# NARA Logging Utilization

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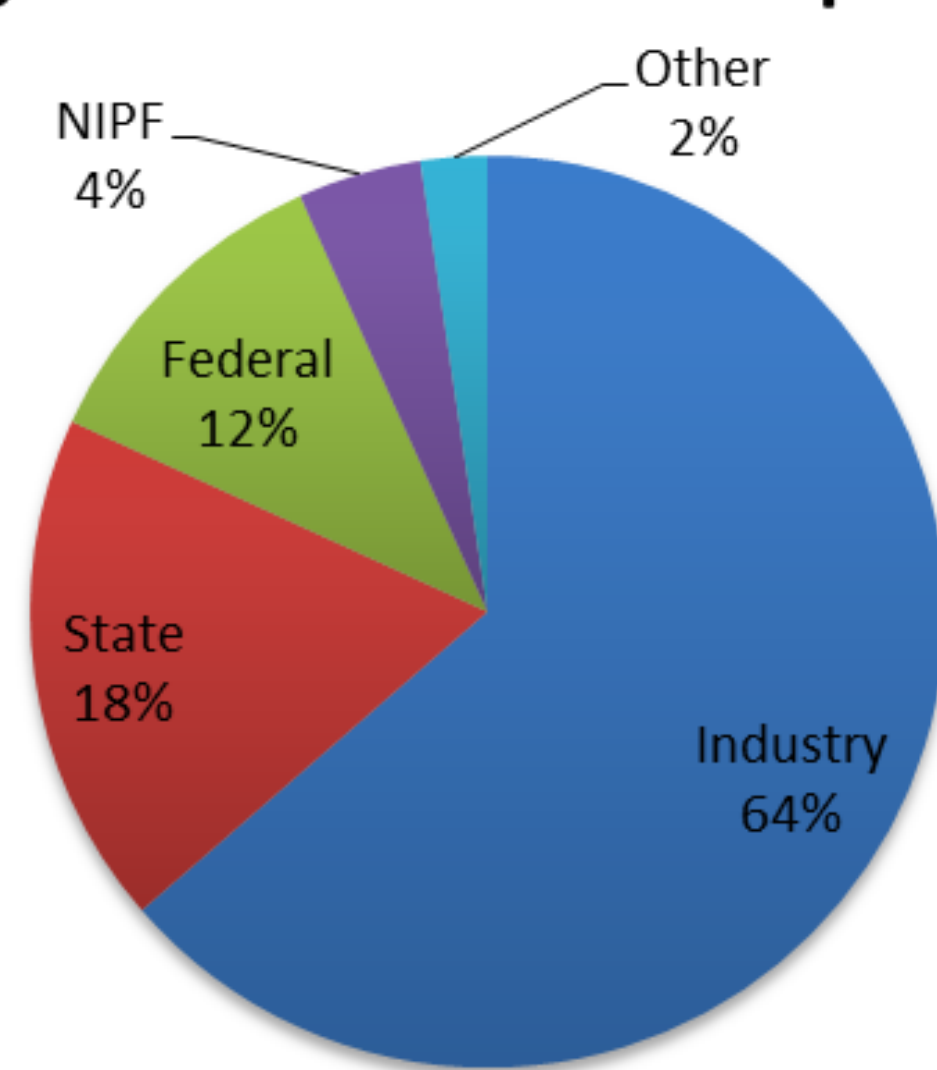
## Introduction:

Pacific Northwest forest land managers seek estimates of timber harvest woody residue volumes and biomass without the use of detailed inventory data. The logging utilization residue ratio, growing stock residue volume/mill delivered volume, can be applied to projected timber harvest volumes to estimate residue volumes without the use of tree list inventories at stand, landscape, and state levels. Research results characterize felled tree attributes such as residue and utilized volumes by tree section- from stump to tree tip. Bole, branch, and foliar biomass (i.e., non-growing stock portions of logging) residues can then be estimated with allometric equations.
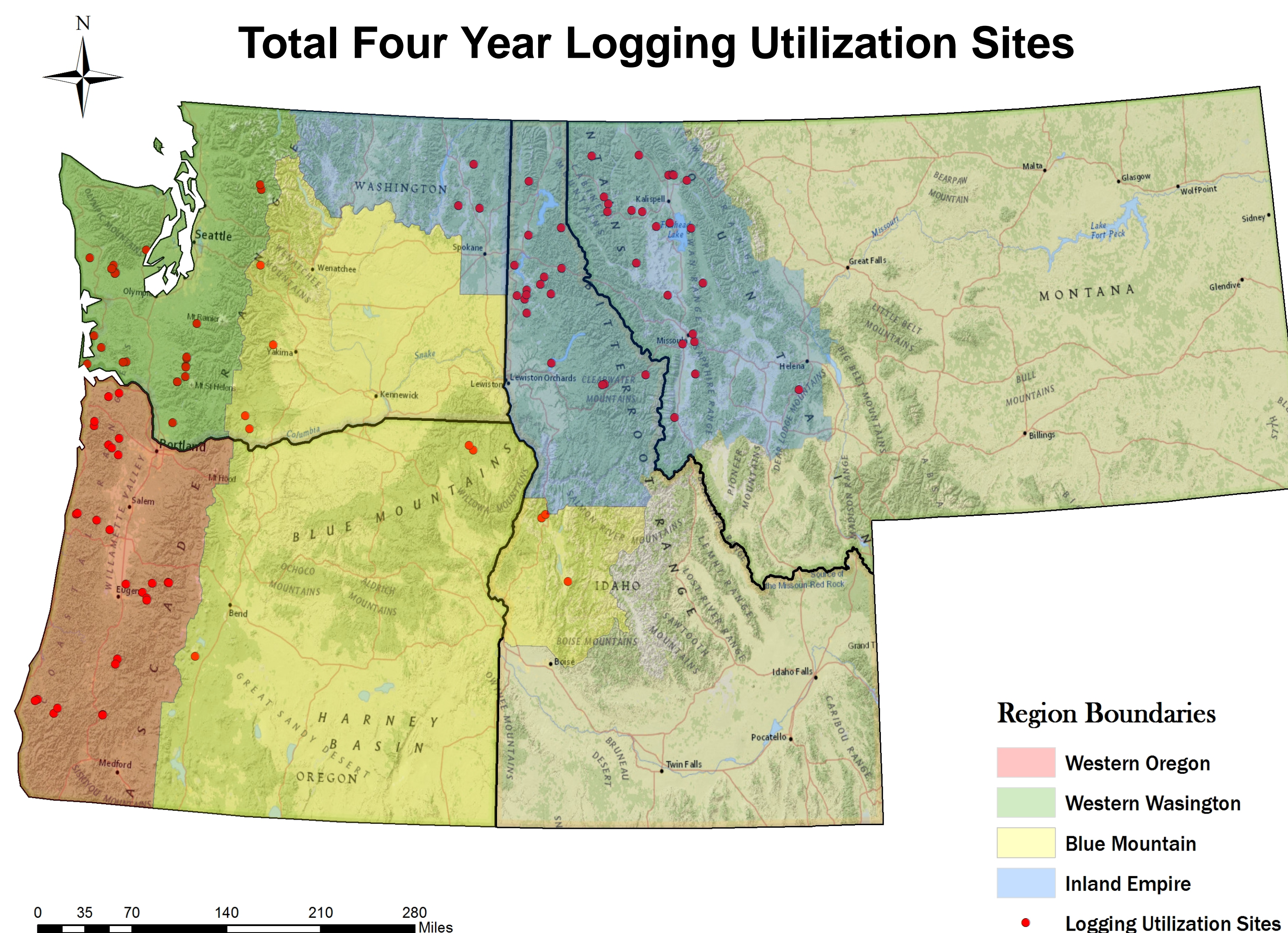
### Mean Stump Height by Felling Method, All Regions
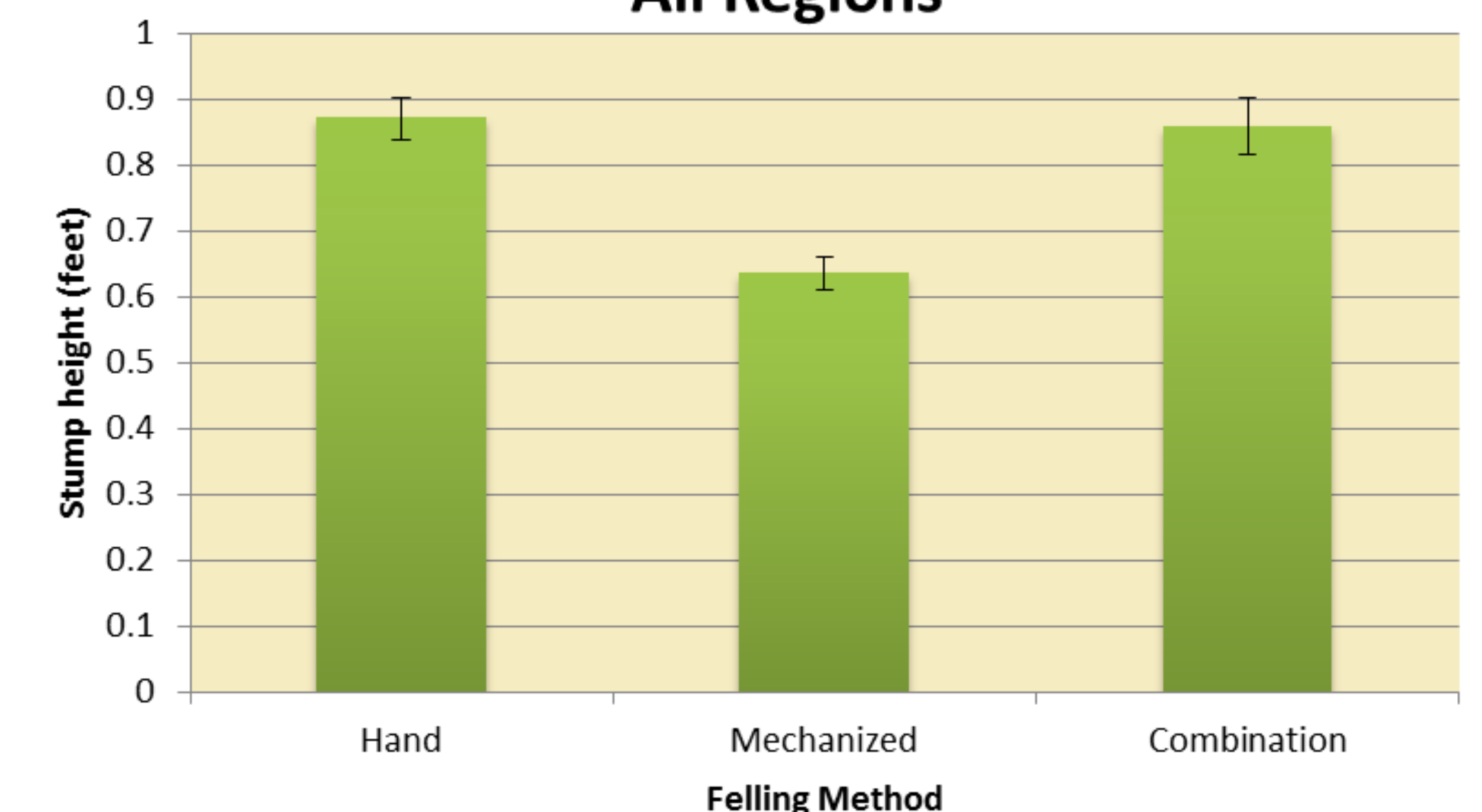


### Predicted F3 by Pulp Removal and Felling Method



### Logging Utilization Species Distribution



### Logging Utilization Ownership Distribution
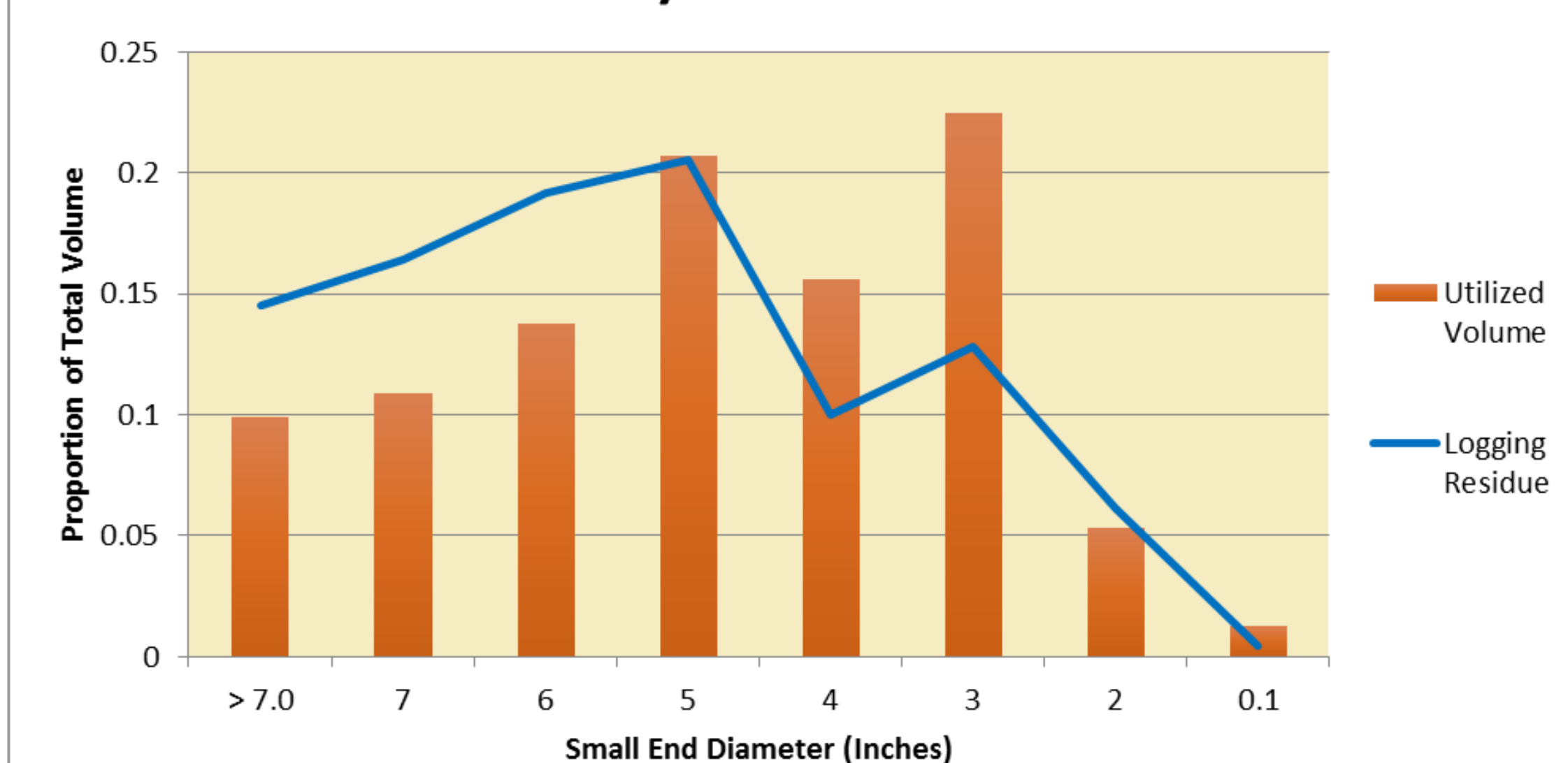


### Total Four Year Logging Utilization Sites



Region Boundaries
- Western Oregon
- Western Wasington
- Blue Mountain
- Inland Empire
- Logging Utilization Sites
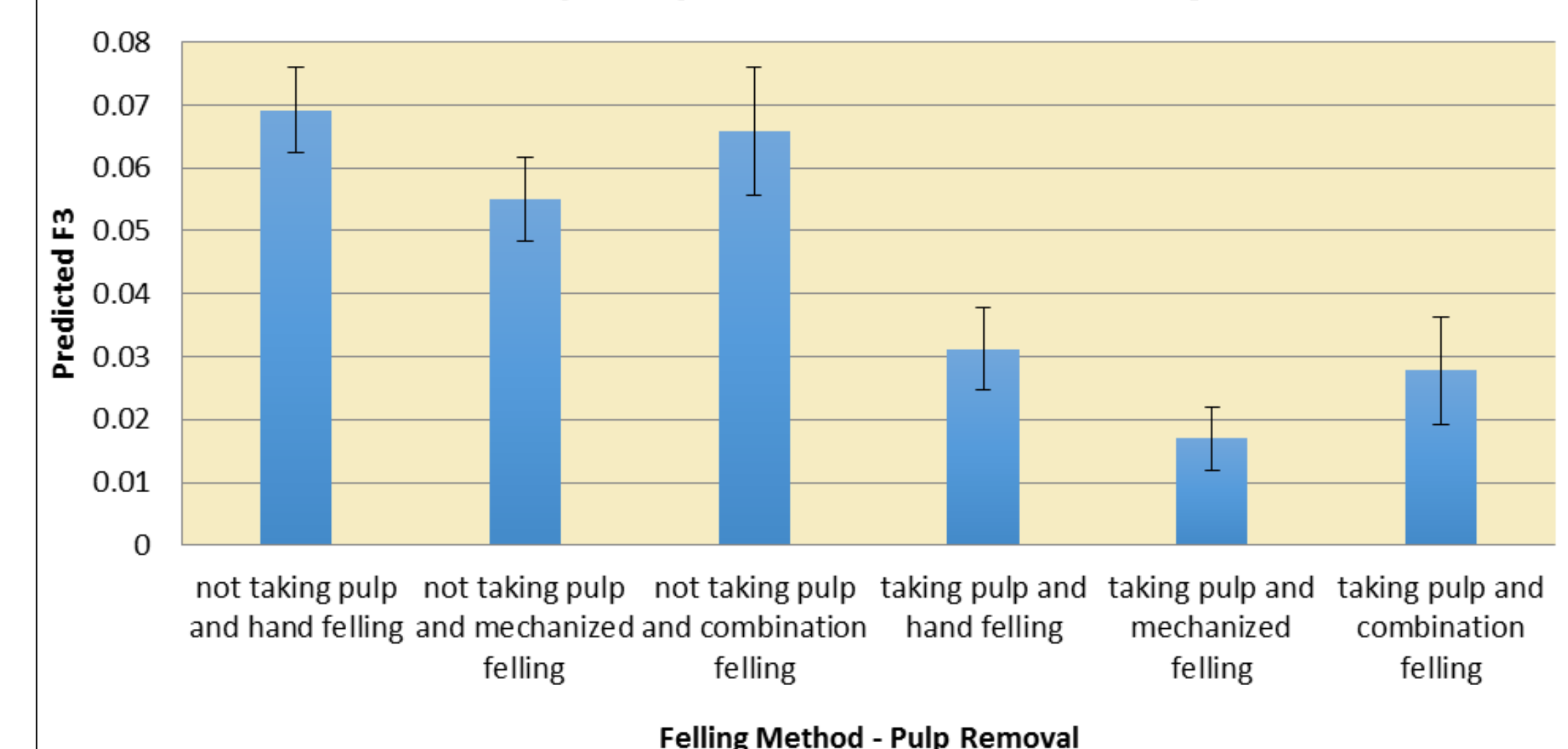
### Proportion of Utilized and Logging Residue Volume by Small End Diameter



### Mean Stump Height by Region
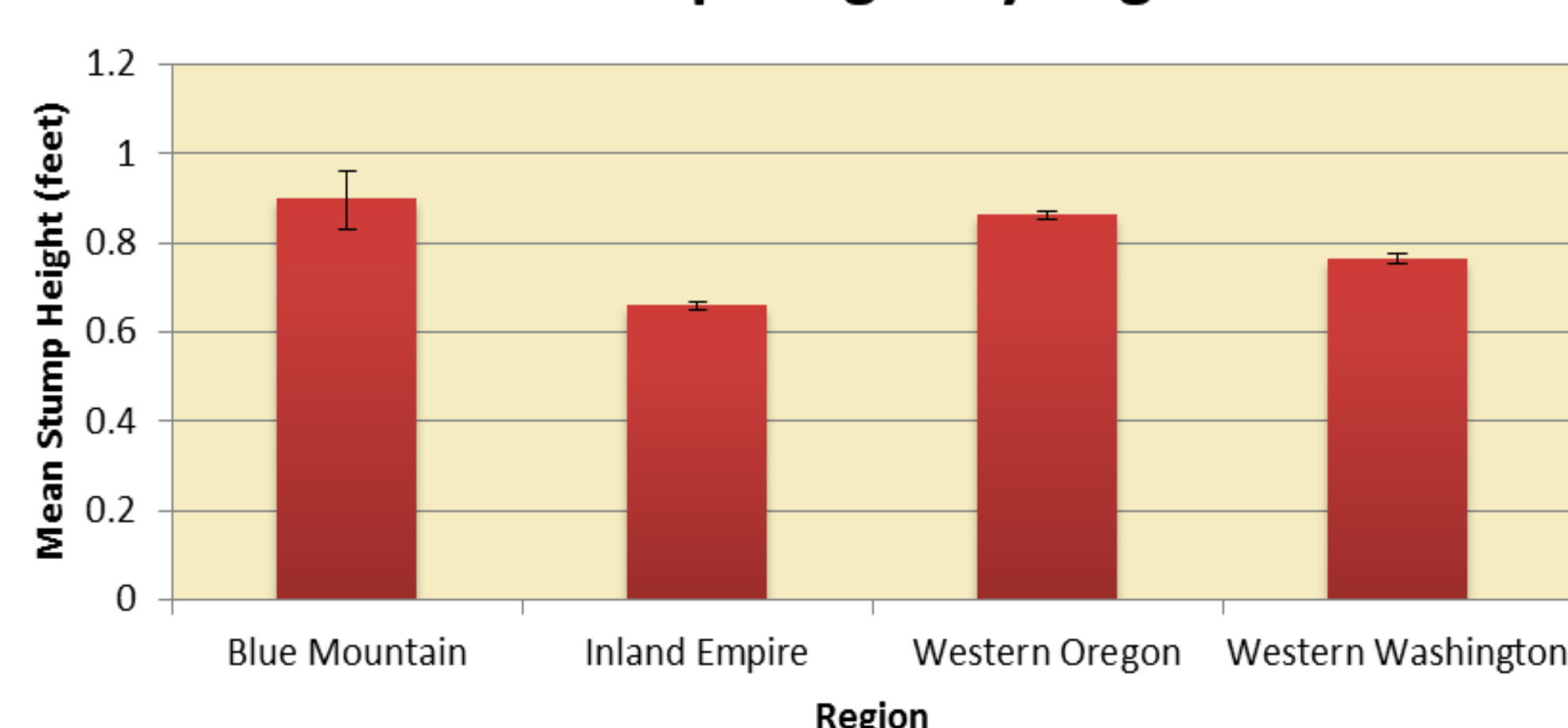


### Logging Utilization Four Year Data Summary

| Region | Number of logging sites sampled | Number of trees sampled | 5 year timber harvest volume -Scribner MMBF |
|---|---|---|---|
| Blue Mountains | 7 | 173 | 2,855 |
| Inland Empire | 53 | 1324 | 6,400 |
| Western Oregon | 21 | 519 | 12,639 |
| Western Washington | 20 | 486 | 11,061 |
| Total | 101 | 2502 | 32,955 |

## Highlights:

- The four-state overall residue ratio (growing stock residue volume/mill delivered volume) was 29 cubic feet of growing-stock logging residue generated per 1,000 cubic feet of mill-delivered volume.

- The predicted residue ratio decreased more than 250 percent when pulp was removed.

- The predicted residue ratio was lowest on mechanized felling sites where pulp products were removed and highest on hand felled sites where pulp was not removed.

USDA

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