

# Introduction

Operationalizing **L**idar in Forest Inventory (OLi)

-Jacob Strunk



# Safety etc.

- Emergency exits
- Restrooms
- Food / ATM



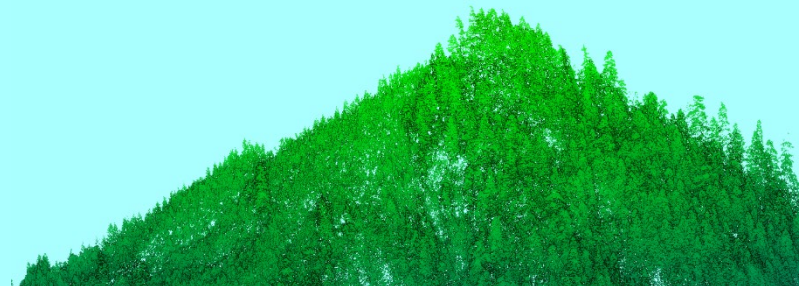
# Thanks For your Participation

- 32 people registered – OR, WA, BC
- Thank you David Bergvall – paid for lunch / snacks etc.



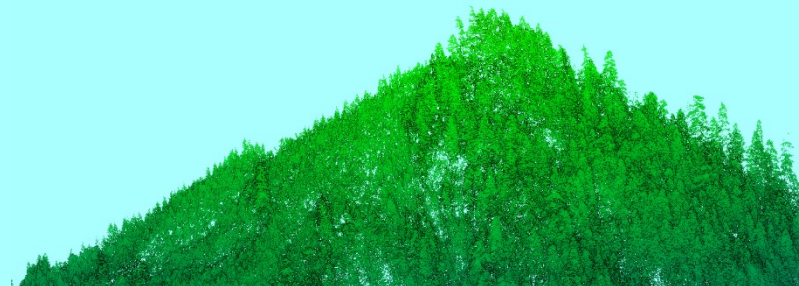
# Background

- Lidar / inventory studied for 20+ years
- Still niche / weird / rarely used
- Misinformation about inventory common
- Lots of people working on the issue / little communication
- Academic conferences provide little help
  
- There is a need for a venue to discuss operational aspects



# Objectives for Meeting

- Connect people interested in lidar / forest inventory
- Set the bar for what is feasible / practical
- Identify gaps that need tackling (operationally)
- Facilitate operationalization of lidar in forest inventory
- Share promising methods / techniques

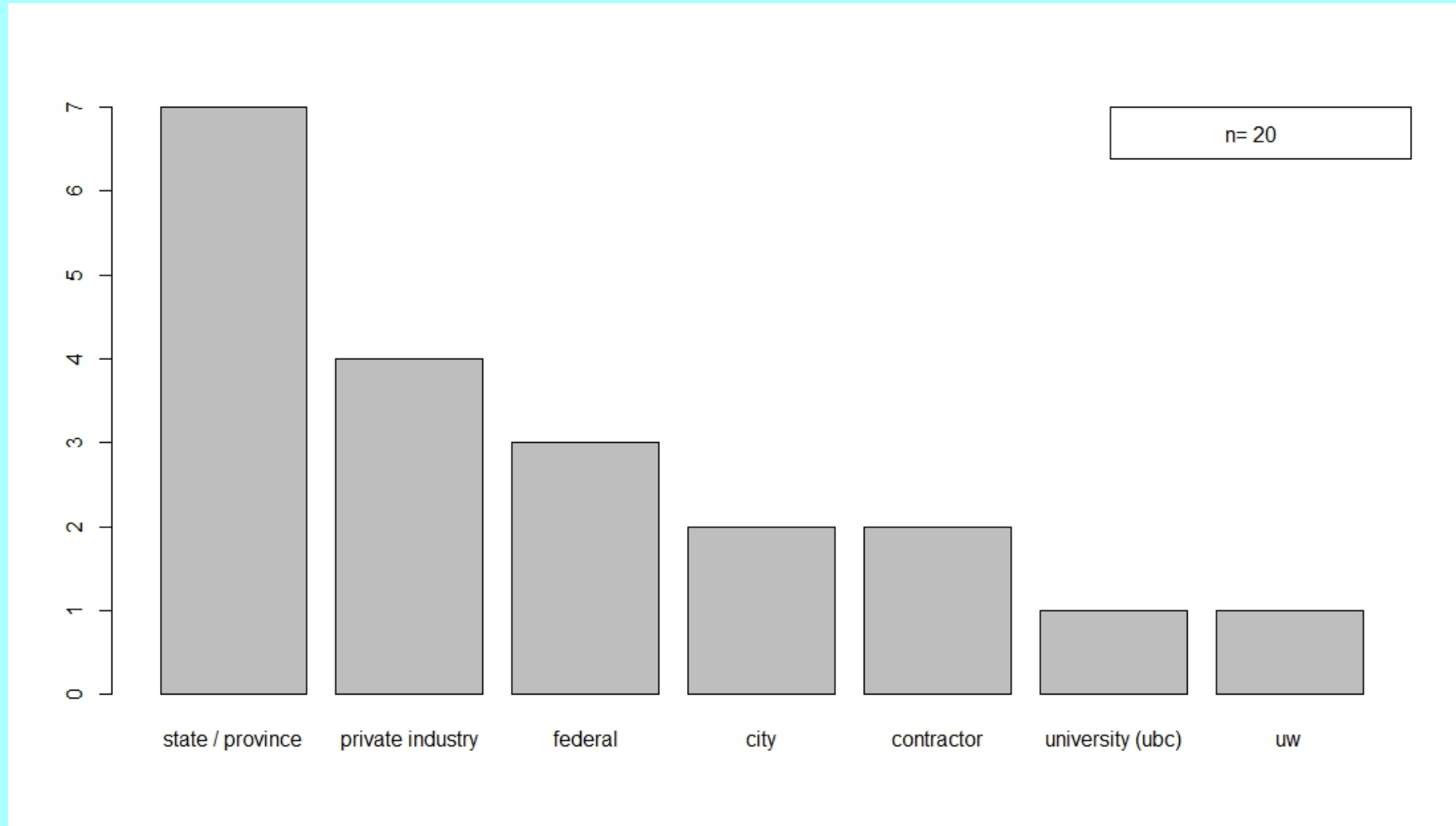


# Survey results

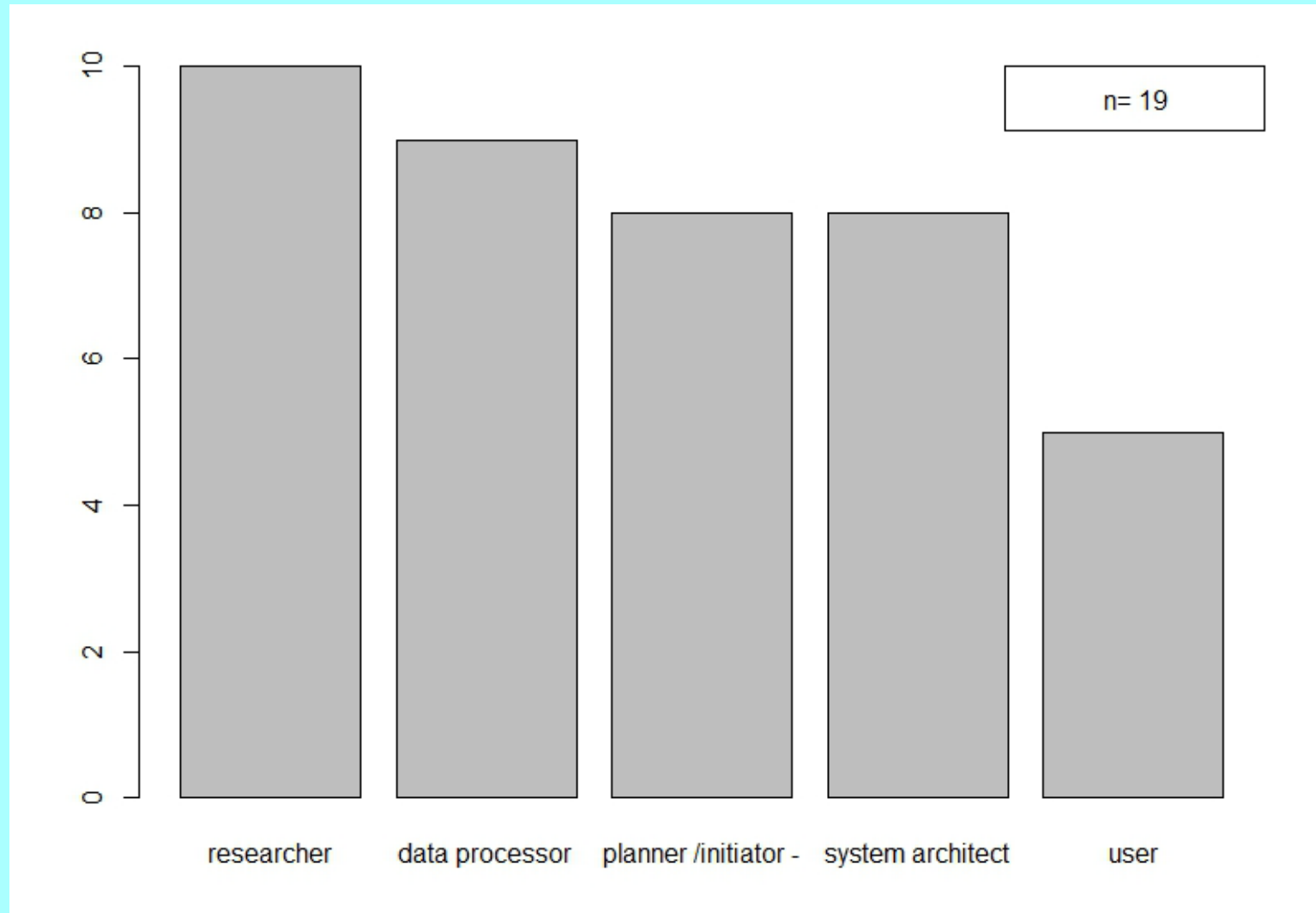
Oct / Nov Survey



# Organization type

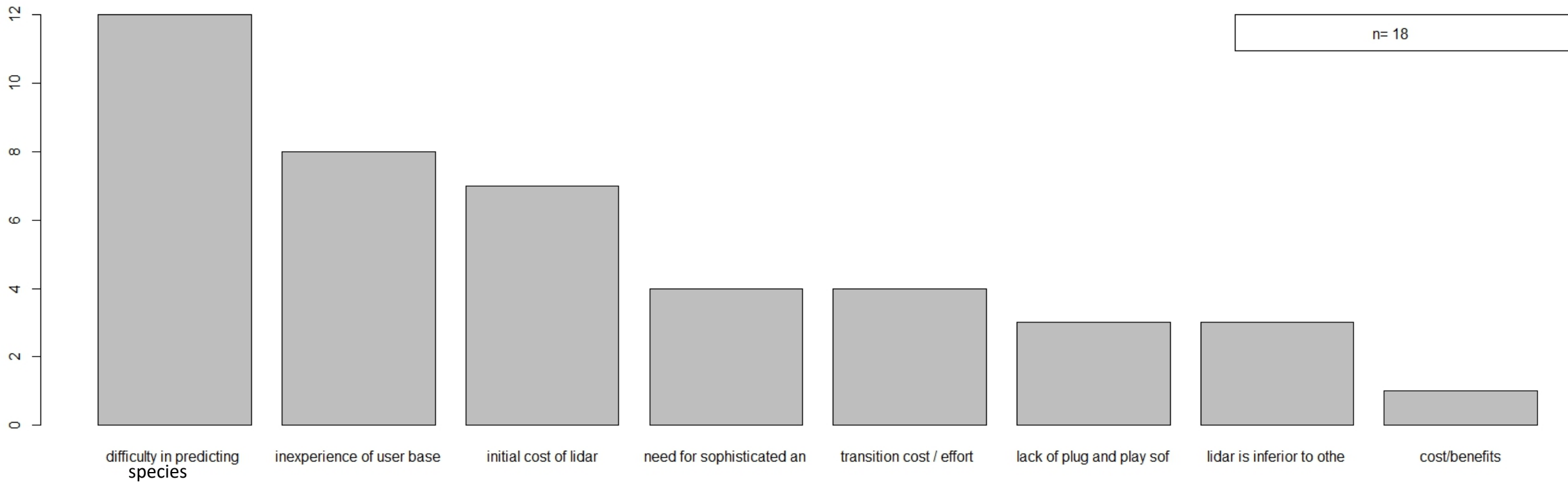


# Your role in industry

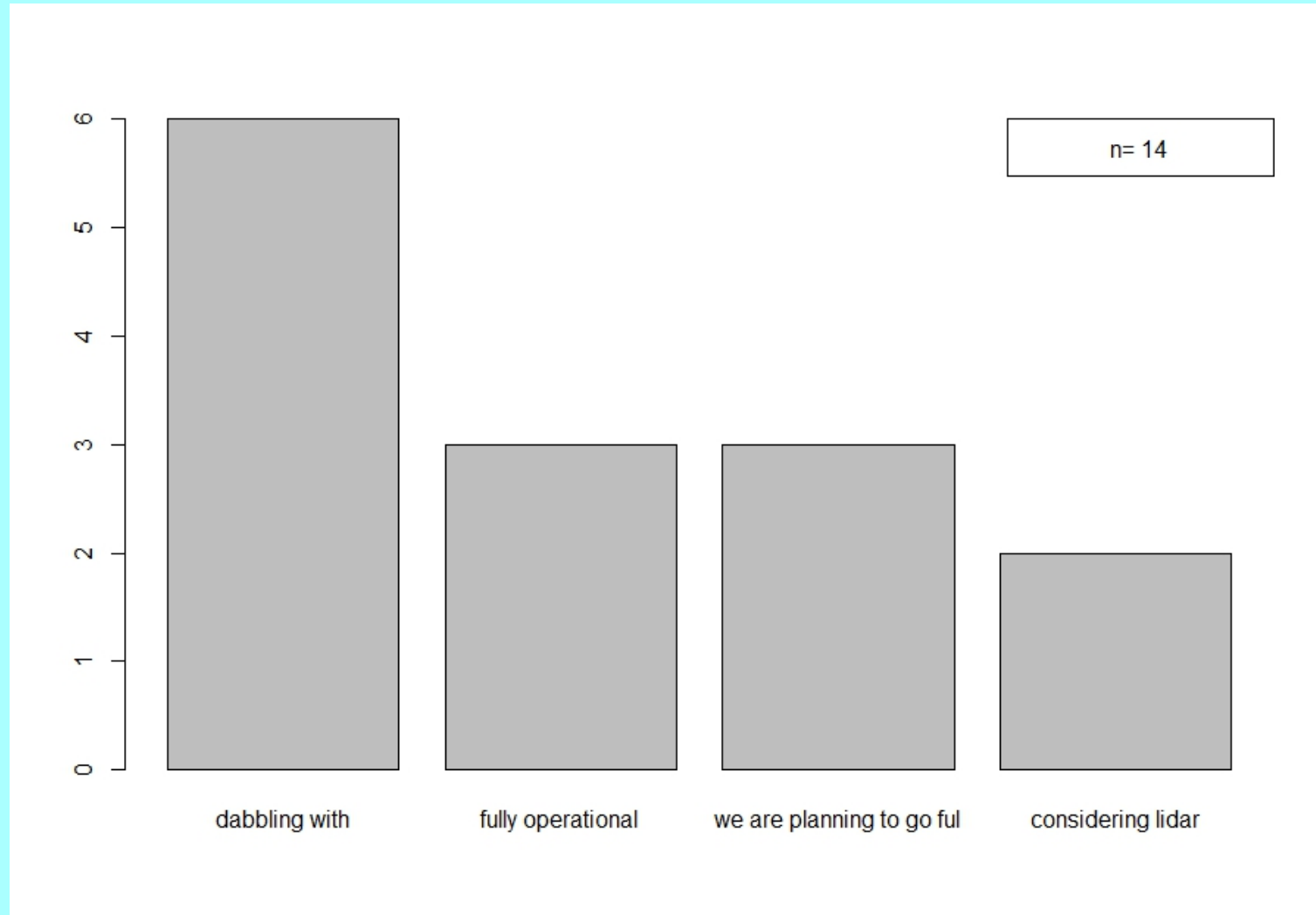




# Impediments to use of lidar in forest inventory



# Lidar status in inventory



Meeting Website and Forums:  
[forestlidar.org/oli-meeting](http://forestlidar.org/oli-meeting)

Mailing List:

[oli2@googlegroups.com](mailto:oli2@googlegroups.com)



# Food for thought

1. Critiques of lidar in inventory
2. A need to re-think inventory
3. Is lidar the future of inventory?



# “Critiques” of Lidar in Forest Inventory

- Some are valid
- Others are probably not



# Valid critiques of Lidar-based Methods

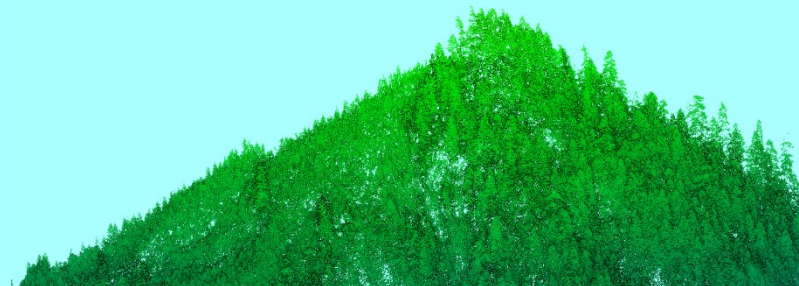
- Have to retool for field measurements – equipment, training
- “Off the shelf” inventory software doesn’t support lidar\*
- Programmer needed
- Statistician needed
- Steep learning curve (+/-)
- Up front costs may be higher

\*Tesera, Lim Geomatics, inventory derivatives easily ingested by common software



# “Critiques” of Lidar-Based Methods

- “Can’t get species”
- “Can’t get components, defect”
- “We need eyes on stands”
- “Too expensive”
- “Can’t measure DWD / snags etc.”



# Common Critiques of Lidar-Based Methods

- “Can’t get species”
  - Is HW / SW good enough
  - What are you using it for
  - How about stratum level species estimates
  - Can you use other inventory data
- “Can’t get components, defect”
  - Can’t get these at the stand level anyways
  - Need stratum level estimate – works well with lidar
- “We need eyes on stands”
  - Still allowed to visit stands
- “Too expensive”
  - Arguably much cheaper / acre
- “Can’t measure DWD / snags etc.”
  - Can predict snag density
  - DWD has so much variability – only large area estimates useful





# Rethinking forest inventory

- We collect lots of information
- We waste lots of information
  - Measurement fulfills a need, then we throw it away/ can't find it
  - Data collected in a way that cannot support other uses
- Better data utilization -> better outcome



# Rethinking forest inventory

- Lidar may not be a plug-in replacement
- Lidar may provide better information in some instances
- Lidar may provide inferior information in others
  
- Link lidar with better data utilization -> replace traditional inventory



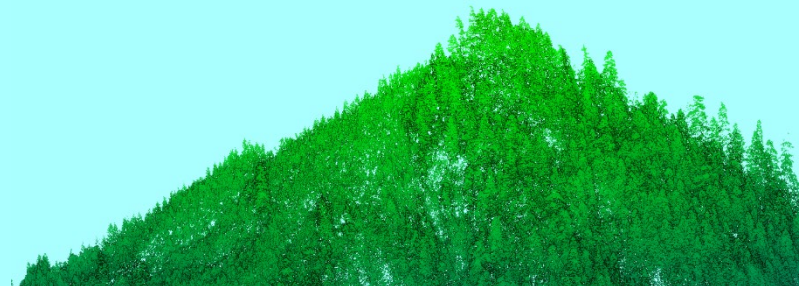
# Example of an measurement regime

- Planting survey
- Survival survey
- Stocking survey
- Free to grow survey
- Herb. Efficacy survey
- PCT survey
- PCT compliance survey
- CT cruise
- CT compliance
- **Ownership-wide inventory**
- Pre-sale cruise



# Where could lidar help

- Planting survey
- Survival survey
- Stocking survey
- Free to grow survey
- Herb. Efficacy survey
- PCT survey (?)
- PCT compliance survey
- CT cruise (?)
- CT compliance
- **Ownership-wide inventory**
- Pre-sale cruise (?)



# Where can we help lidar

- Planting survey
- Survival survey
- Stocking survey
- Free to grow survey
- Herb. Efficacy survey
- PCT survey
- PCT compliance survey
- CT cruise
- CT compliance
- **Ownership-wide inventory**
- Pre-sale cruise

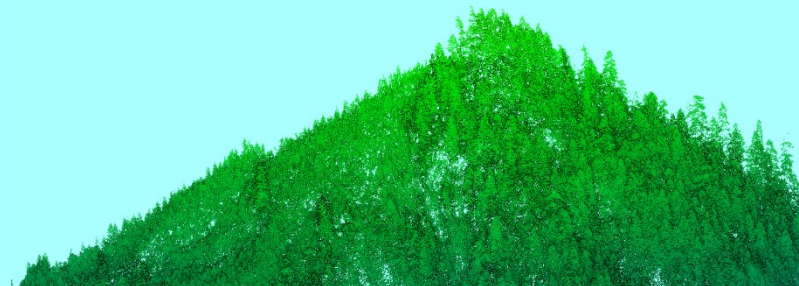


Is Lidar the Future?



# Why Lidar is Inevitable (or should be)

- The technology is ready
  - Lidar is tested / proven
  - Methods available / vetted (plug in implementation is not)
  - Inexpensive GPS can support it (\$3500 / unit)
- **Lidar methods are cheap**
  - ~\$0.20 / acre for 2 ppm (~\$.10 / acre for stereo-dsm )
  - 1 field plot / 100 acres
- Advantages of lidar are multiple (dtm, csm, stand delineation, inventory, habitat,...)
- Lidar is **high resolution** (3 ft. raster feasible)
- **Lidar is fast!** – 1 season for plots / lidar
- Limitations are overstated



Thanks !

