

# Draft Periodic Status Review of Western Gray Squirrels in Washington



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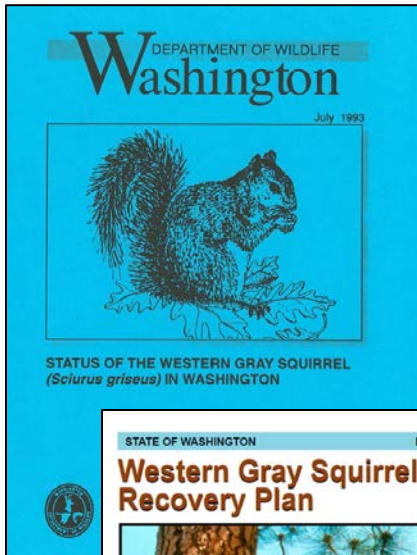
# Draft Periodic Status Review: Process & Timeline

## Listing Process Guided by WAC 220-610-110

- Last Western Gray Squirrel PSR 2016
- February 2020: solicit data and information from the public prior to work on initial draft
- February 2023: 90-day public comment period on Draft
- June 2023: commission briefing and public comment on draft (extra step)
- August 2023: PSR finalized
- Listing "...solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available."
- Threatened species is "... likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats"

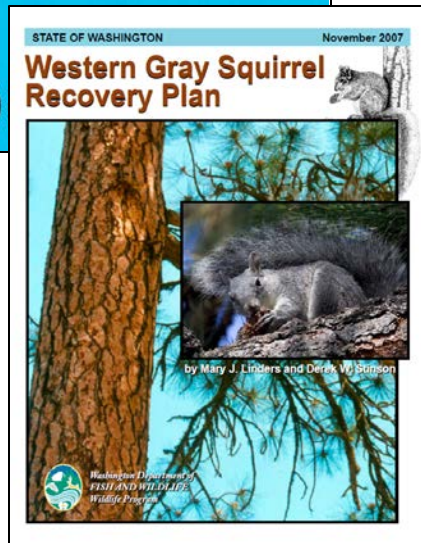


# Listing of Western Gray Squirrel



## State

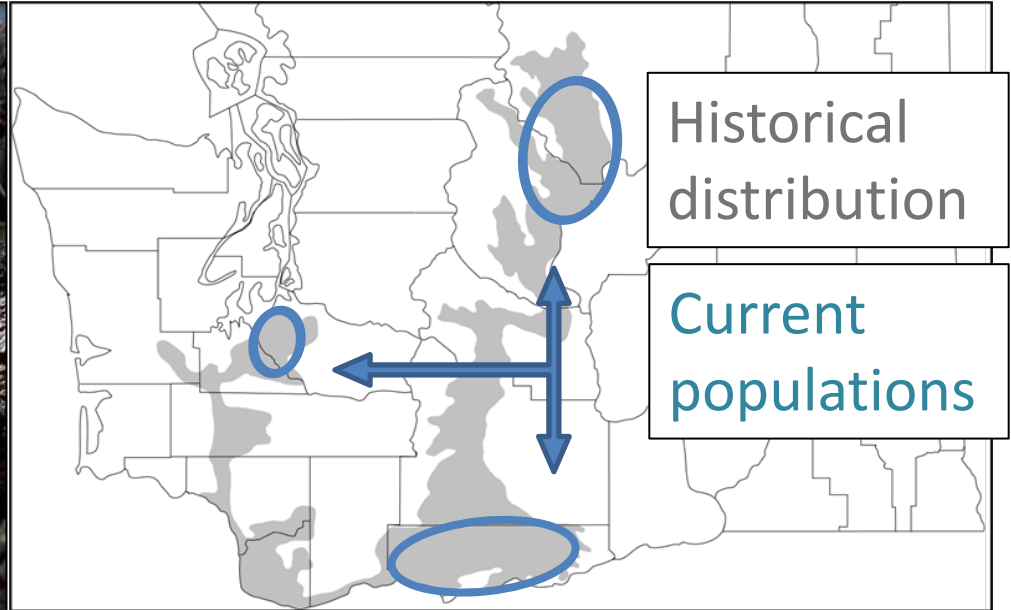
- **Threatened** since 1993
- Recovery plan 2007



## Federal

- Proposed distinct population 2001
- Not warranted 2004





## In Washington:

- Once uncommon to locally common across range
- Declining by the late 1800s and rare by 1970
- Now 3 isolated populations







# How are they doing?

2 Strategies focused on Western Gray Squirrel primary habitat

- Estimate habitat occupancy
- Estimate habitat change since listing (1993)
- Quantitative measures for the PSR
- Counting squirrels was not an option



# What is Primary Habitat?



Research: most-used, including key nesting and foraging areas.

- Tree canopy cover >40%
  - Ponderosa pine
  - Douglas-fir
  - Oregon white oak
- Large conifers, averaging >9" dbh with some >16" dbh
  - Nest and den sites
  - Seed production
- Connected canopy:  $\geq 3$  adj. crowns
  - Discrete nest access
  - Escape from predators





# Occupancy Surveys

## Hair tubes: baseline data



Methods developed 2015-2017 pilot project

- Tried to delineate the edges of distribution
- Very low detection rates in peripheral areas; excluded these from final protocol

Occupancy surveys implemented 2018-2020

	# transects	Occupancy*	St Dev
Puget Trough	18	0.39	0.12
Klickitat	60	0.44	0.07
North Cascades	60	0.27	0.06

\*detection probability was high (0.91, SE = 0.03)



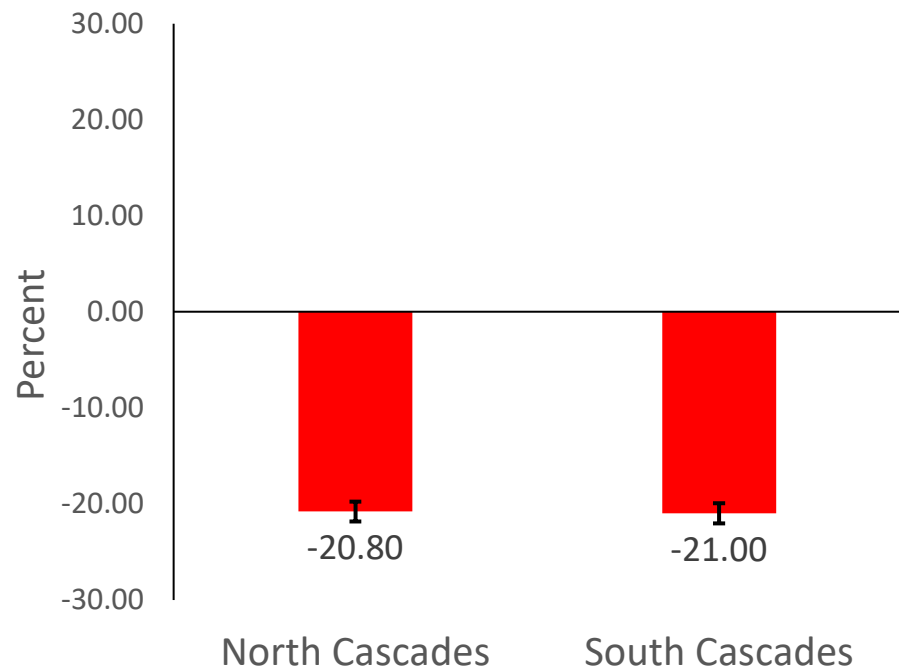
# Habitat Change Analysis 1993-2017

Project objectives:

1. Estimate change in Primary habitat since listing (1993)
2. Estimate the relative contribution of different agents of change

Net change in  
WGS Primary habitat:  
>20% decline

Gains in Primary habitat  
did not compensate for  
losses.

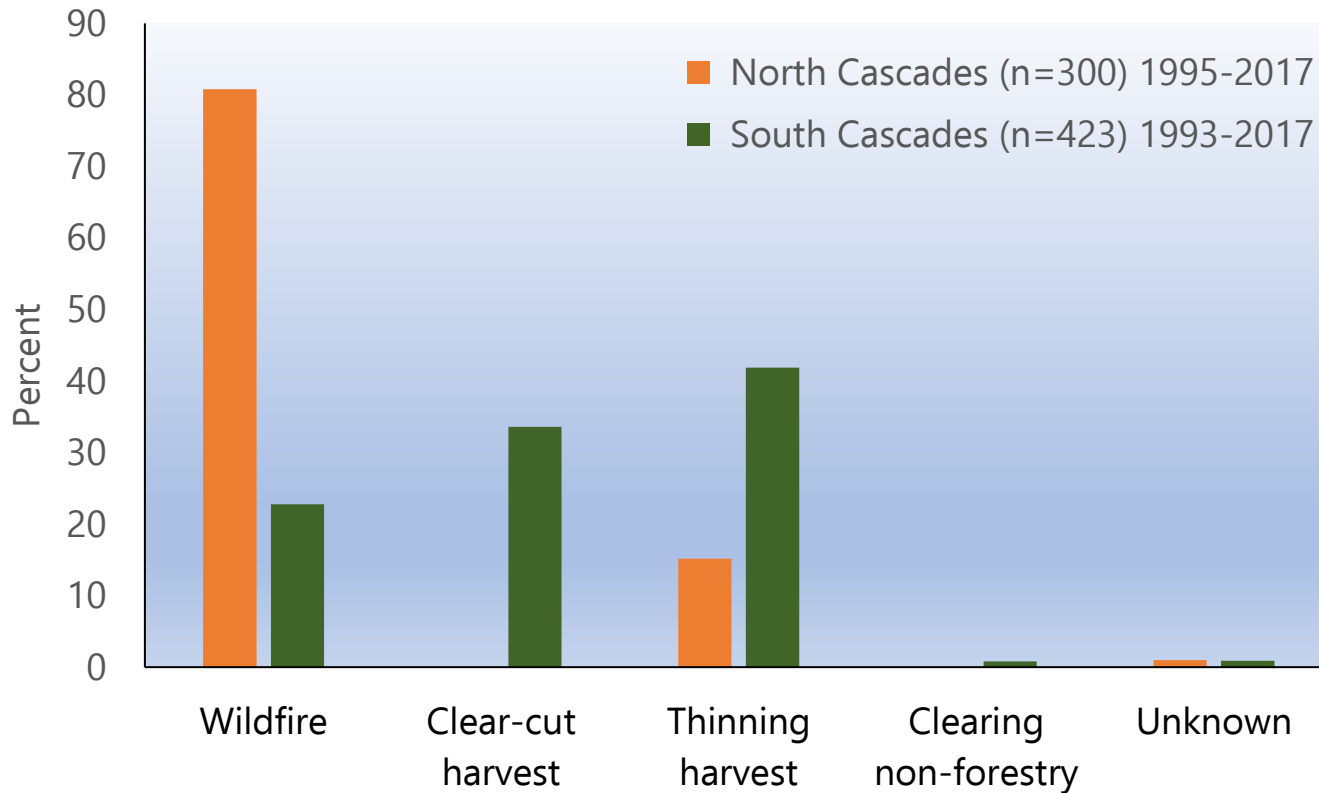


\* 95% confidence interval



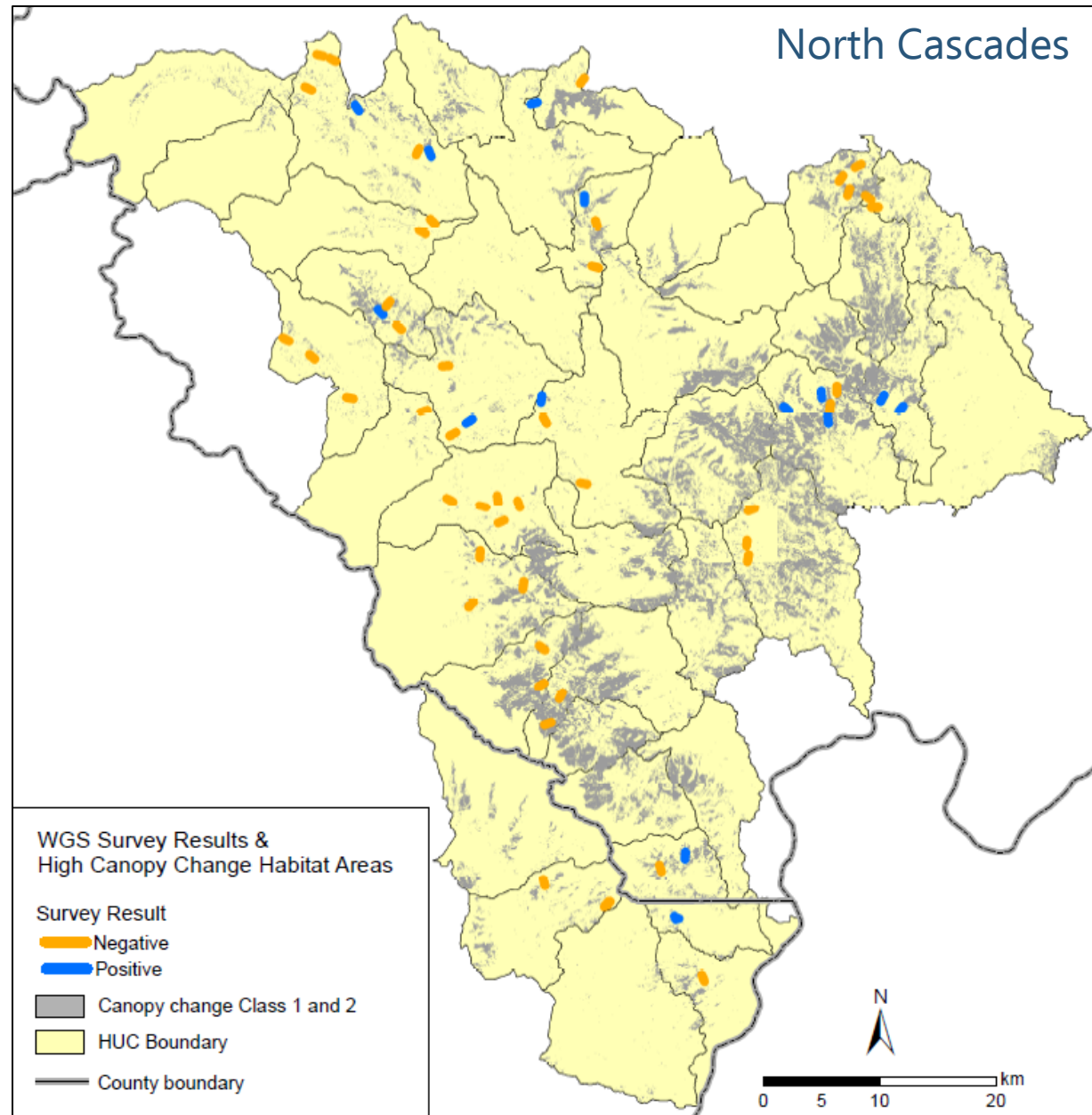


# Agents of habitat loss



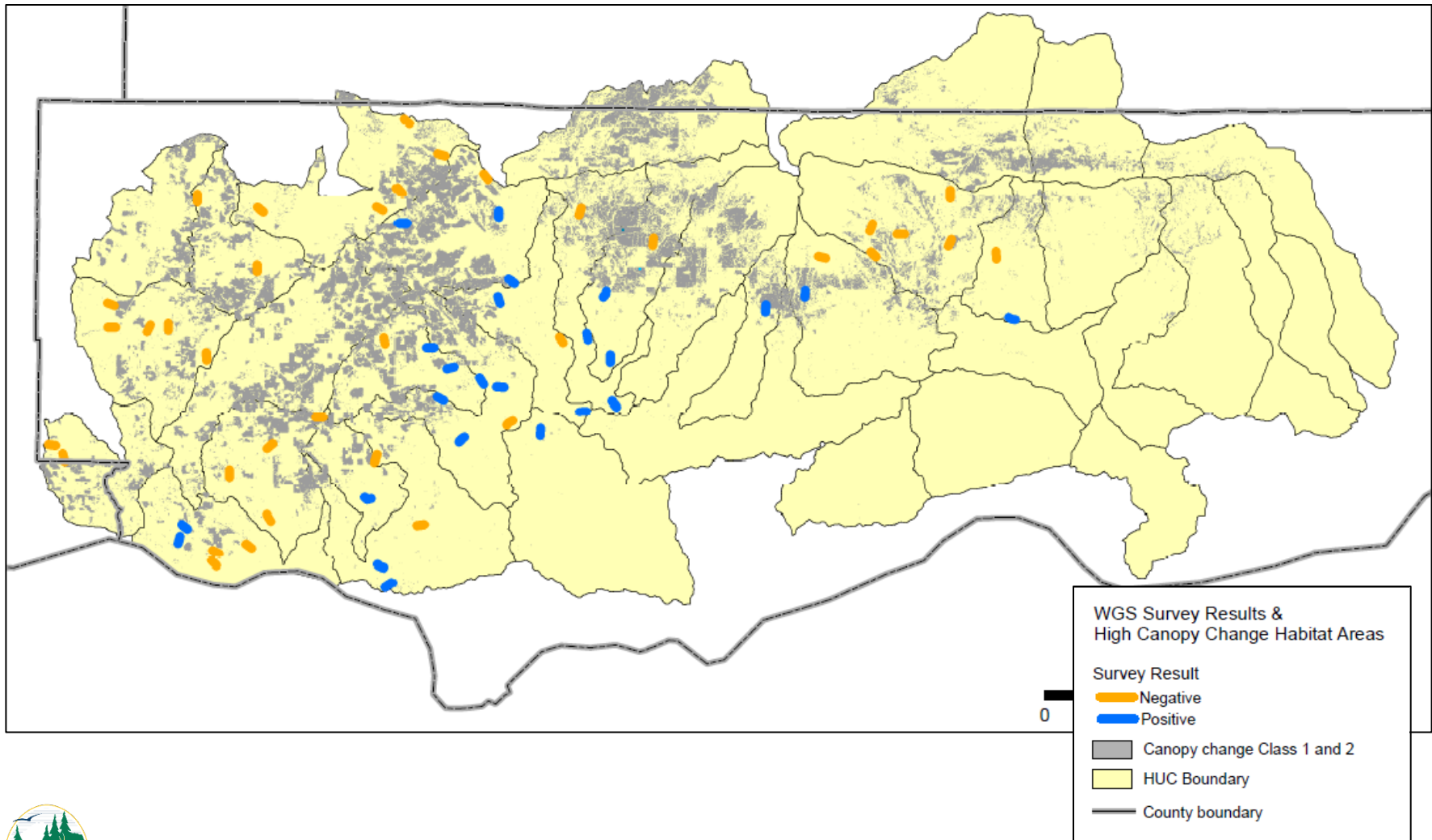
# Occupancy survey results and habitat change

Change classes 1 and 2:  
12-100% canopy loss  
1993-2017



# Occupancy survey results and habitat change

South Cascades



# Factors affecting Western Gray Squirrels

## Habitat loss and degradation:

- Timber harvest
- Wildfire
- Land conversion
- Fire suppression

## Habitat loss exacerbate population threats:

- Small population size/isolation
- Disease
- Roadway mortality
- Climate change
- Interspecies competition

No state rules or enforceable guidelines for habitat retention. Only squirrels and nests are protected.





# Conclusions

- Squirrel occupancy appears low and fragmented.
- Primary habitat for Western Gray Squirrels in the Cascades has declined >20% since listing.
- Frequency and severity of wildfires are increasing with climate change.
- Current harvest rotation lengths in the South Cascades (35-45 years) likely limit availability of suitable stand structures.
- Conservation efforts to date have been insufficient to reverse downward trend.



# Summary

- Western Gray Squirrel populations in WA disjunct and fragmented.
- Habitat loss and fragmentation, key factors in 1993 listing decision, are increasing.



## Recommendation:

It is recommended the species be uplisted to Endangered:

*"...seriously threatened with extinction throughout all or a significant portion of its range within the state (WAC 220-610-110 [2.4])"*



# Public comments



## 3 broad categories

- Clarify the language or science
  - ✓ Concerns accounted for by study methods
- Adequacy of data
  - ✓ Statements may be true, aren't best available science
- WAC process and timeline
  - ✓ Collaboration and considerations





# Public comments: Clarify language or science

## Concerns accounted for by study methods

Did we consider these approaches?	Response
HC: efforts underway (e.g., voluntary protections, 2° habitat)	Post hoc analysis of change since listing - not a projection
HC: continuous data vs. canopy change classes	Canopy change classes enable prediction and connectivity at landscape scale – project objectives
HC: field verification of orthophoto interpretation	Past efforts by same observers had high accuracy
Occupancy surveys didn't use probability-based sampling	Yes - at the HUC 10 scale, not range wide scale
Occupancy surveys didn't overlap areas of canopy cover change	If primary habitat these were eligible





# Public comments: Adequacy of data



Statements may be true but not best available science

Comment	Response
Didn't verify that habitat and population declines are correlated	True unless habitat quality increases
Don't know how much habitat is needed for a healthy population	True, not defined
No population data to support uplisting	True, occupancy approach alternative
Didn't discuss interannual variability in occupancy	True, insufficient data and secondary to objective
Effectiveness and/or compliance of voluntary management was not evaluated	True, this work needs to be done



# Public comments: WAC process and timeline



## Comments for consideration

Comment	Response
Decision is premature; wait for voluntary actions to mature	Data reflect current status as per WAC (220-610-110)
Expand collaborative efforts rather than uplist (e.g., multi-landowner surveys)	Cooperative surveys welcome but don't change results to date
Landowners report seeing more squirrels	May be perceived or real, localized or widespread; baseline data only
Recent acquisition by Conservation Fund not considered	Purchase alone changes little; WDFW supports landscape-level planning
Editorial comments	Incorporated, thank you!



# Public process: Collaboration welcome



## How we collaborate:

- Review forest practices and assist with and/or coordinate survey response
- Collaborate on voluntary management plans based on PHS recommendations

## Future opportunities:

- New biodiversity money used to hire conservation biologist and asst district in Region 5; cons bio in Reg 2
- Formation of a working group
- Revision of PHS recommendations
- Assess effectiveness and/or compliance voluntary actions
- Research relationship between habitat quality and squirrel fitness



# What is the effect of a change in classification?



- Brighter spotlight on the conservation of the species
- Priority Habitat and Species List – No change  
All sensitive, threatened, endangered, and candidates are PHS species and reflected in recommendations for GMA and CAO
- Slight change in penalties for take of individuals  
Threatened: Misdemeanor violation, minimum \$2,000 fine  
Endangered: 1<sup>st</sup> conviction gross misdemeanor, 2<sup>nd</sup> conviction in 5 years class C felony
- Forest Practice Board update
  - Share critical habitat information with Forest Practices Board within 30 days of a classification change
  - The Forest Practices Board shall consider impacts of forest practices on essential habitat
  - Department of Natural Resources process, in consultation with WDFW.







# Questions?



## Acknowledgements

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