



Forest Pathology

Kootenay / Boundary Region

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Years of Armillaria
Infection

New Findings

Kootenay – Boundary Region

- **Plantation health**
- **Root Disease Trials**



New Findings

Kootenay – Boundary Region

Armillaria Root Disease Trials

Established 1987 - Permanently Marked Trees

Near Nelson

- Smallwood
- Busk

Near Golden

- Marl

New Findings

Kootenay – Boundary Region

Armillaria Root Disease Trials

Established 1987 - Permanently Marked Trees

Percent (%) Trees (dead) with Armillaria Root Disease (2014).

Species	Busk Creek	Marl Creek	Smallwood
White Pine	2.5	13.9	18.4
Douglas-fir	-	5.0	25.0
Lodgepole Pine	5.0		
Combined Species	2.8	13.1	18.9

New Findings

Kootenay – Boundary Region

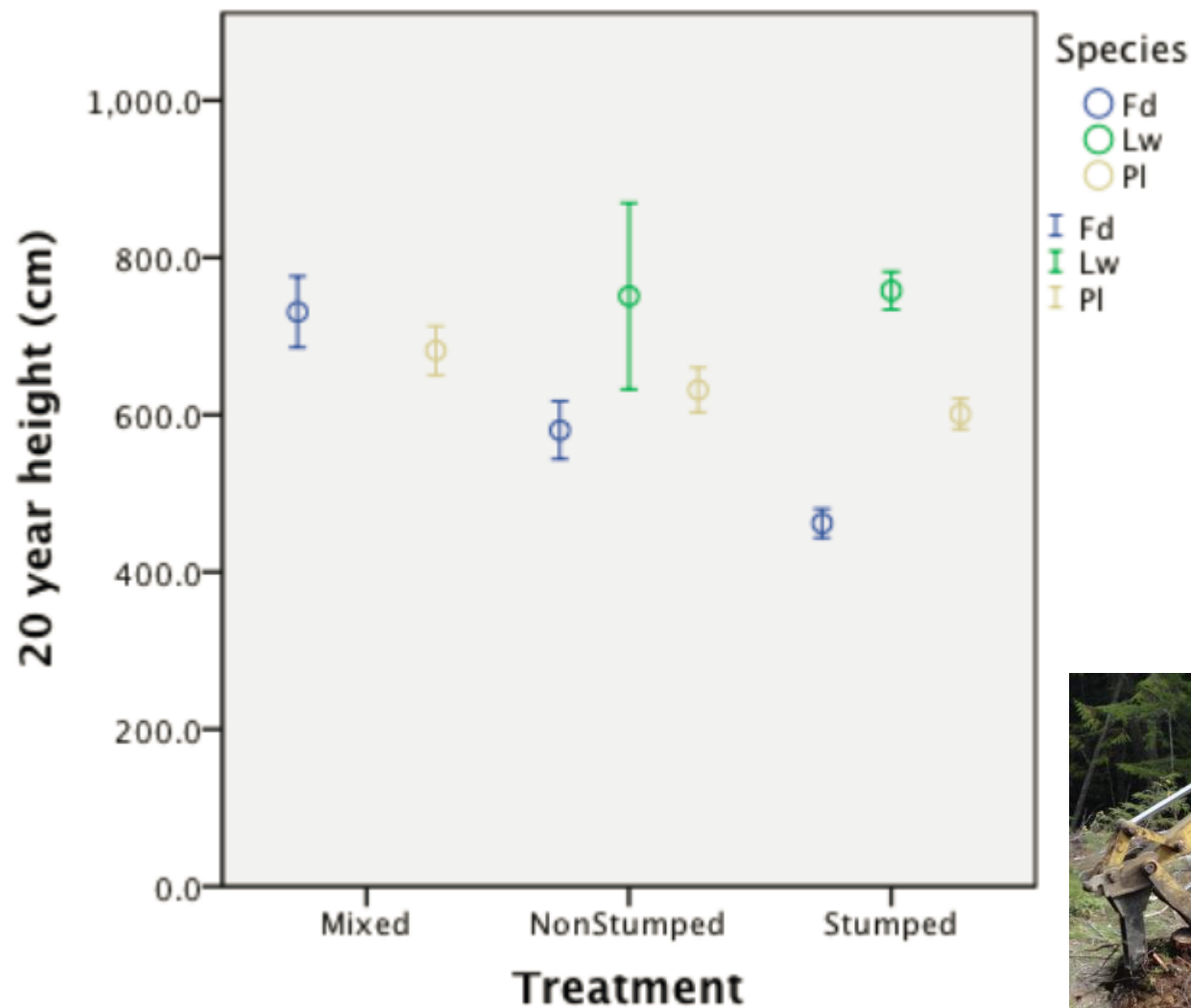
Armillaria Root Disease Trials

Established 1987 - Permanently Marked Trees

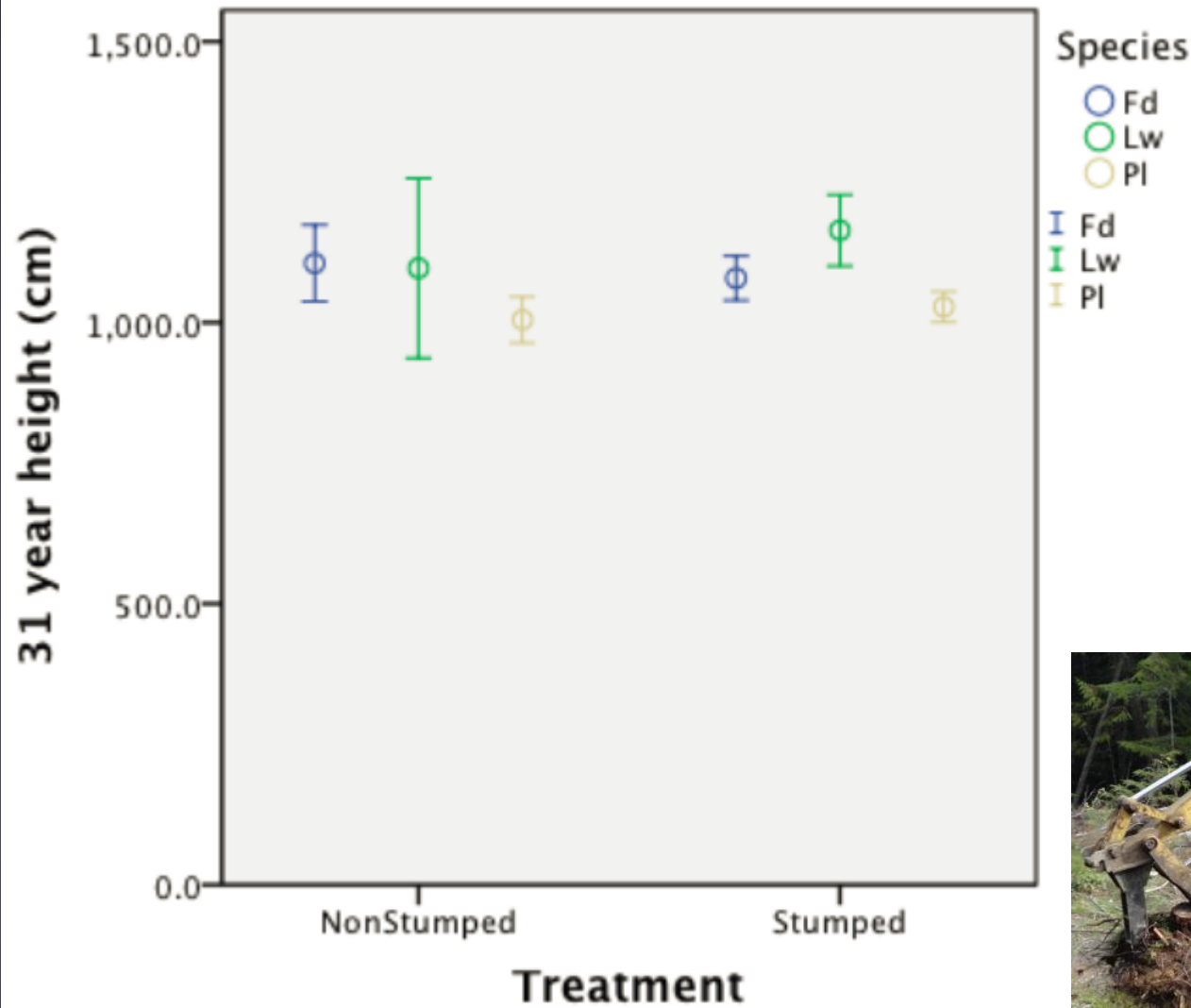
Percent (%) Armillaria Root Disease on LIVING and DEAD (2013)

Species	Columbia West Planted 1987	McPhee Planted 2004
White Pine	4.0	5.4
Douglas-fir	4.3	5.6
Lodgepole Pine	6.7	
Cedar	0	1.8
Larch	3.4	
Combined Species	3.4	3.8

species by treatment across BGC groups – 20 yr height



species by treatment across BGC groups – 31 yr height



Knappen Ck. Armillaria Trial

- Planted 1991
- Interior Cedar-Hemlock (ICHdw2)
- Lodgepole, Larch, Doug-fir
- Stumping Treatments

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Imagery Date: 5/14/2007 2004

49°24'07.92" N 118°26'10.34" W elev. 682 m

Google earth

Eye alt 2.13 km





New Findings

Kootenay – Boundary Region

Plantation Development

Knappen Research Trial: 1991 - 2011

- **New infections and mortality of regeneration peaked at 14 and 16 years after planting, respectively.**
- **Most mortality (55%) of infected trees occurred during 2003, 2005, and 2007 which corresponds with extreme drought years.**
- **Douglas-fir is more prone to *Armillaria* than lodgepole pine and larch.**

Recommendations

Kootenay – Boundary Region

For Interior-Cedar-Hemlock Zone...

- **Reconsider early free-growing dates**
- **Limit planting of Douglas-fir**
- **Expect greater mortality than in past**

2014/15

- **Provide District Assistance Where Needed**
 - Arrow TSR
 - Lodgepole rust predictions
- **Root Disease Trial Analysis & Reporting**
- **Continue White Pine Blister Rust Screening**
- **Lodgepole rust predictions**
- **White Pine Trials (resistance and pruning)**
- **Long-term Site Productivity Network (LTSP)**
- **Long-term Forest Health Plots: Limber & Whitebark**
- **Climate Change (e.g. Birch Decline)?**

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