

Van Dyke's Salamander

(*Plethodon vandykei*):

Perspectives from
a recent literature review





General Information

- One of 7 designated FFR amphibians
- One of 5 lungless salamanders in WA
- One of 2 amphibians endemic to WA

Adult female with eggs



Unique or Important Features

- High moisture requirements
- Low temperature requirements
- Highest C-value (\cong low metabolism)
- Direct development (~~aquatic larvae~~)
- Long developmental period



Unique or Important Features Impose:

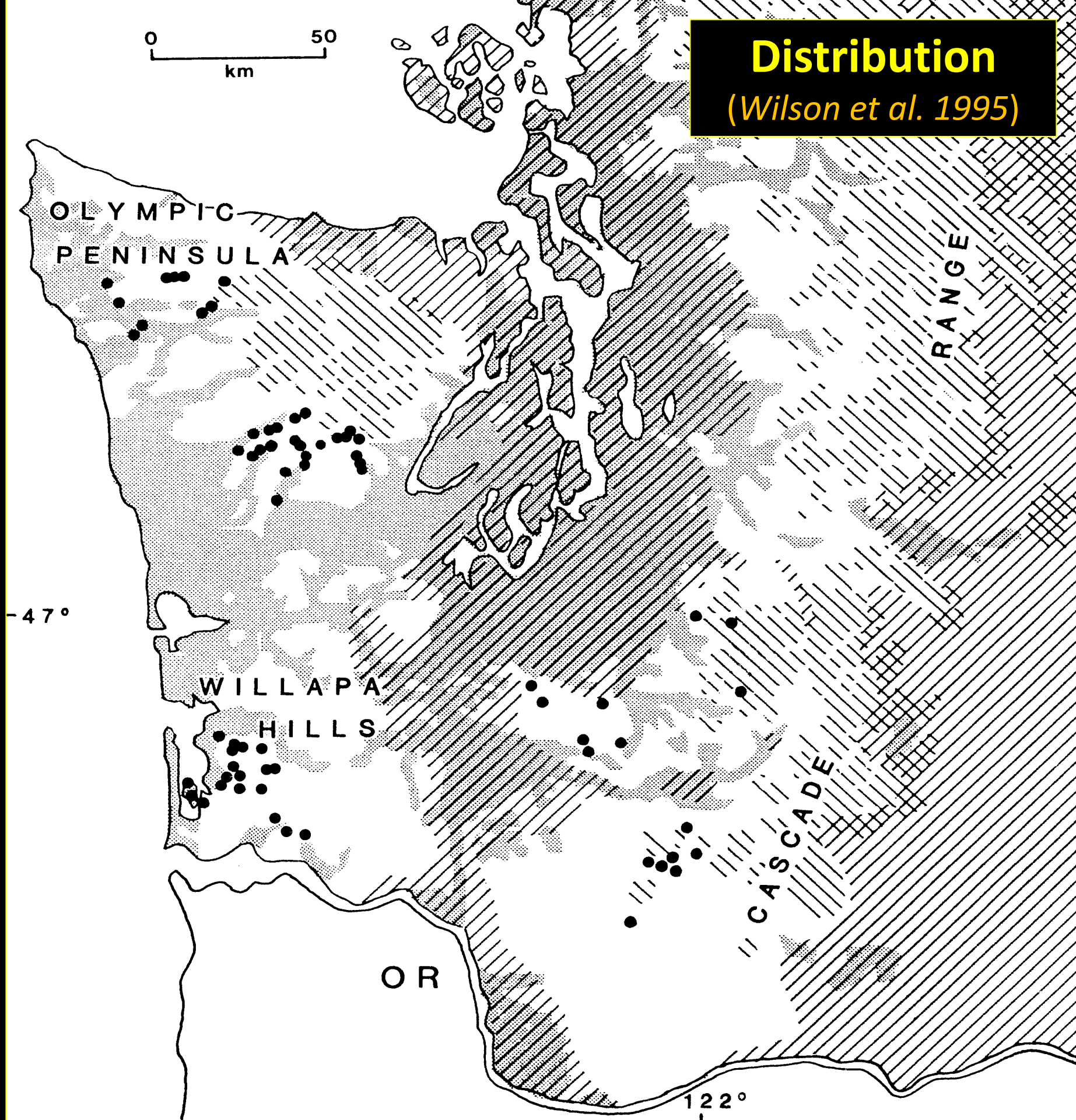
- Geographic constraints
- Habitat use constraints

Collectively, constraints may make Van Dyke's salamander the amphibian most vulnerable to climate change.

This also creates uncertainty about its vulnerability to forestry practices.

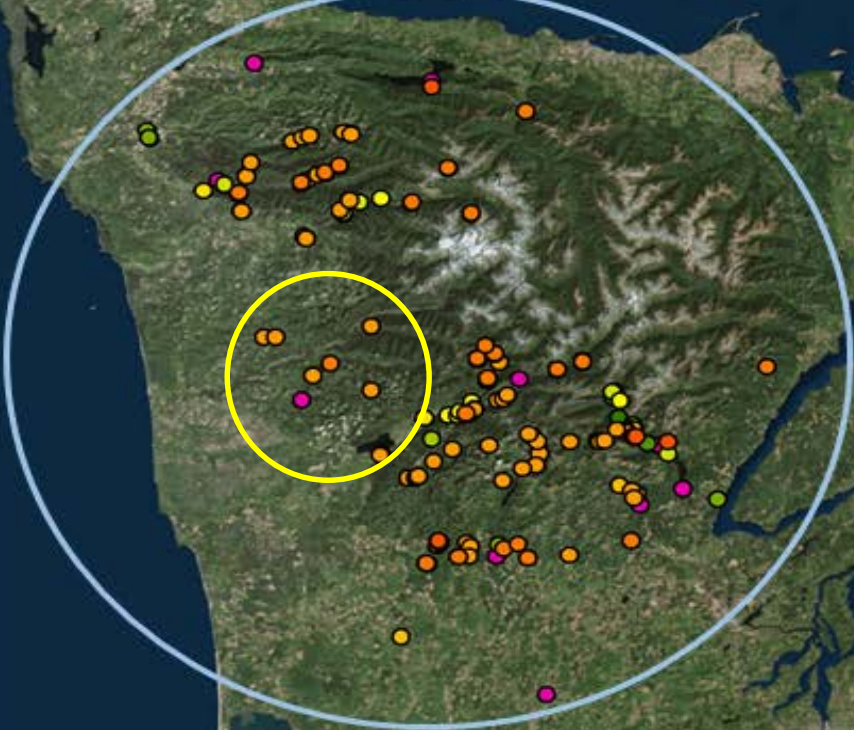
Distribution

(Wilson et al. 1995)

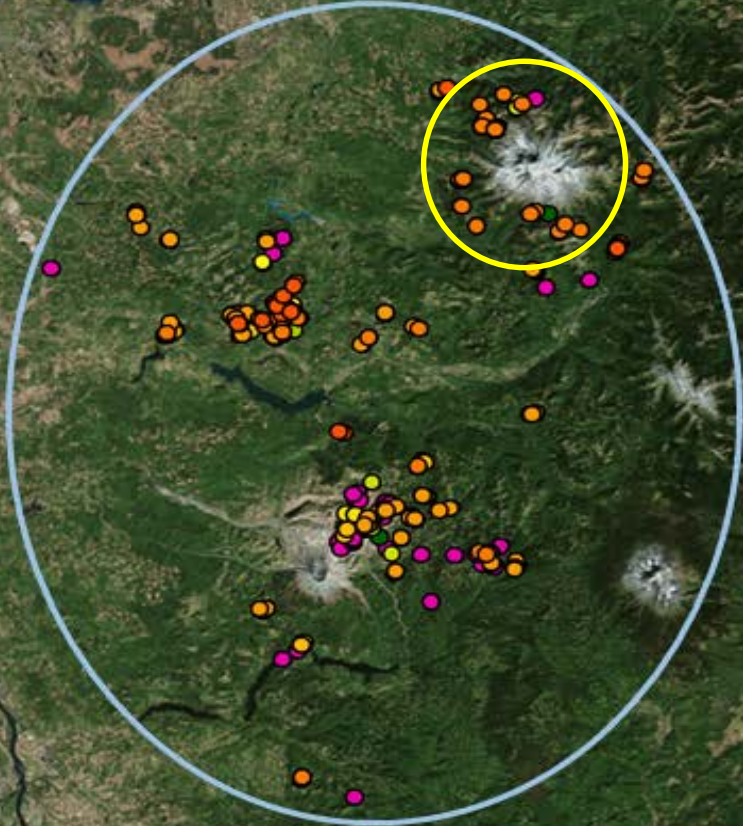


Distribution

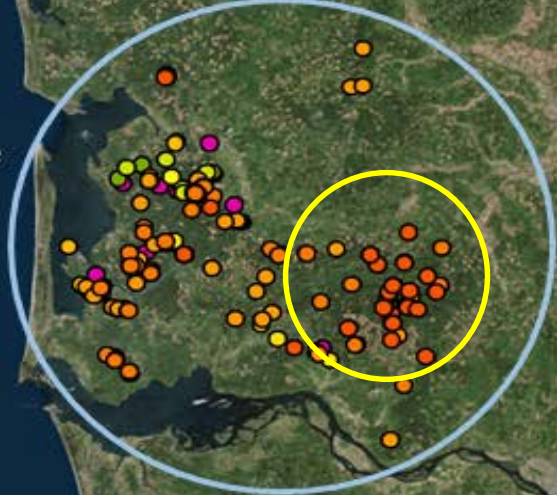
Olympics



Cascades



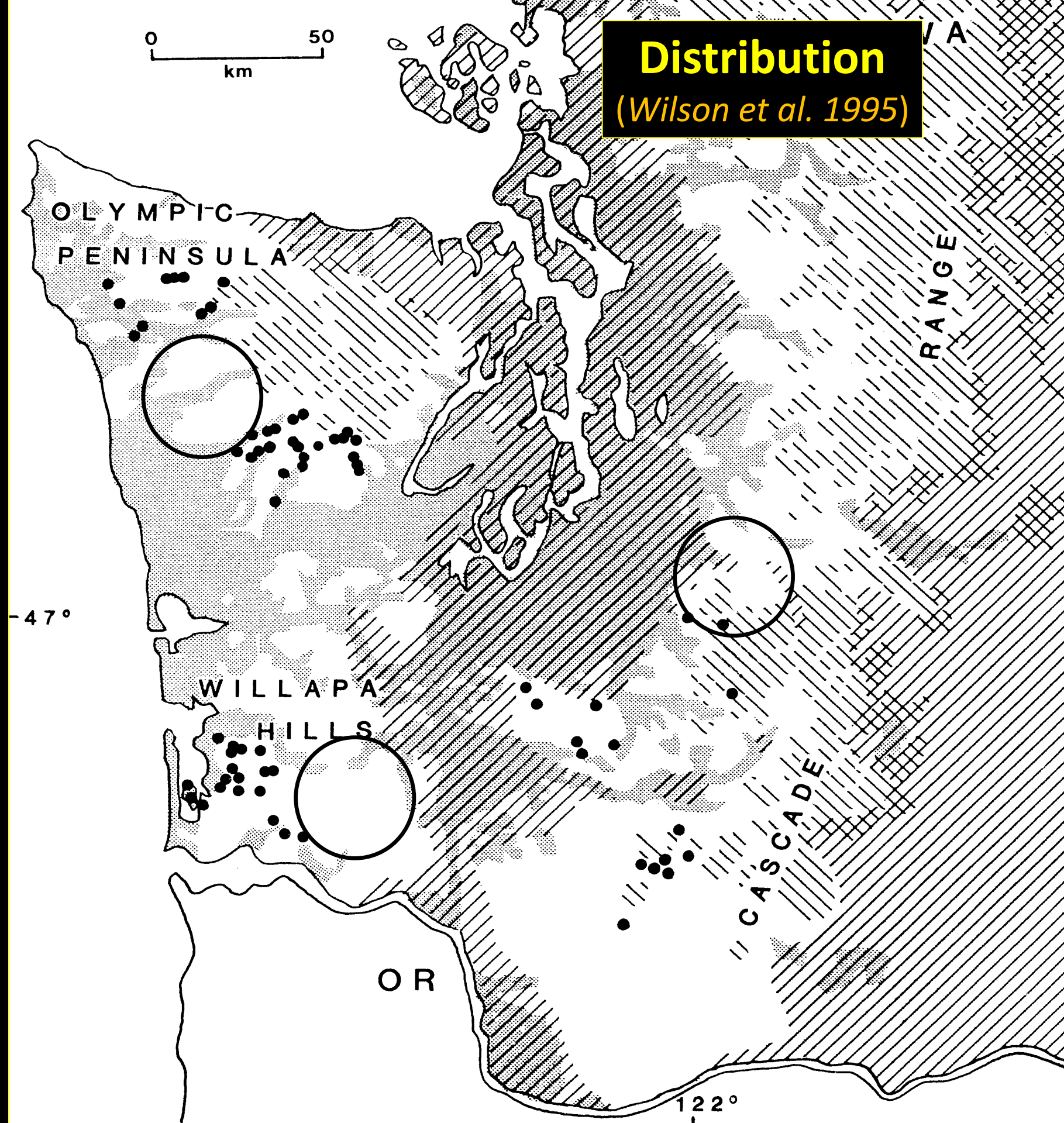
Willapa Hills



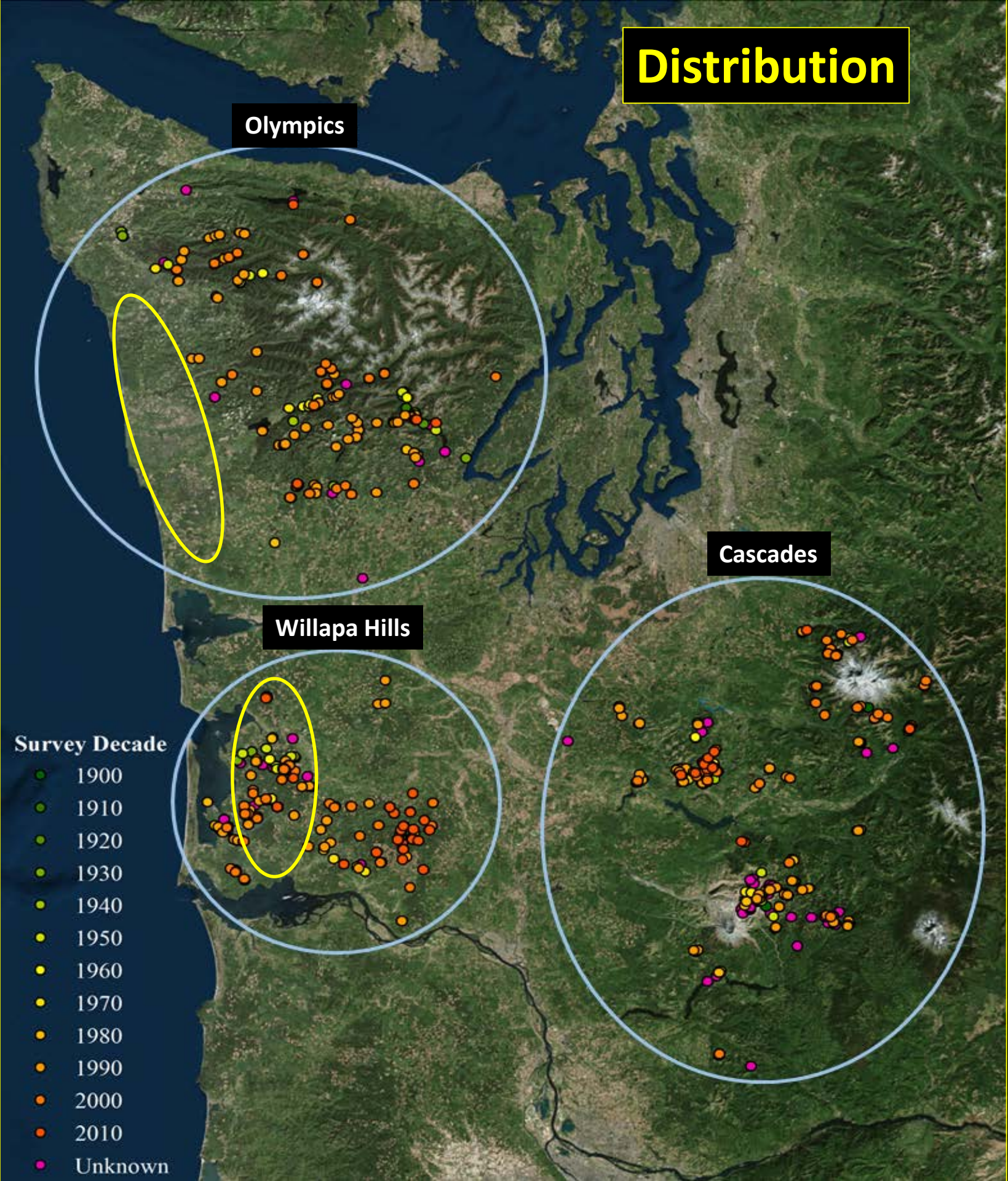
Survey Decade

- 1900
- 1910
- 1920
- 1930
- 1940
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010
- Unknown

Distribution
(Wilson et al. 1995)



Distribution



Olympics

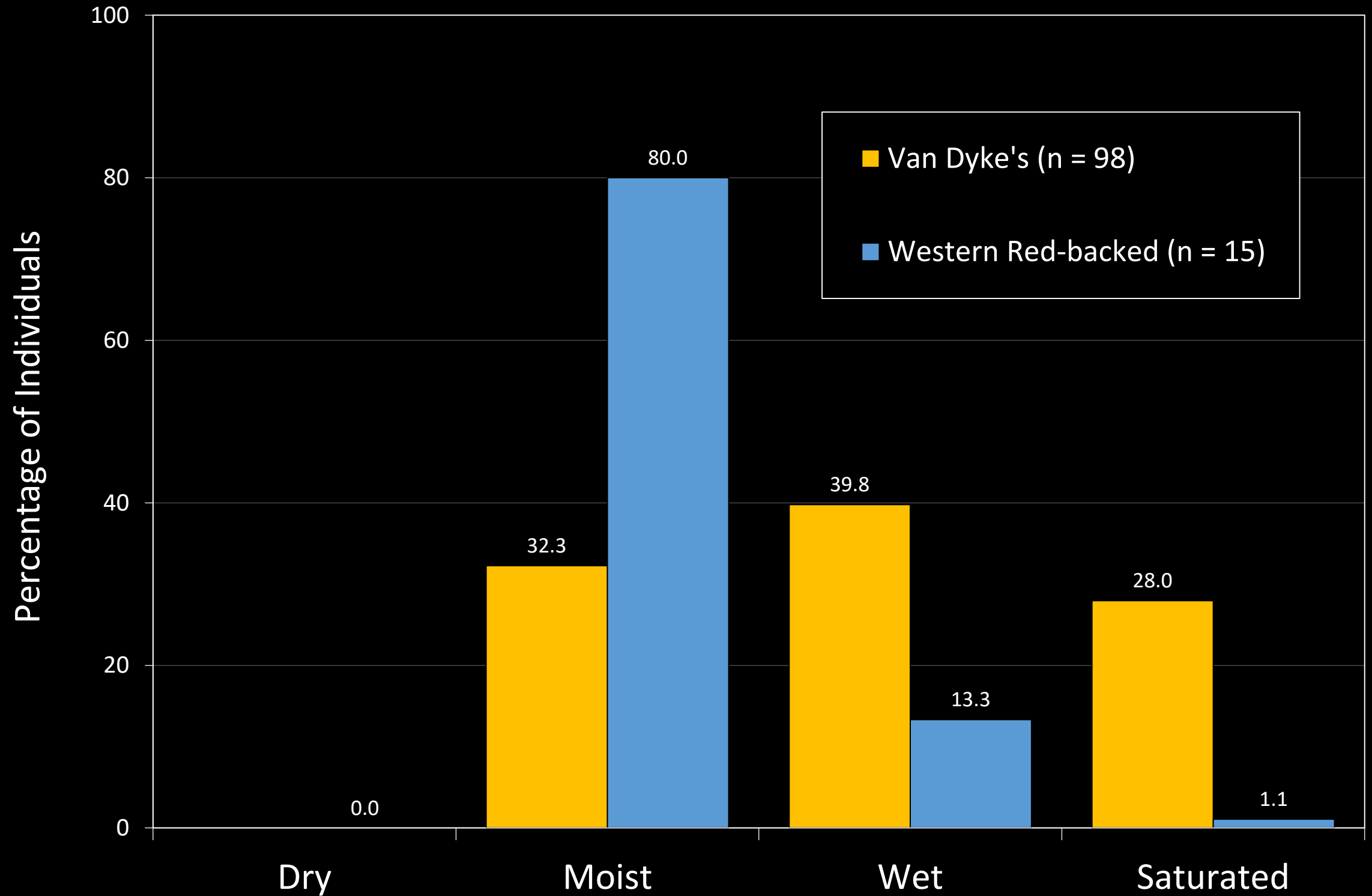
Cascades

Willapa Hills

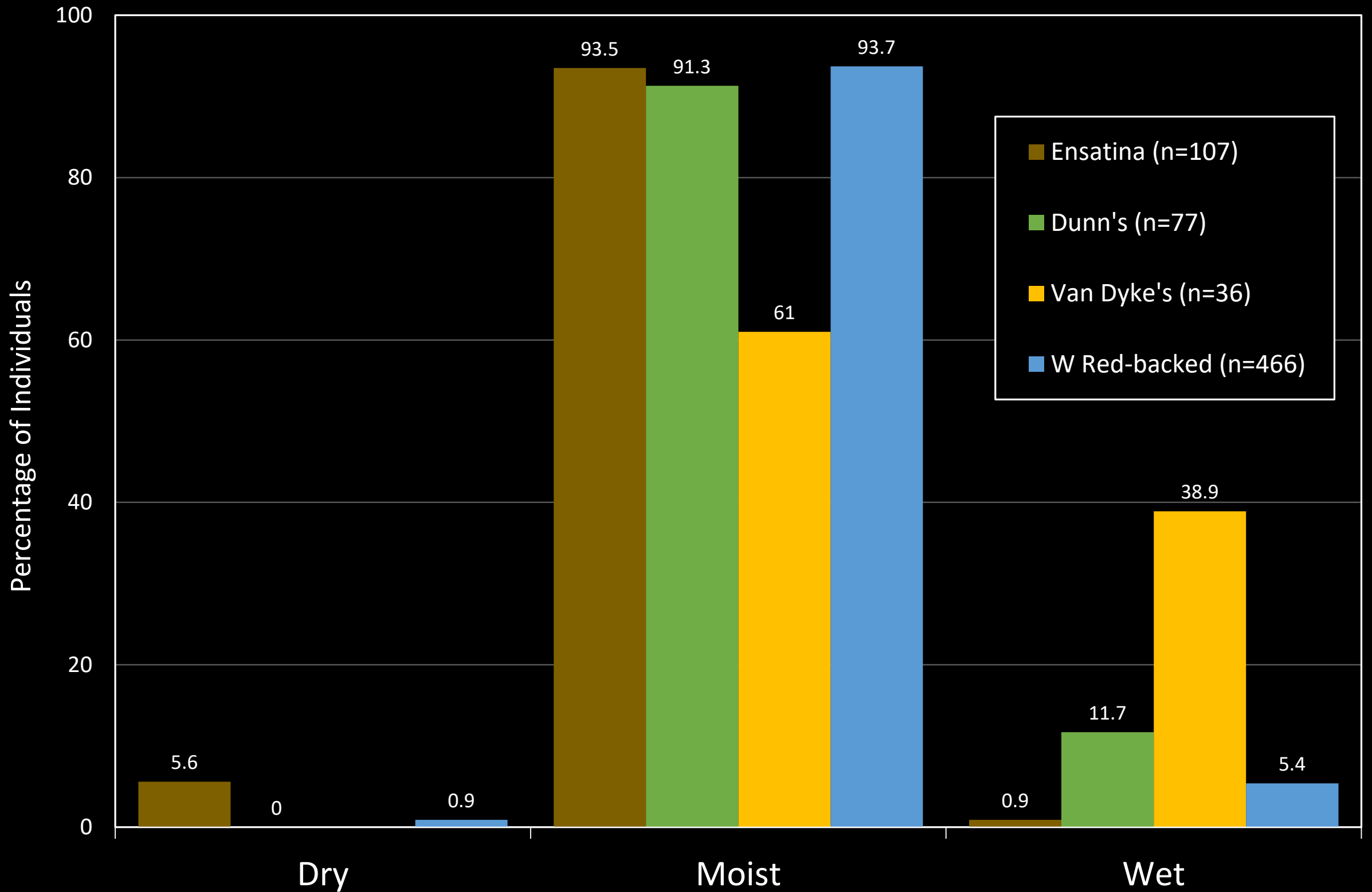
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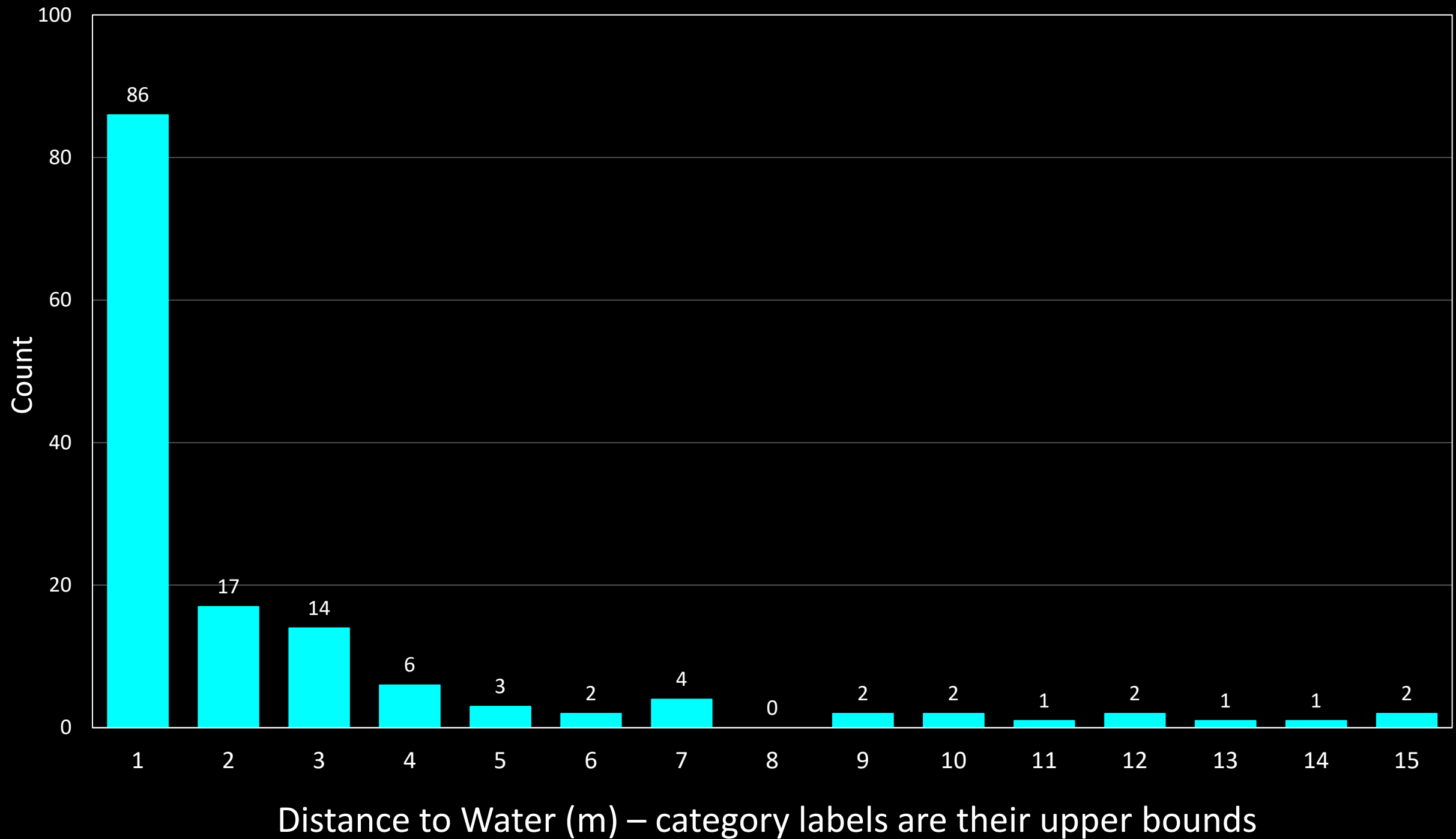
Patterns reflecting Moisture - Cascades



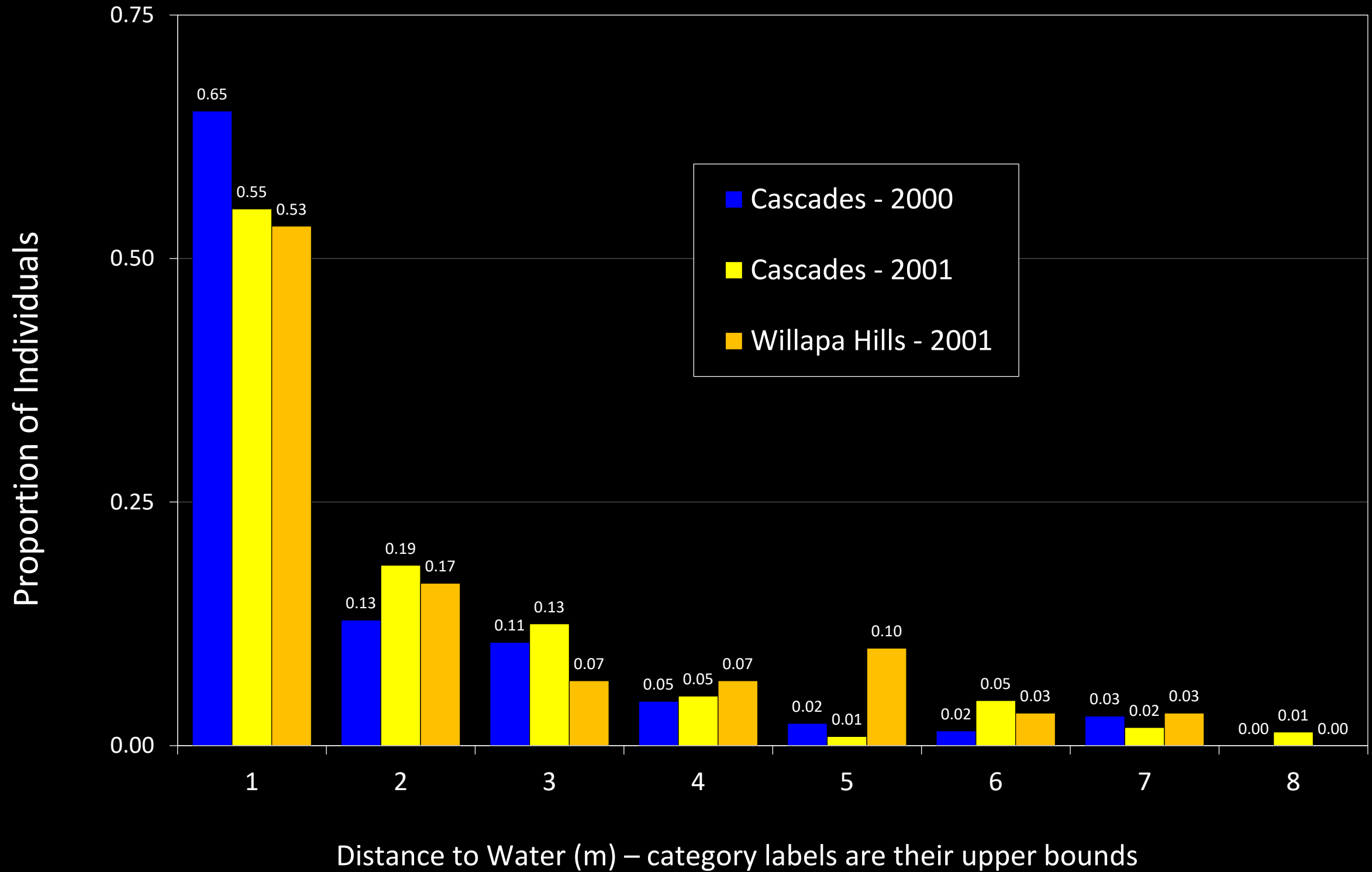
Patterns reflecting Moisture – Willapa Hills



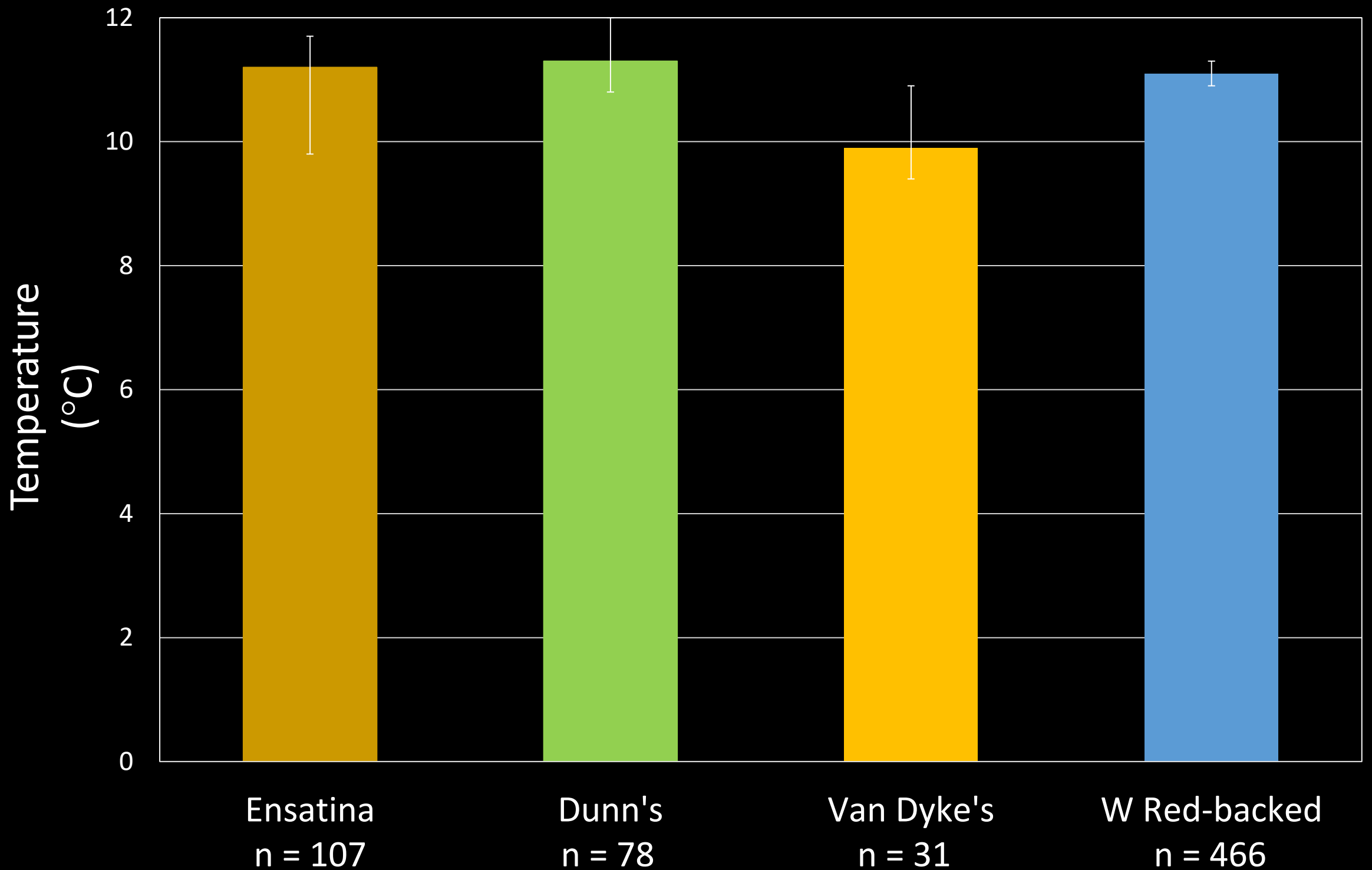
Patterns reflecting Moisture – Cascades



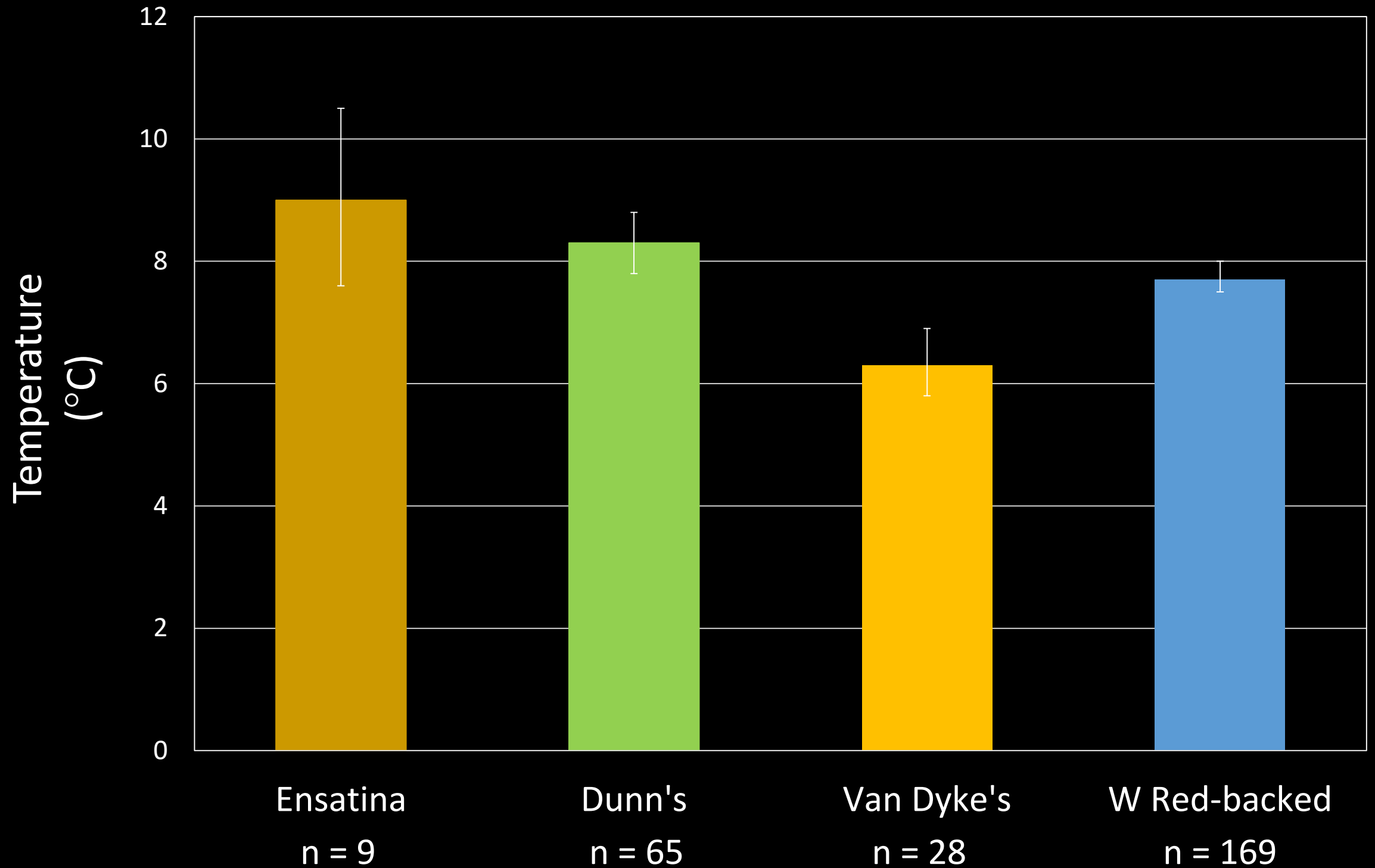
Patterns reflecting Moisture



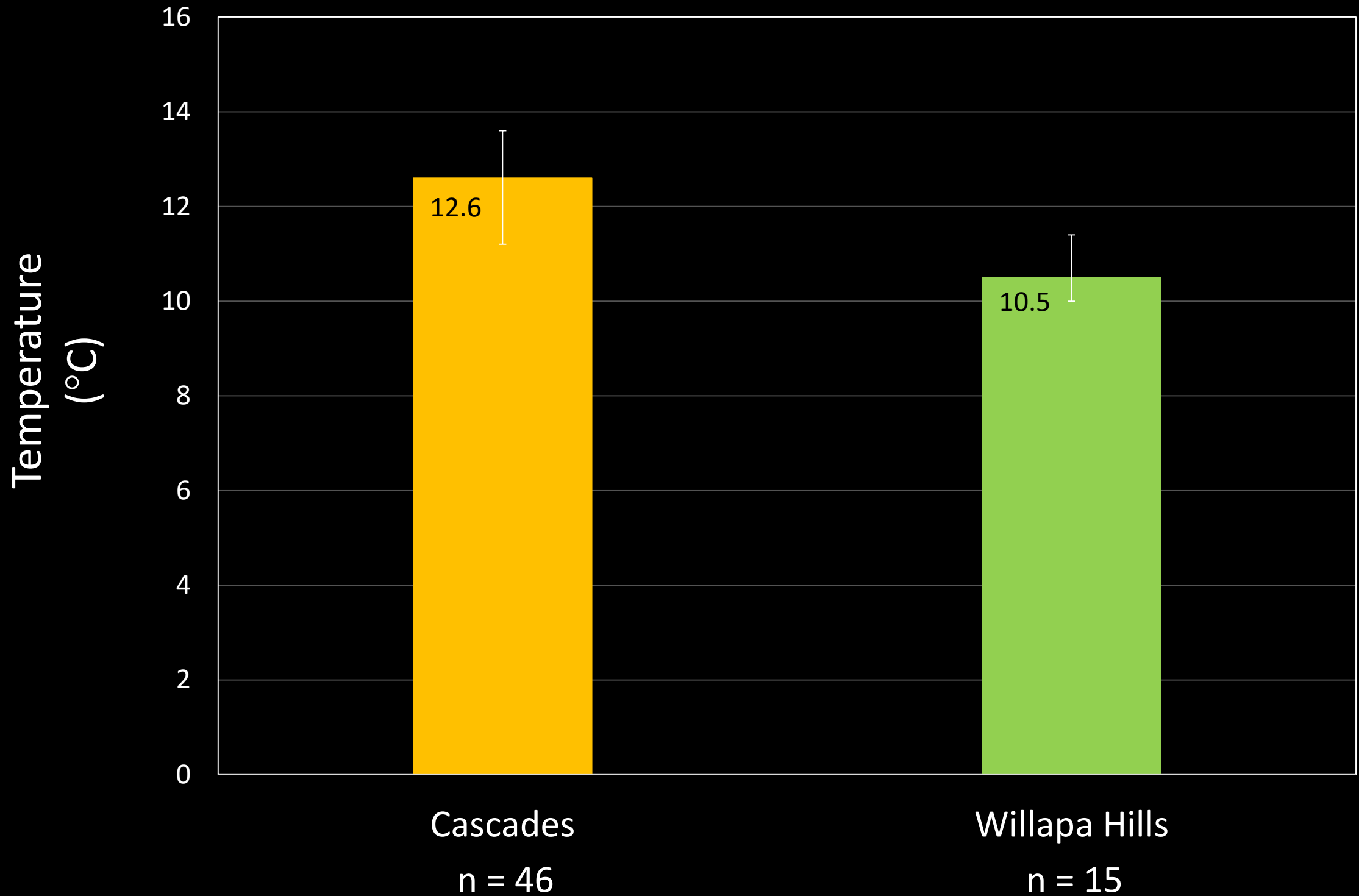
Patterns reflecting Temperature Willapa Hills – 2001-2003



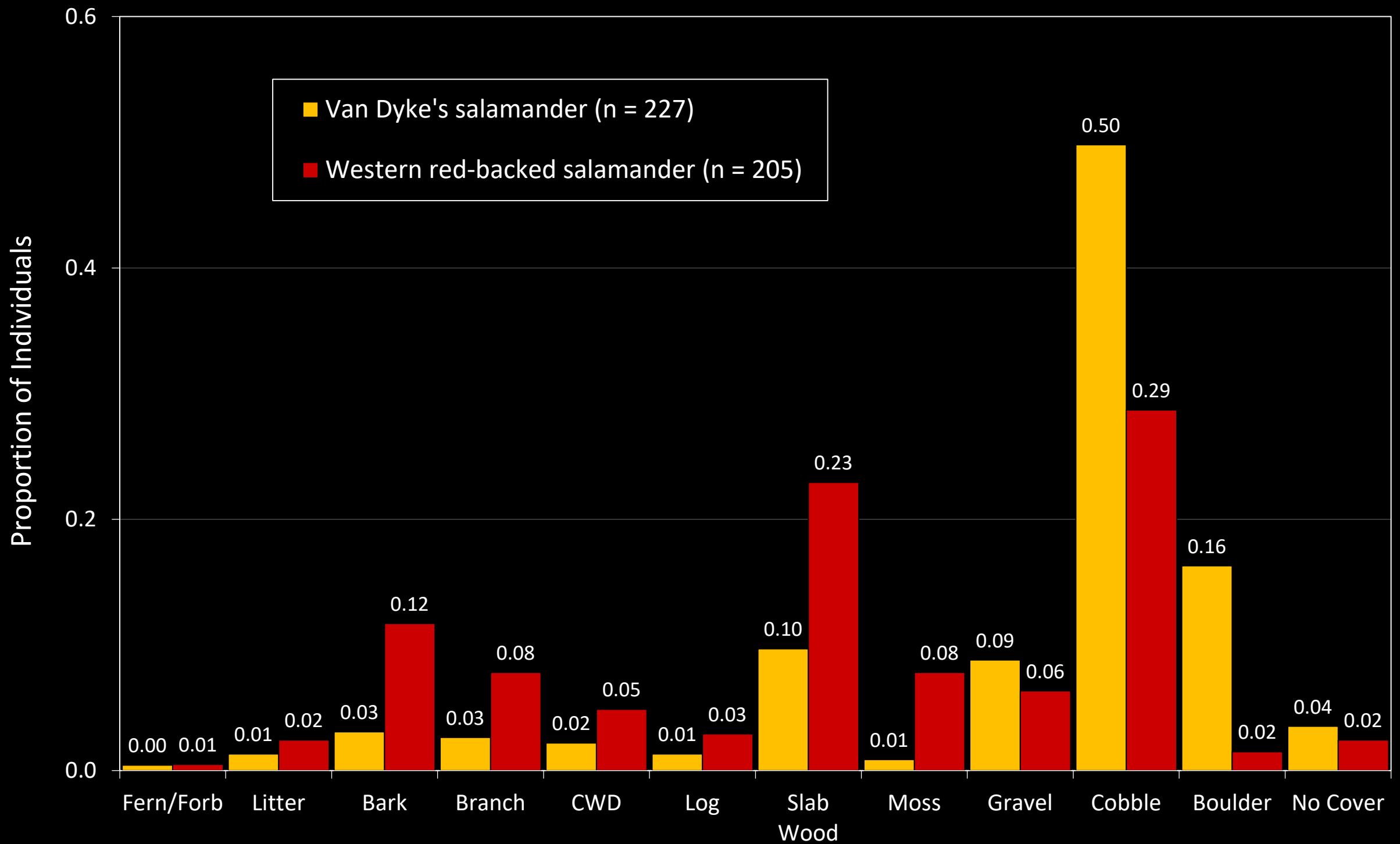
Patterns reflecting Temperature – Willapa Hills - 2015



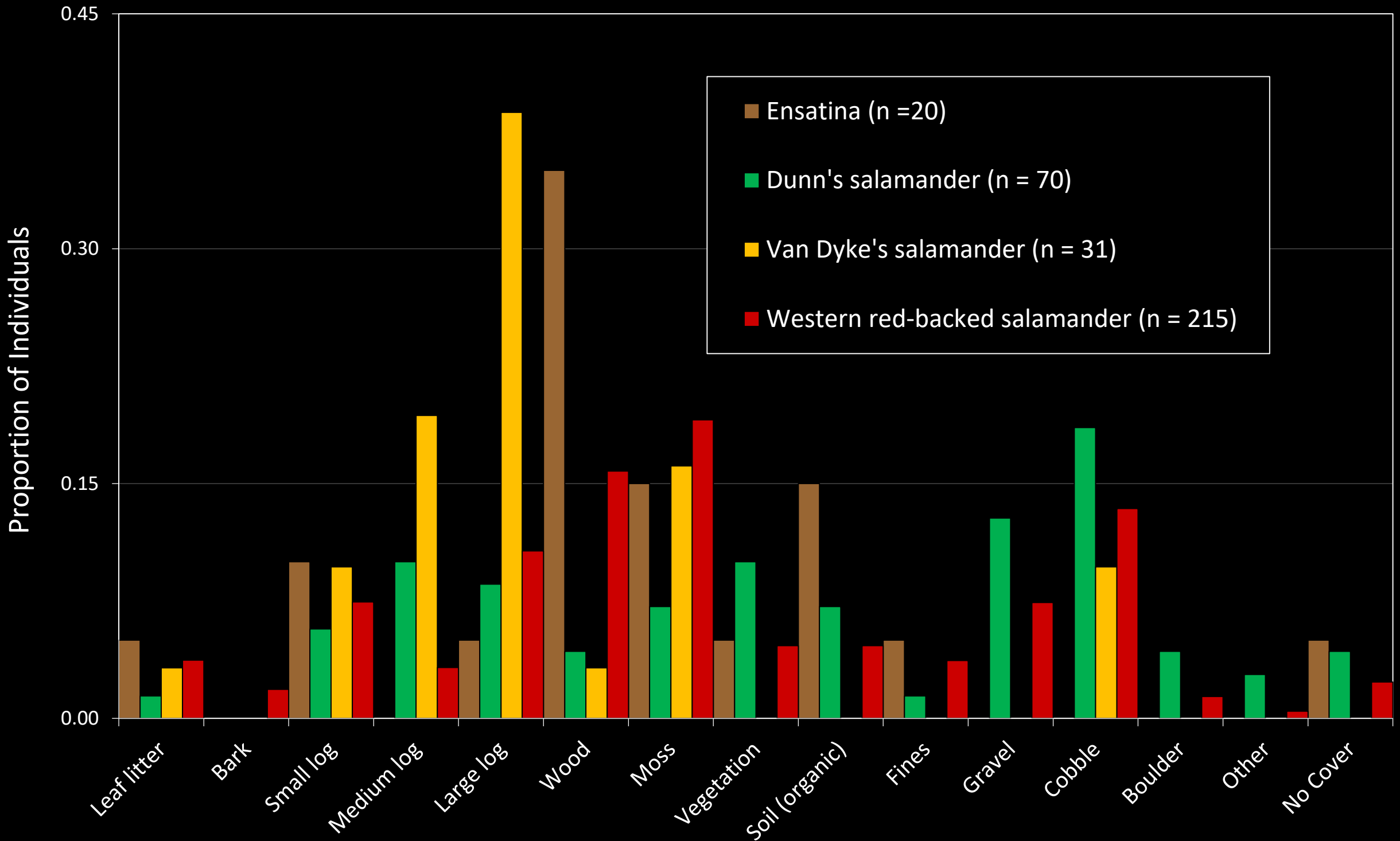
Patterns reflecting Temperature Cascades vs Willapa Hills



Patterns reflecting Substrate Cascades

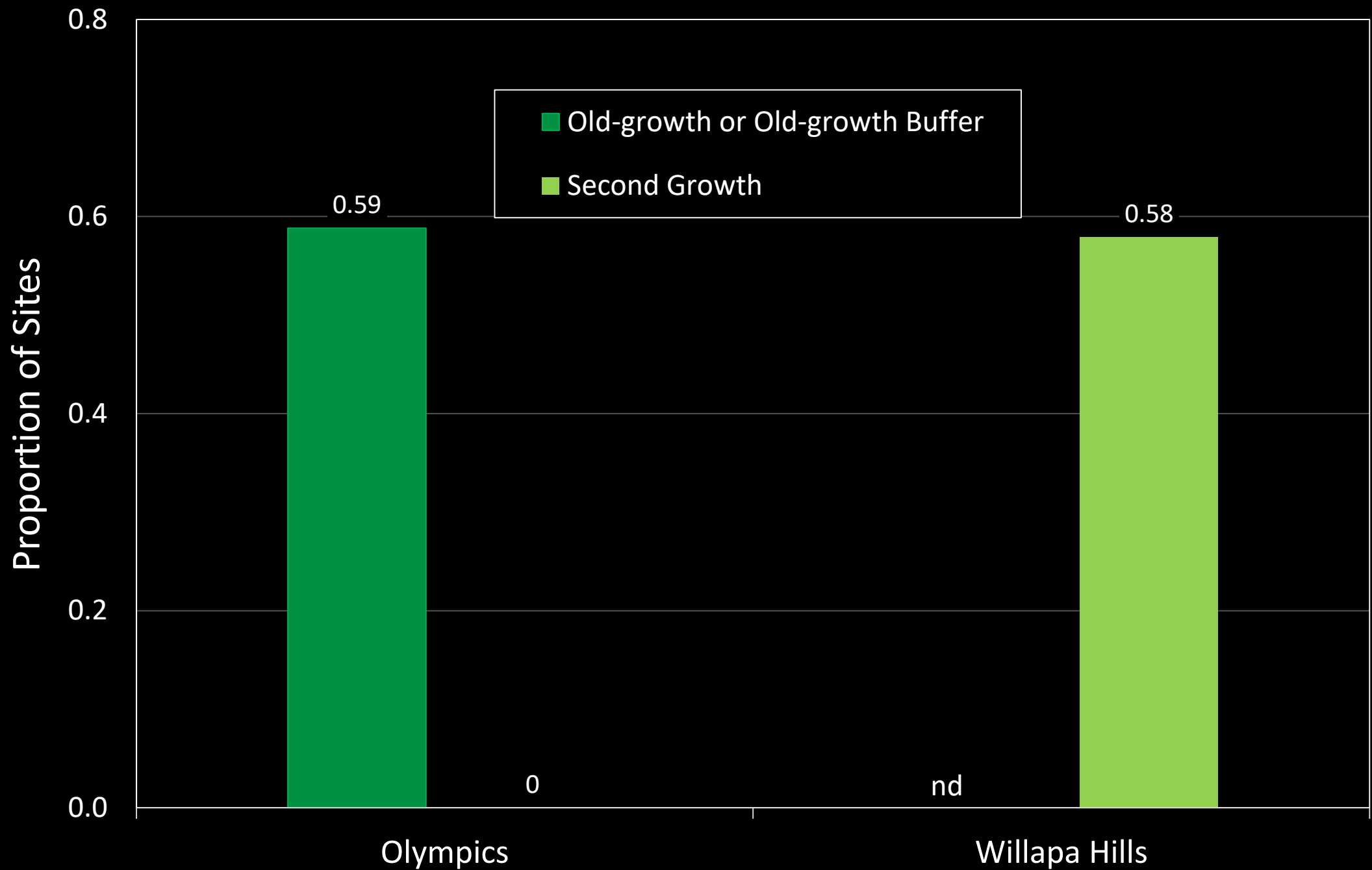


Patterns reflecting Substrate Willapa Hills



Landscape Contrast

Olympics vs Willapa Hills



Landscape Contrast

Olympics vs Willapa Hills

Possible Basis for Differences	Basis Justified	Likelihood
1) Sampling Methods	No – methods same	Unlikely
2) Different Years	Yes	Possible – needs analysis
3) Different Seasons	No – seasons same	Unlikely, but see 2
4) Elevational Asymmetry	Maybe	Unlikely, but needs analysis to exclude
5) Treatment Asymmetry	Yes	Possible – needs analysis
6) Different Wood Loading	Maybe	Possible – needs analysis
7) Population Differences	Maybe	Possible – needs genetic analysis

Conclusions

- Moisture or temperature-modified conditions resulting from forestry should be examined for their potential effect on Van Dyke's salamander.
- Further evaluation of the actual importance of wood in Coastal regions seems justified.
- If wood is associated with Van Dyke's salamander, manipulating treatments where the amount of wood is altered may be needed to evaluate its response to the variation in wood.
- Proximity to aquatic habitat patterns implies that most buffers on Type N streams and all buffers on Type F streams may adequately protect Van Dyke's salamander. This hypothesis may need verification.
- As a consequence, a RMZ effect on Van Dyke's salamander would most likely occur on the clearcut portion of Type N headwater streams, so a potential harvest effect study would best be focused on those habitats.