needs

SSG are strongly associated with *open-canopied* forest



Directed/selective timber harvest could be acceptable in many areas

Harvest should be based on findings of future research:

Behavioral responses of SSG to timber harvest

Acceptability of artificial openings and edges

Optimal spatial pattern of large trees – stay tuned!

# Support

CA Department of Fish and Game, Resource Management and Policy Division

US Fish and Wildlife Service, State Wildlife Grants Program

US Forest Service, Management Indicator Species Program

US Forest Service, Dancers In The Forest Program