



ESTIMATING FUEL LOADINGS IN MASTICATED AREAS

Sharon Hood
Ros Wu

Mastication used to:

- Reduce fuel bed depth
- Increase canopy base heights
- Slow rate of spread and intensity if burned





STAY BACK 300 FEET

HYDRO-AX 721E

Before Treatment



After Treatment



Masticated Fuels

- Very irregular shapes
- Small pieces
- Compact fuel bed
- Mixed woody, masticated material into litter and duff layers



Objectives

- Determine bulk density of masticated fuels
- Test Cover-Depth method



Methods

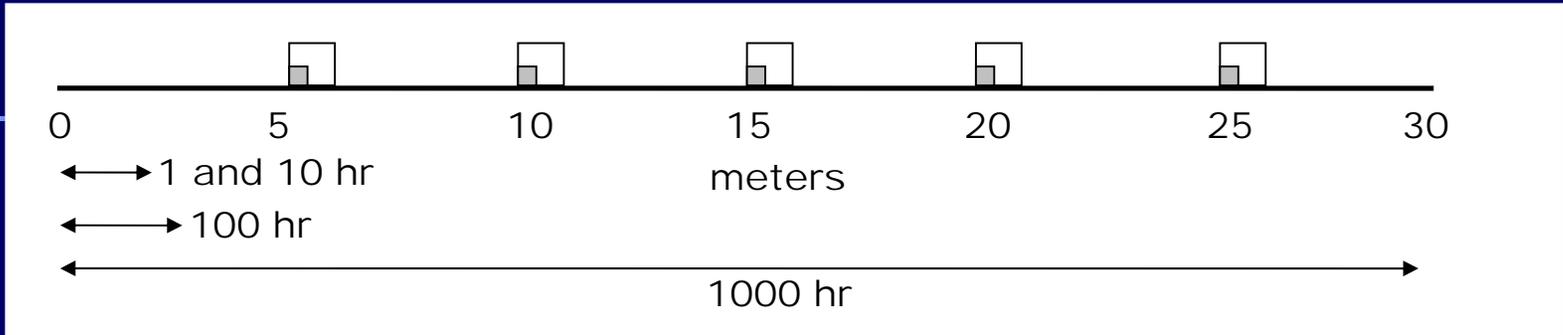
Installed fuel transects in 3 vegetation types

- 3 Pinyon – Juniper sites (SW Colorado)
- 3 Ponderosa pine – Gambel oak sites (SW Colorado)
- 1 Jeffrey pine – white fir site (N. California)

Estimated loading two ways:

- Planar intercept method and duff/litter profiles
 - Averaged each piece to determine size class
- Cover – depth method
 - Total and woody % cover 1 m²
 - Average depth of woody, litter, and duff profile

Plot Layout



- Measured depth in 30x30 cm sub-frame of 1 m² frame
- Collected all material
 - Only where 100% cover to calculate volume
 - By type (masticated, litter, & duff)
- Dried and weighed to calculate bulk density for estimating loadings

Cover-Depth Method

Volume = 30 cm X 30 cm X depth

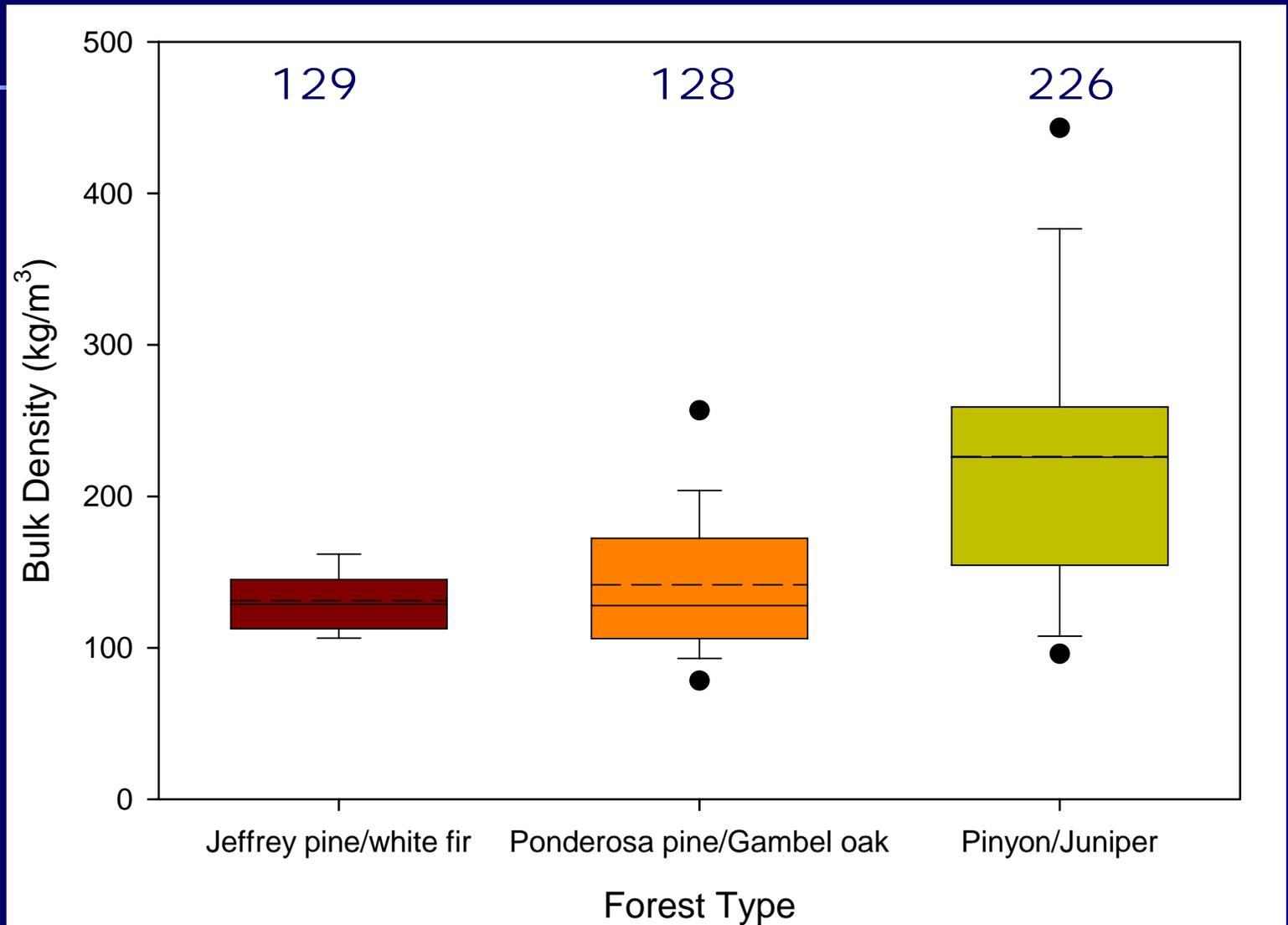


Bulk Density = sample weight/volume

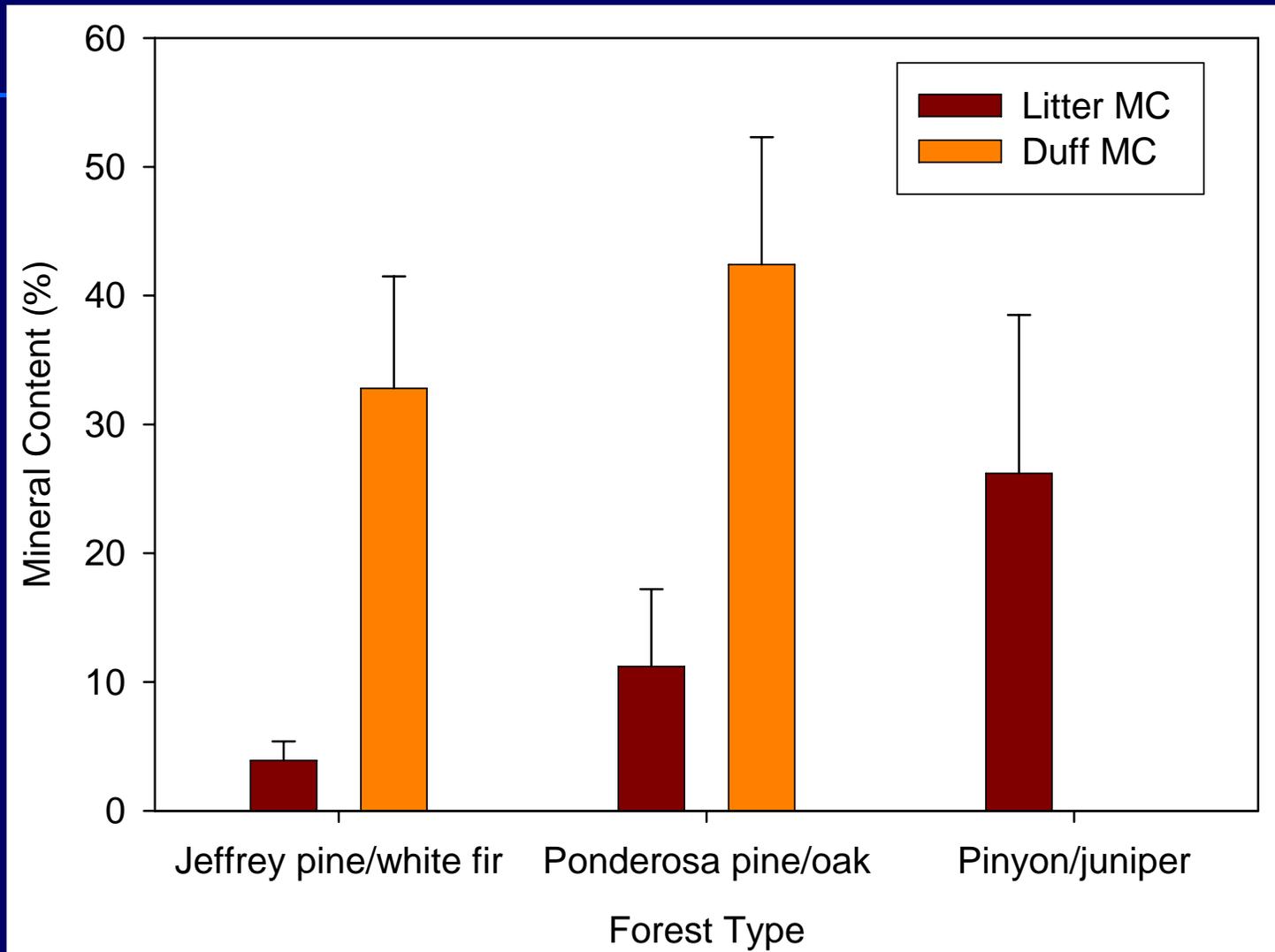


Loading = Bulk Density X Depth X Cover
Class

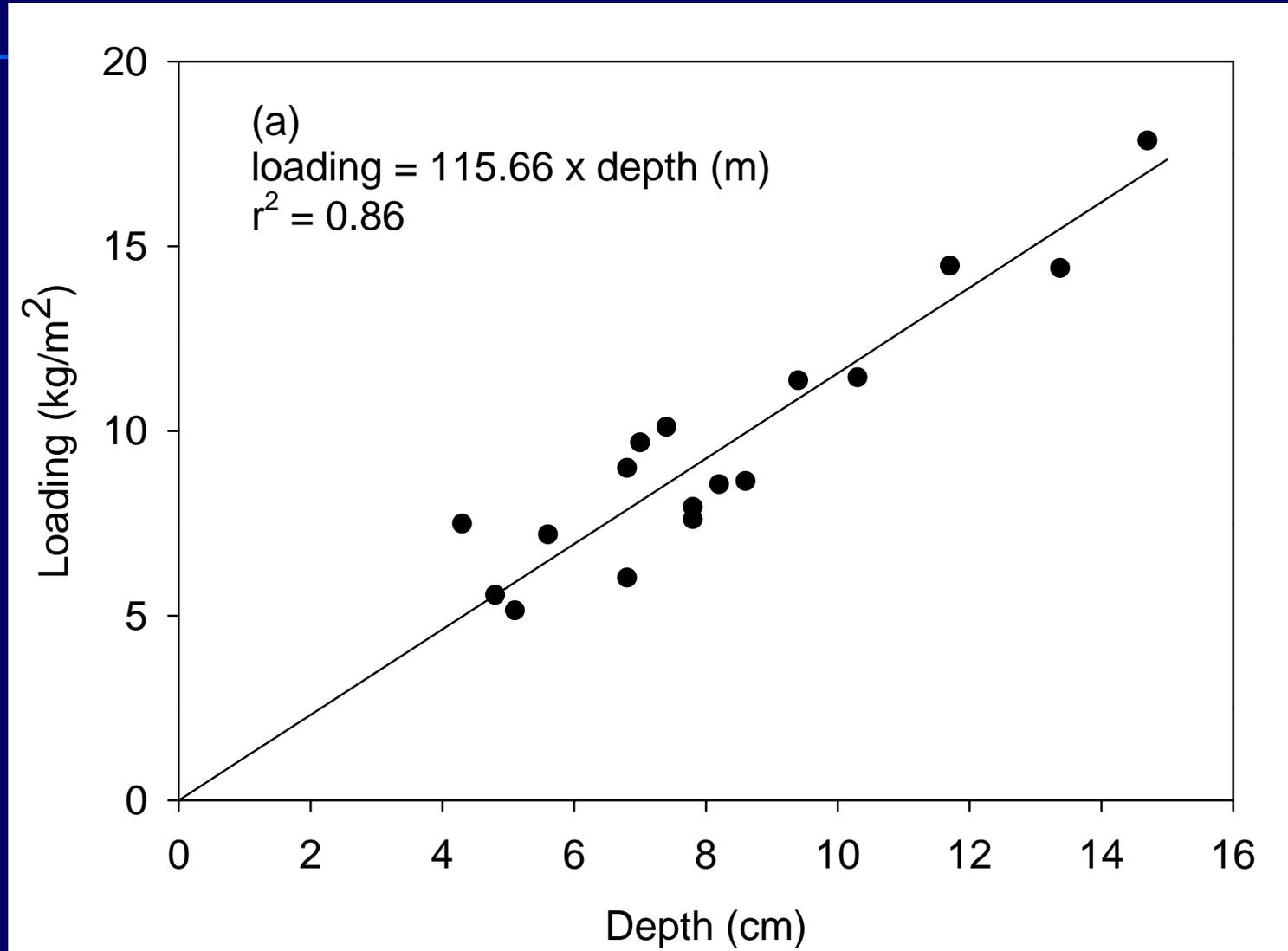
Median Fuel Bed Bulk Densities



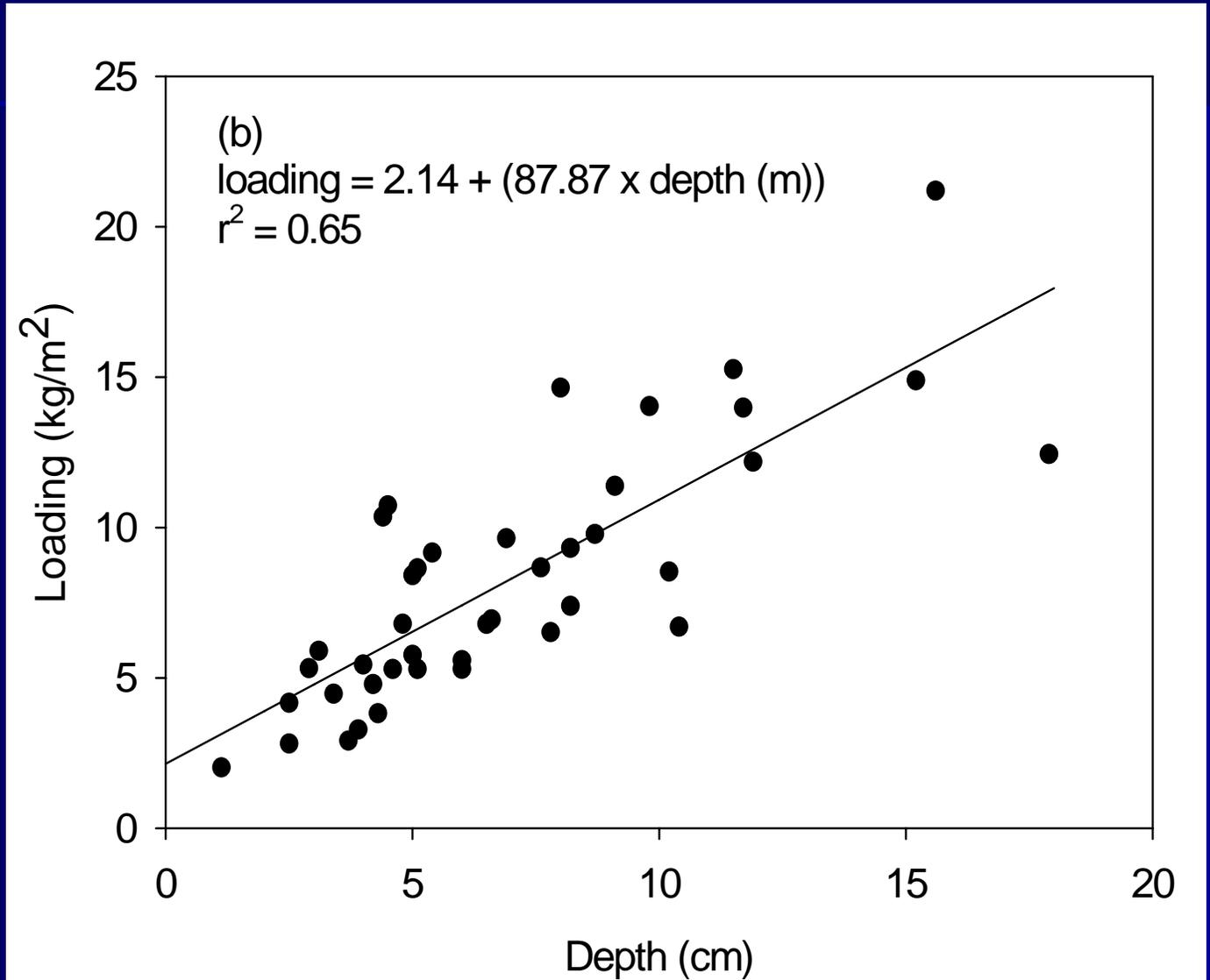
Mineral Ash Content



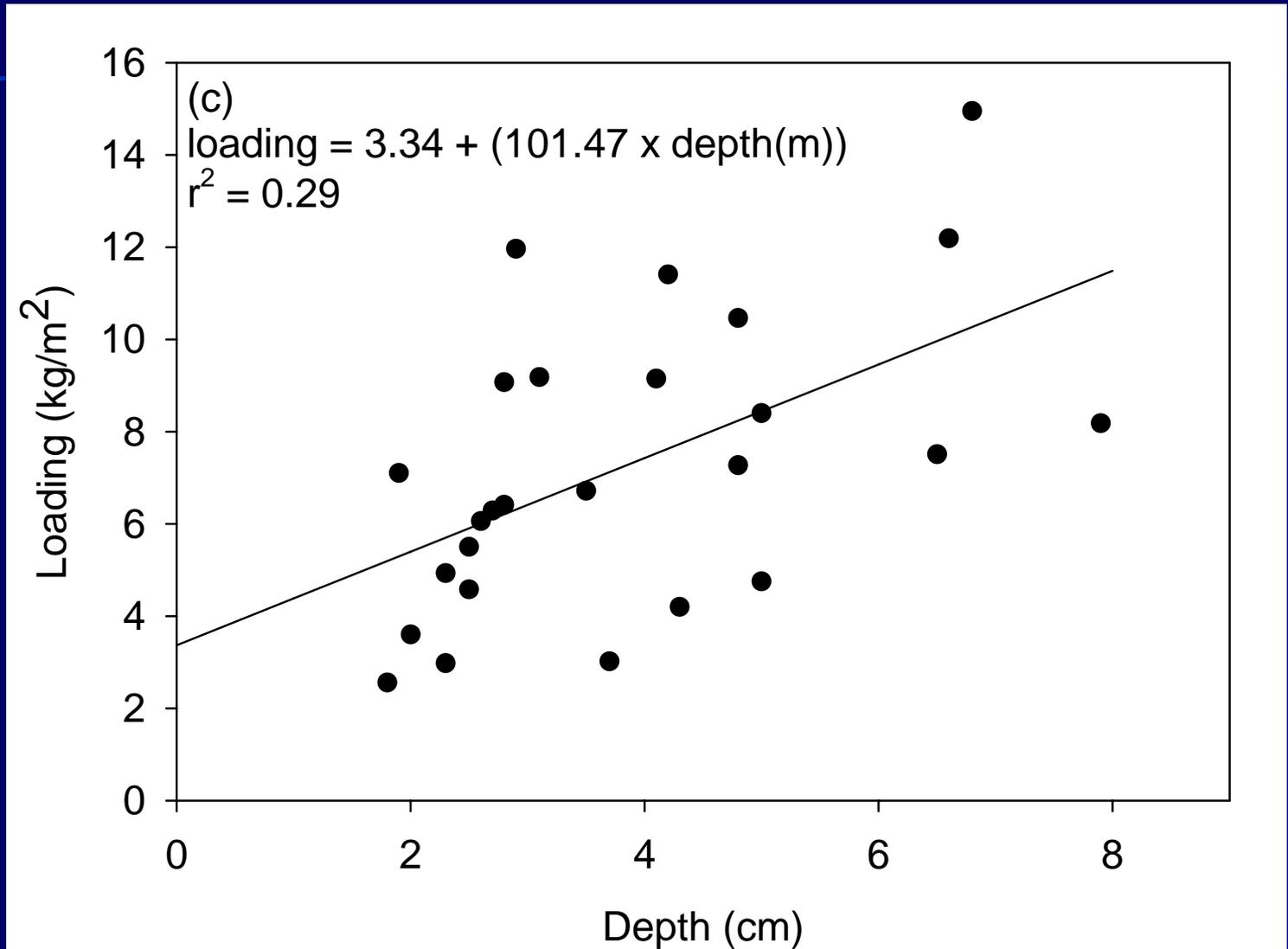
Jeffrey Pine/white fir



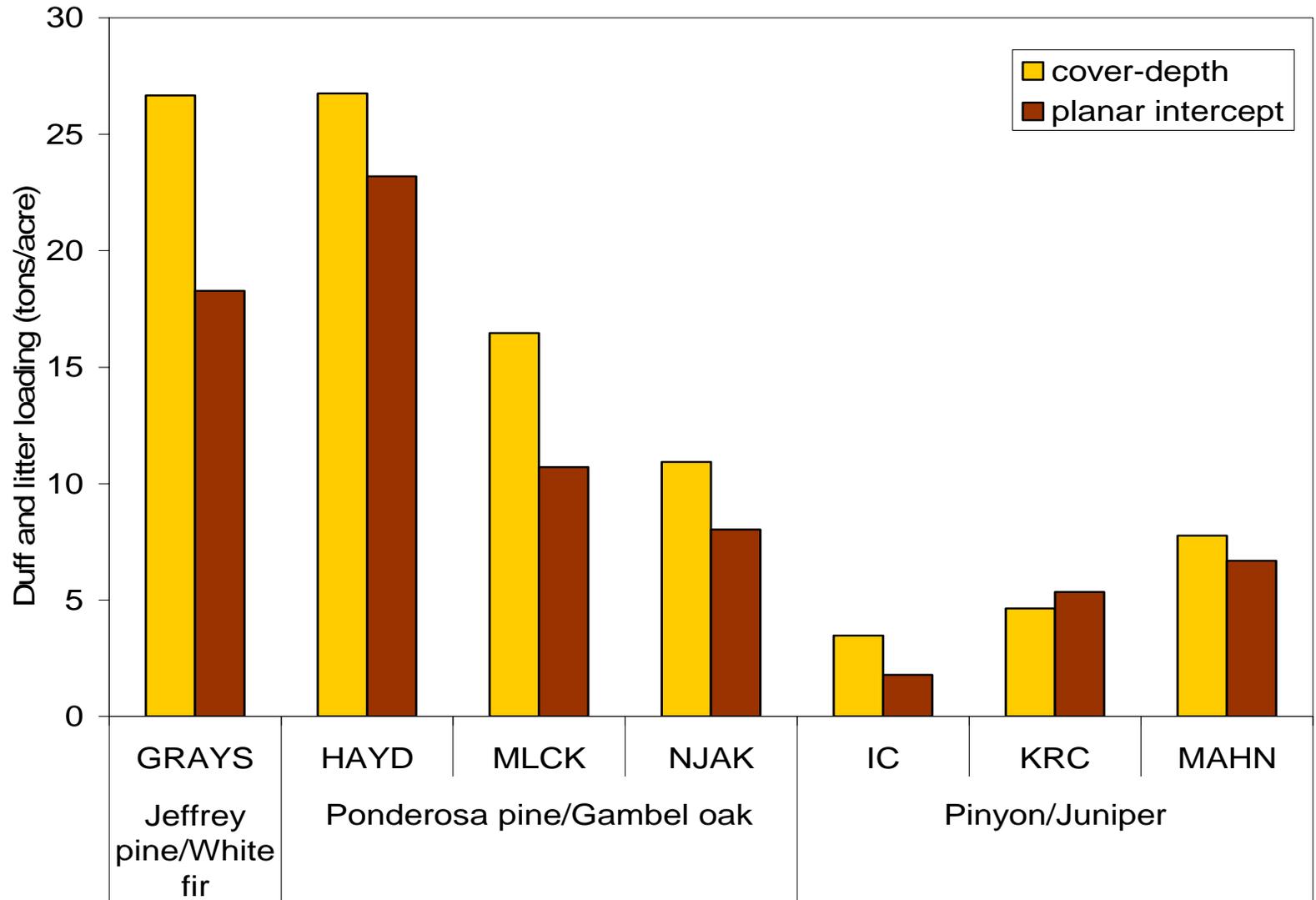
Ponderosa pine/Gambel Oak



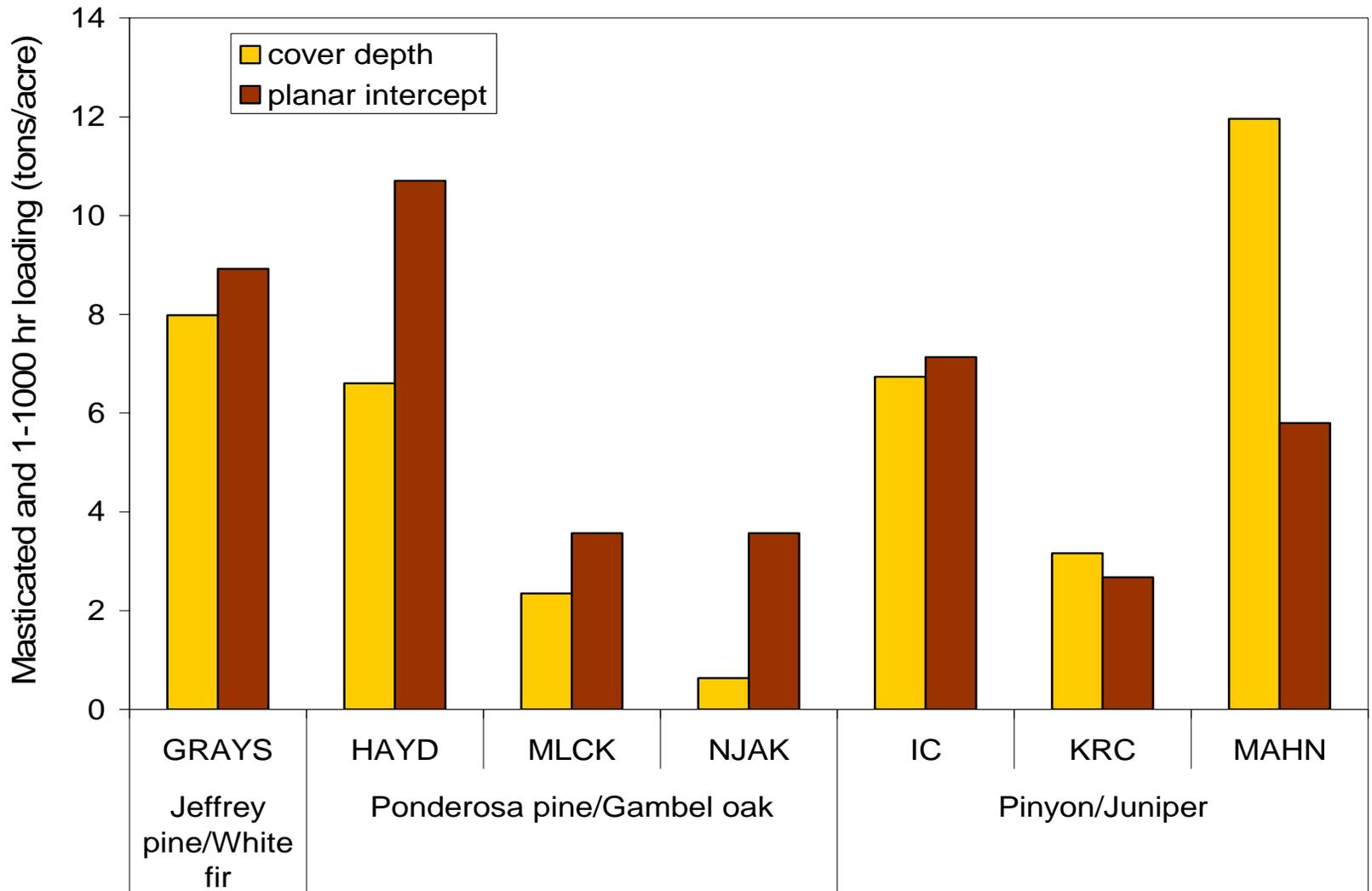
Pinyon/Juniper



Duff-litter loadings



Masticated/Woody Loadings



Summary

- Jeffrey pine/white fir best relationship of loadings and depth
- High variability in PJ
- Cover-depth method estimated:
 - Higher duff/litter loadings
 - Lower masticated/woody loadings



DC HOTZ

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Future Work

- Accuracy assessment of 2 methods using sub-frame data
- If cover-depth method more accurate than possibly expand study to include more veg. types and larger sample sizes.
- Is another method better?

