

SNAMP Science Team: Spatial



Spatial Team Members

Principal Investigators:

Qinghua Guo, UC Merced
Maggi Kelly, UC Berkeley

Graduate Students:

Marek Jakubowski, UCB
Alessandro Montagni, UCB
Wenkai Li, UCM

Staff:

Hong Yu, UCM

Spatial Team Goals

- Developed to assist in the GIS and remote sensing technology that all teams require.
- Members of the spatial team have the responsibility for supporting all other teams' GIS, remote sensing and spatial analysis needs.

Spatial Team Activities

- LIDAR Data Acquisition and Processing
- Field Campaign

Spatial Team Update: Lidar

Lidar = Light Detection and Ranging

The measurement of the speed which a pulse of light returns to a sensor is converted to elevation above sea level.

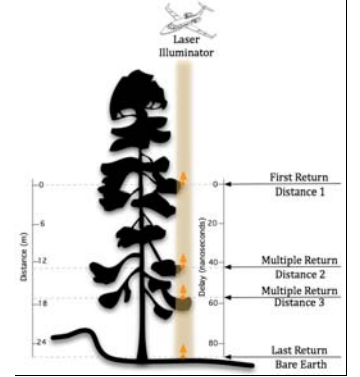
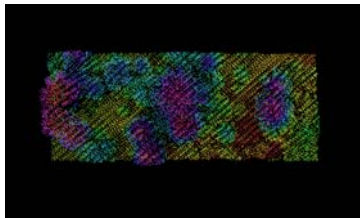


Image modified from Lefsky et al. 2004 with tree graphic from globalforestsience.org



Lidar Data Products

This is a video showing the density of our lidar data

Lidar videos from SNAMP lidar data produced by Marek Jakubowski and Alessandro Montagni

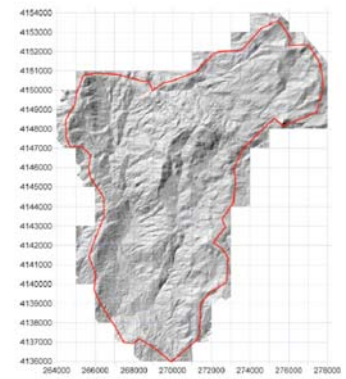
Sugar Pine Lidar

Lidar Specs for the Sugar Pine Study Area:

- collected Sept 13-15 2007
- flew 600 m above ground level
- 117 km² covered
- 9 points per m²
- ~1,000,000,000 points!
- 70 GB of raw data

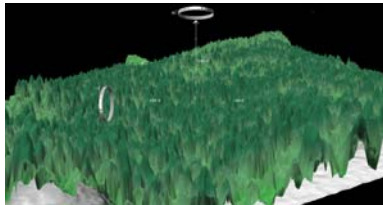
Field Data Specs:

- 130+ plots
- 3,600+ trees surveyed



Lidar Data Products

Raw Lidar Data → DEM: Digital Elevation Model → DCM: Digital Canopy Model
 • Representation of bare earth • DSM – DEM: only the vegetation



Lidar Data Products

DEM:

- **Water team** → as input to the hydro model...
- **Fisher team** → characterize topographically-controlled habitats
- **FFEH team** → topographic inputs to fire model

DCM:

- **FFEH team** → inputs to fire model: tree height; crown size; canopy cover; canopy base height; crown bulk density
- **Owl team** → characterize owl habitats: canopy roughness; vertical canopy structure






Camera Trapping

- One camera
- One km² grid
- One month
- Rebait weekly

Cameras password protected



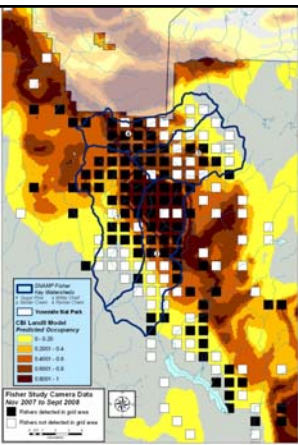
YEAR ONE

221 Camera Trap Months
106 Fisher Detections (48%)

Compare with CBI prediction?


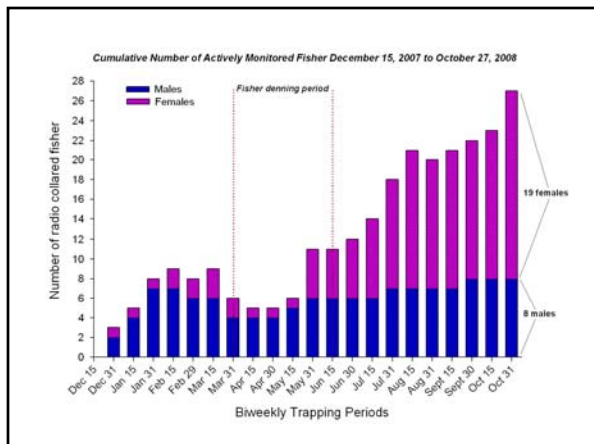
67% Correct
33% Incorrect

If cutoff is 0.4



Live Trapping

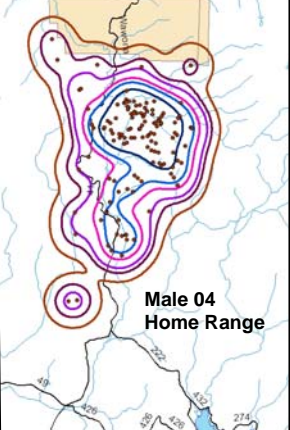
- Attach radio collars
- Collect genetic data
- Reproductive status
- Age
- Health

Radio-tracking

- Daily aerial tracking
- Periodic ground tracking

- Home range
- Natal dens
- Mortalities
- Dispersal



Male 04 Home Range