

Status of MPB outbreak and Blister Rust in the AB Wilderness

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2009 Landscape Assessment System

- 95% of the catchments were impacted
- 46% showed severe mortality
- 36% showed moderate mortality
- 13% showed low mortality
- 5% showed trace mortality



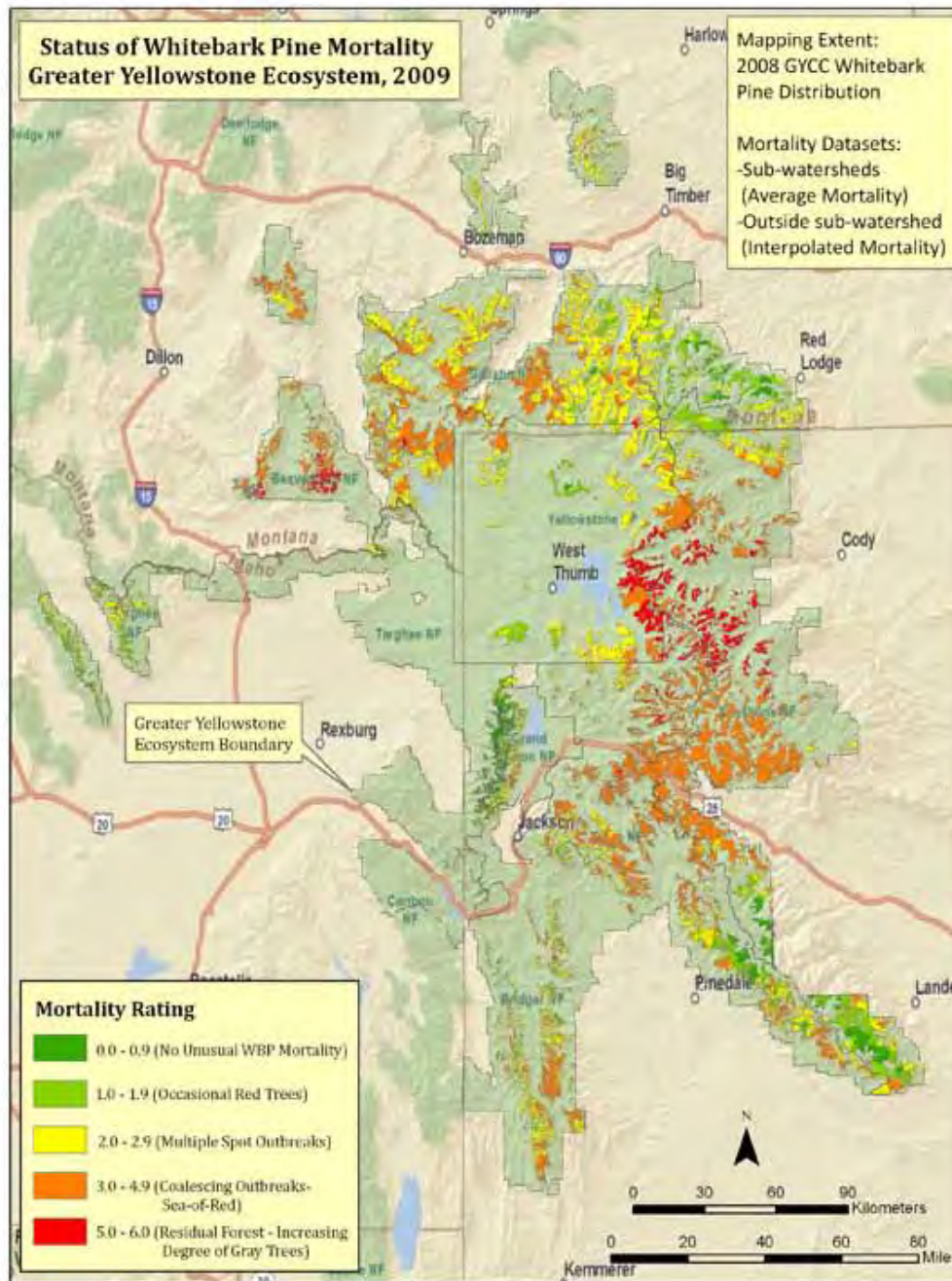


Photo retrieved from: www.greateryellowstone.org

Our Study



Main Question

- What is the status of whitebark pine in respect to MPB and White Pine Blister Rust in the Absaroka and Beartooth mountain ranges?

Side goals

- Provide a study framework that can involve citizen scientists
- Ground truth the 2009 LAS

Methodology



5 Mortality levels

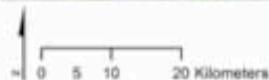
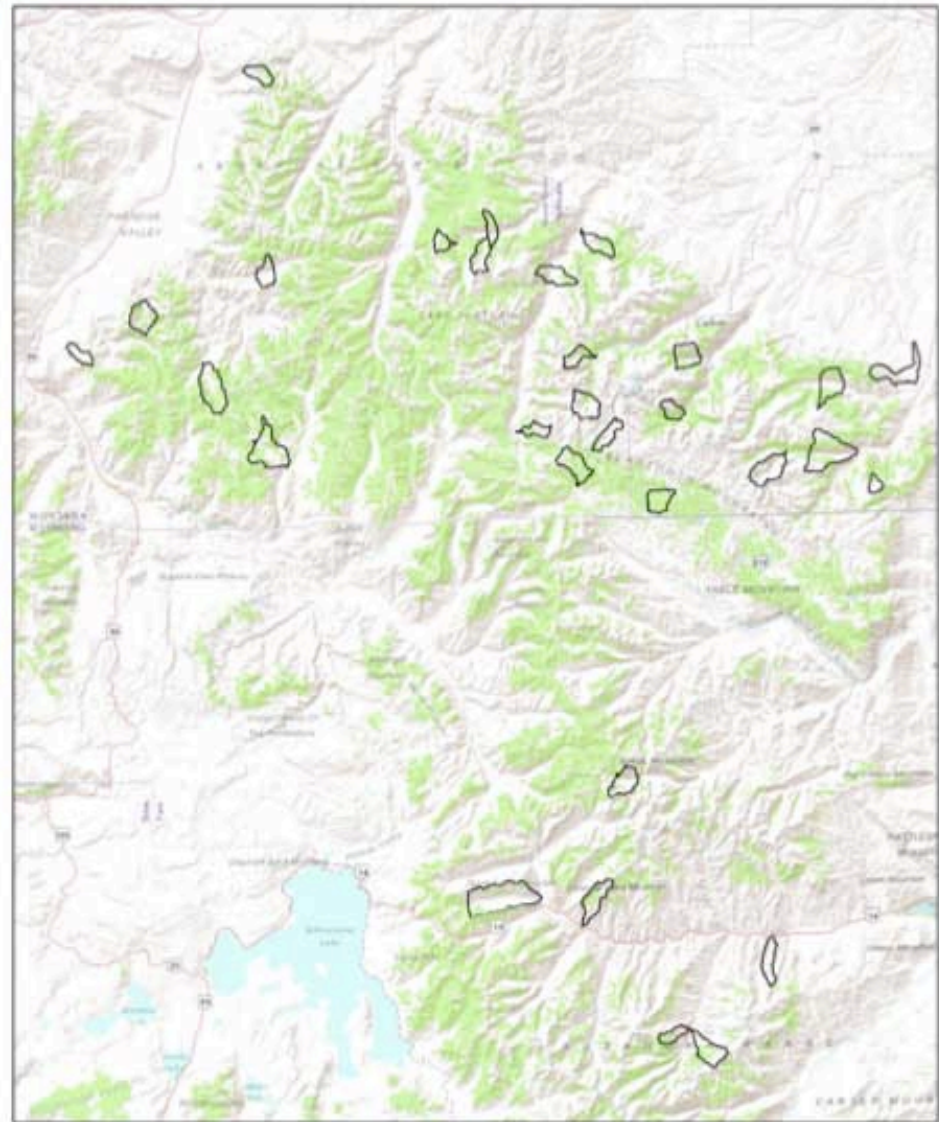
Trace
Low
Moderate
Severe
Post Outbreak

30 Catchments

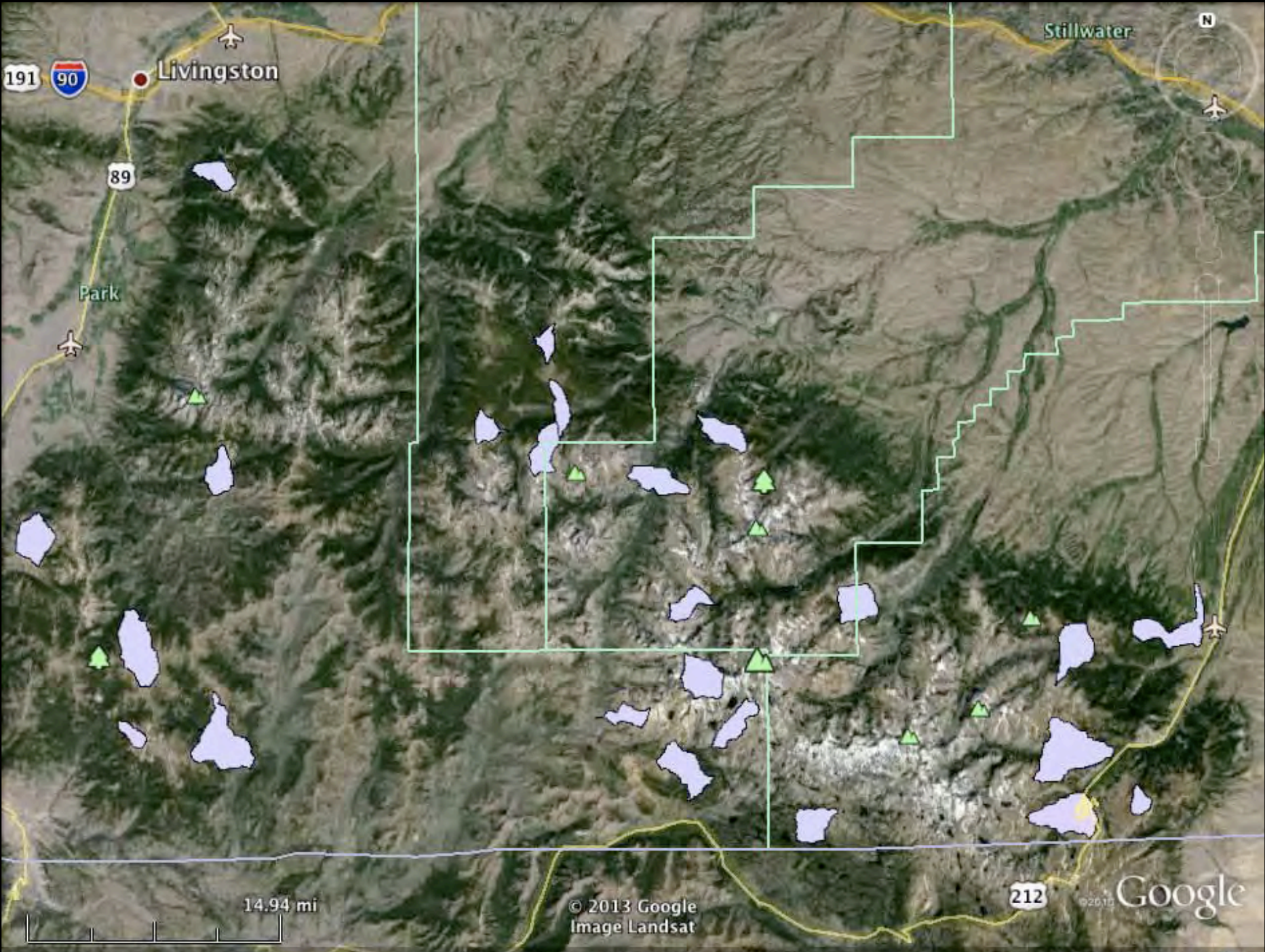
6 Catchments per
mortality level

5 plots at each
catchment

150 total plots



Randomly Selected Catchment
GYCC Whitebark Pine Distribution



191 90

Livingston

Stillwater

89

Park

14.94 mi

© 2013 Google
Image Landsat

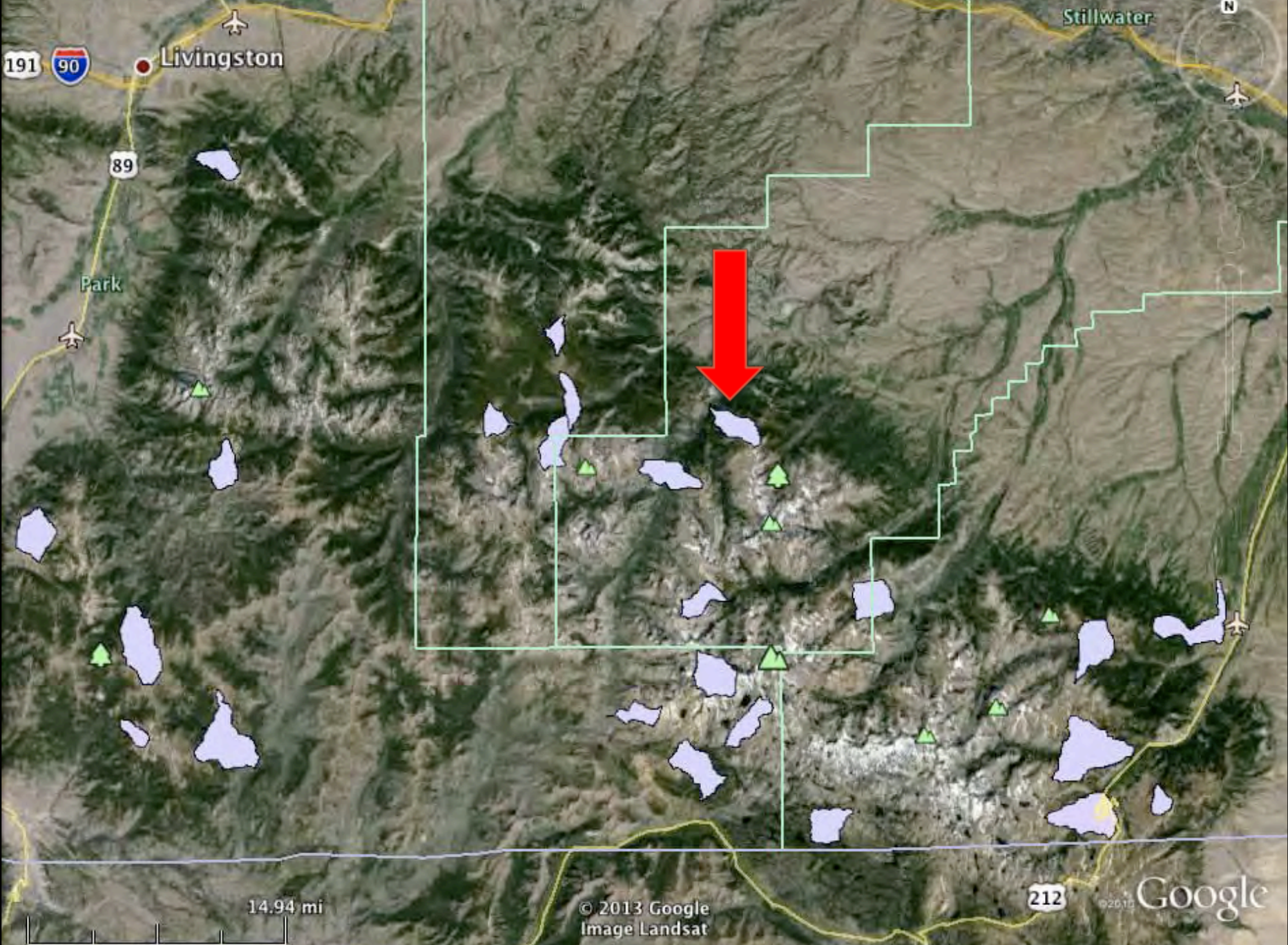
212

Google

Imagery Date: 4/9/2013

lat 45.307316° lon -109.957083° elev 8626 ft

Eye alt 65.84 mi



191 90

Livingston

Stillwater

89

Park

14.94 mi

© 2013 Google
Image Landsat

212

Google

Imagery Date: 4/9/2013

lat 45.307316° lon -109.957083° elev 8626 ft

Eye alt 65.84 mi



Image USDA Farm Service Agency

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lat 45.352970° lon -109.844040° elev 8353 ft

©2010 Google

4450 ft

1998

Eye alt 25730 ft



45.348769, -109.831975 [origin]  Center of Mass


Image USDA Farm Service Agency

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© 2010 Google

Imagery Date: 8/11/2011  1998

lat 45.352970° lon -109.844040° elev 8353 ft

Eye alt 25730 ft 

WILDLIFE RESPONSE PLOT & OBSERVATION FORM

Site info

Photo Synth

Weather

Plot ID:

Place Name:

Temp:

UTM Coordinates: Easting-

Northing-

Wind: still/breeze/gusty/windy

Elevation (m):

Waypoint name:

Time:

Date:

Open/Closed Stand

Dwarf/med/tall trees

direction-

speed (Beaufort Scale):

Scribe:

Observer:

Incline:

Aspect:

Conditions: rain/sun/overcast/storm/post-storm

Additional notes:

Key Code:

Sq: Squirrel

Cl: Clark's

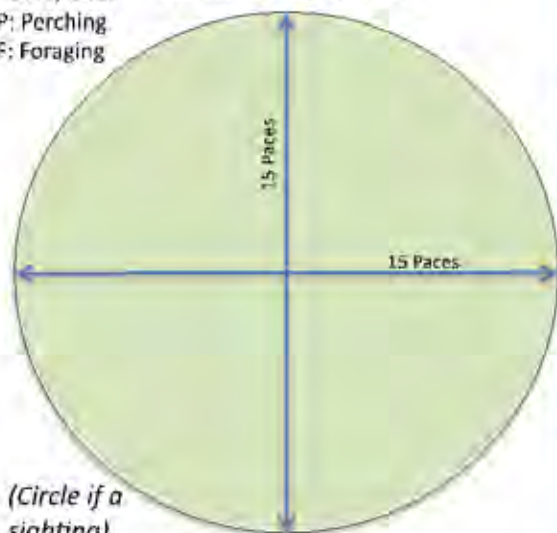
FO: Fly Over

P: Perching

F: Foraging

Wildlife Obs Plot

Code each sighting (eg. Sq₁, Sq₂)



MIn	Squirrel	Clark's
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

<input type="checkbox"/> Trees with Cones	Total
New-	
Old-	

Overall Cone Assessment:

Many/Some/Few/None

Additional
Notes:

Forest Condition

	<5"	6-10"	11-15"	16-20"	20"+
Live Host					
Yellowing Host					
Red Host					
Losing Needles					
Gray Host					
Dead Host (Non-MPB)					
Live Other					
Dead Other					

Legacy Presence (count):

Beetles (count trees w/):

Pitch Tubes

Frass

Notes:

Additional observations:

Fire:

White Pine Blister Rust

Feeding

Flagging

Oozing

Livestock

Verbenone

Fruiting Bodies

Swelling

Overall WPBR assessment: Some/Common/Abundant

Humans

Recruitment

Size	w/WPBR	w/o WPBR	Total
Ankle (<4")			
Knee (4-18")			
Waist (18-36")			
Shoulder (36-60")			

Bears (count)

Excavated Midden Tracks

Clawing Scat

Other

Notes:

Midden

Clippings

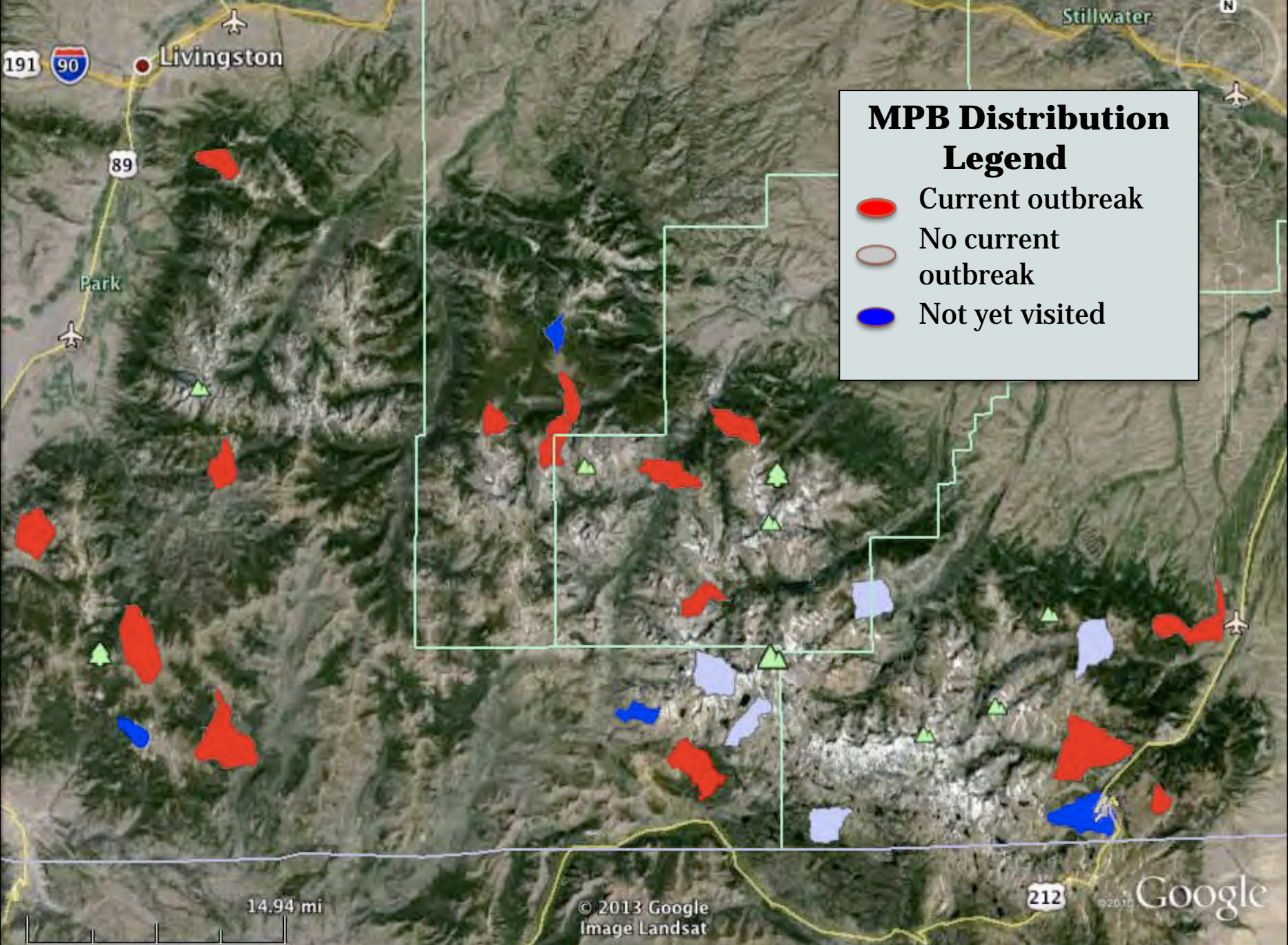
	Sm	Med	Lg	Active	Inactive	Used
1.						
2.						
3.						

Dead Top

other _____

Preliminary Results





MPB Distribution Legend

- Current outbreak
- No current outbreak
- Not yet visited

West Fork of Horse Creek





Line Creek Plateau



Line Creek Plateau



Red Rock Plateau



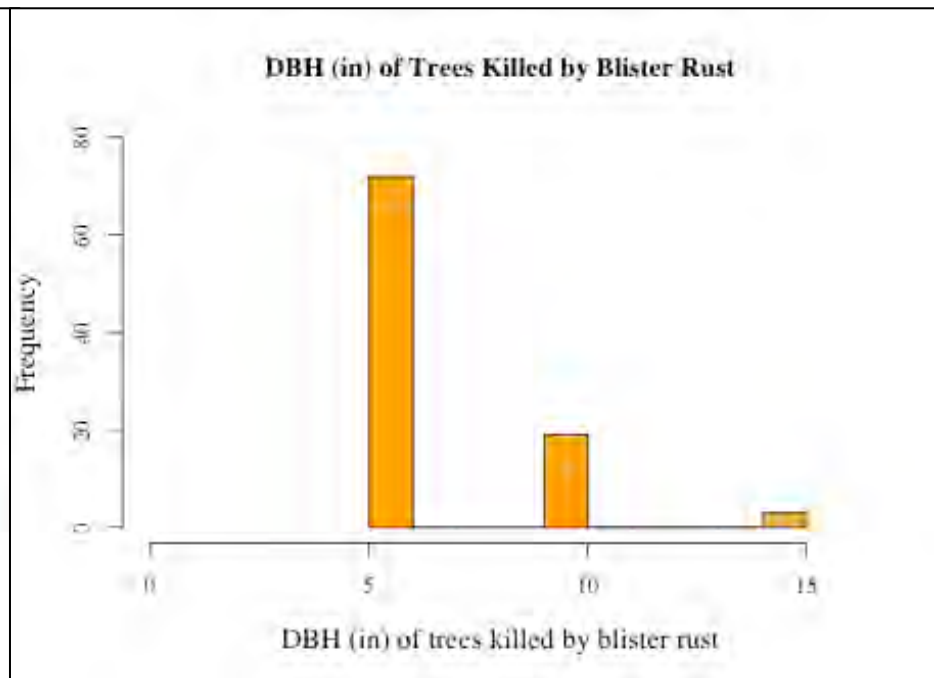
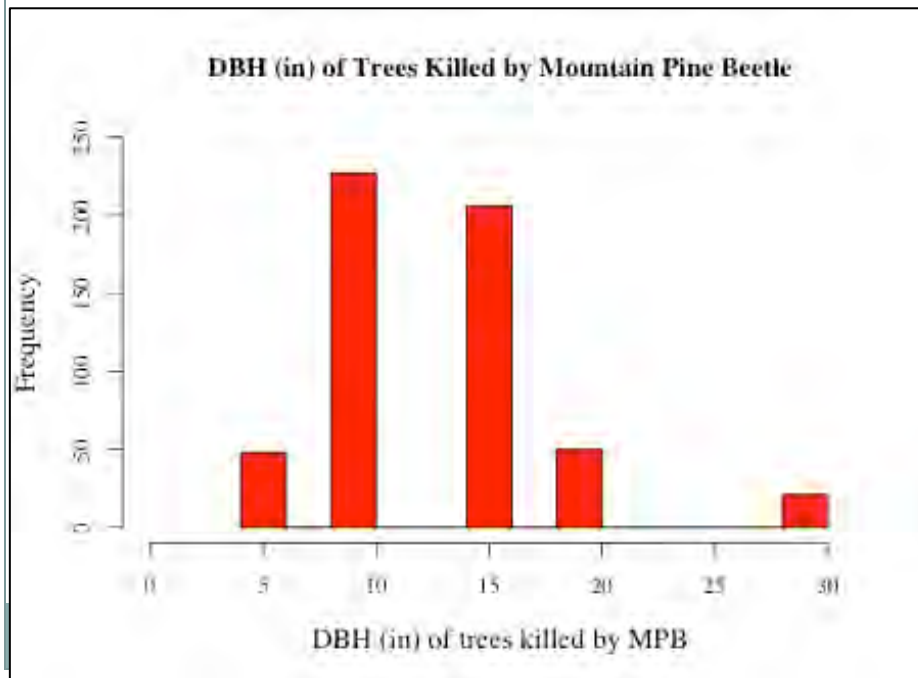
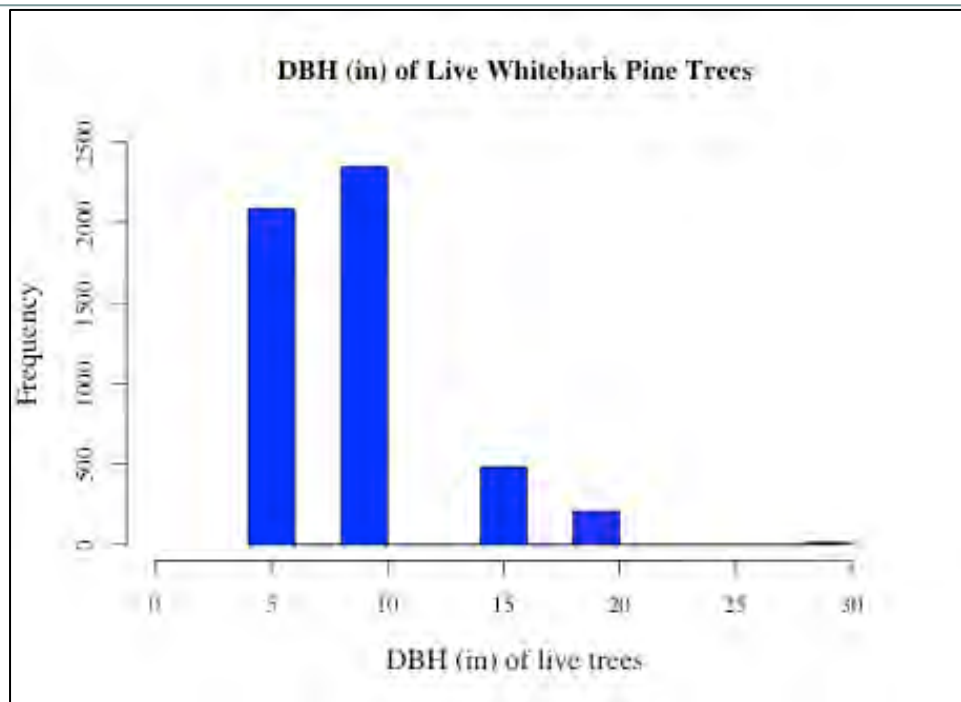
Red Rock Plateau



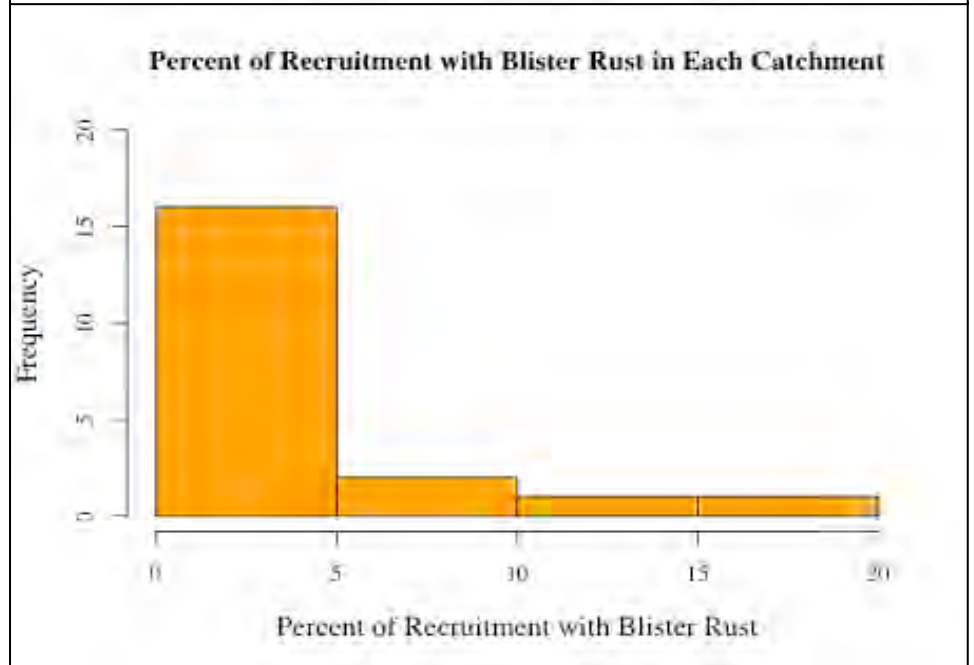
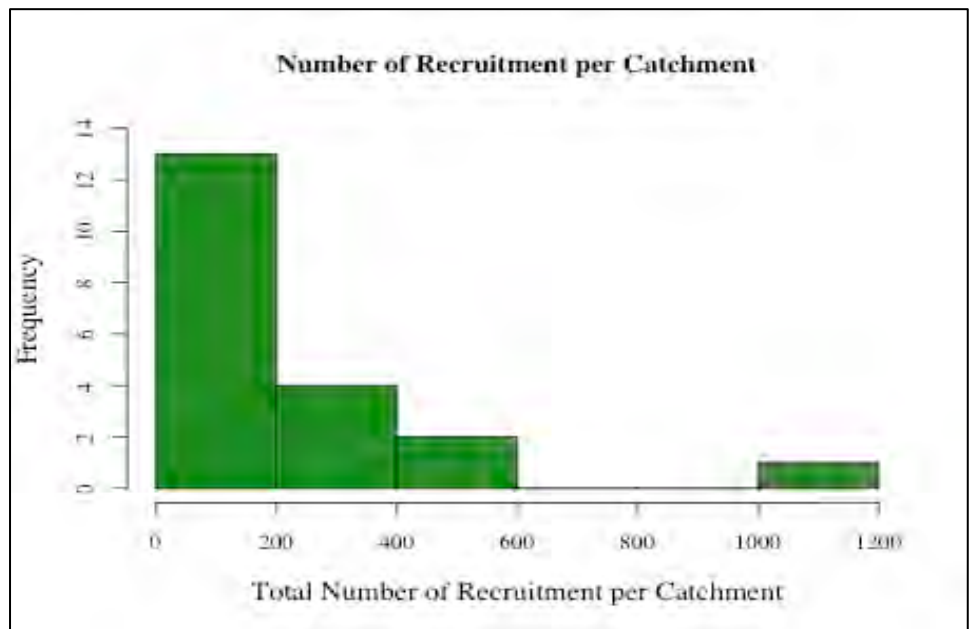
WPBR Distribution Legend

- Some
- Common
- Abundant

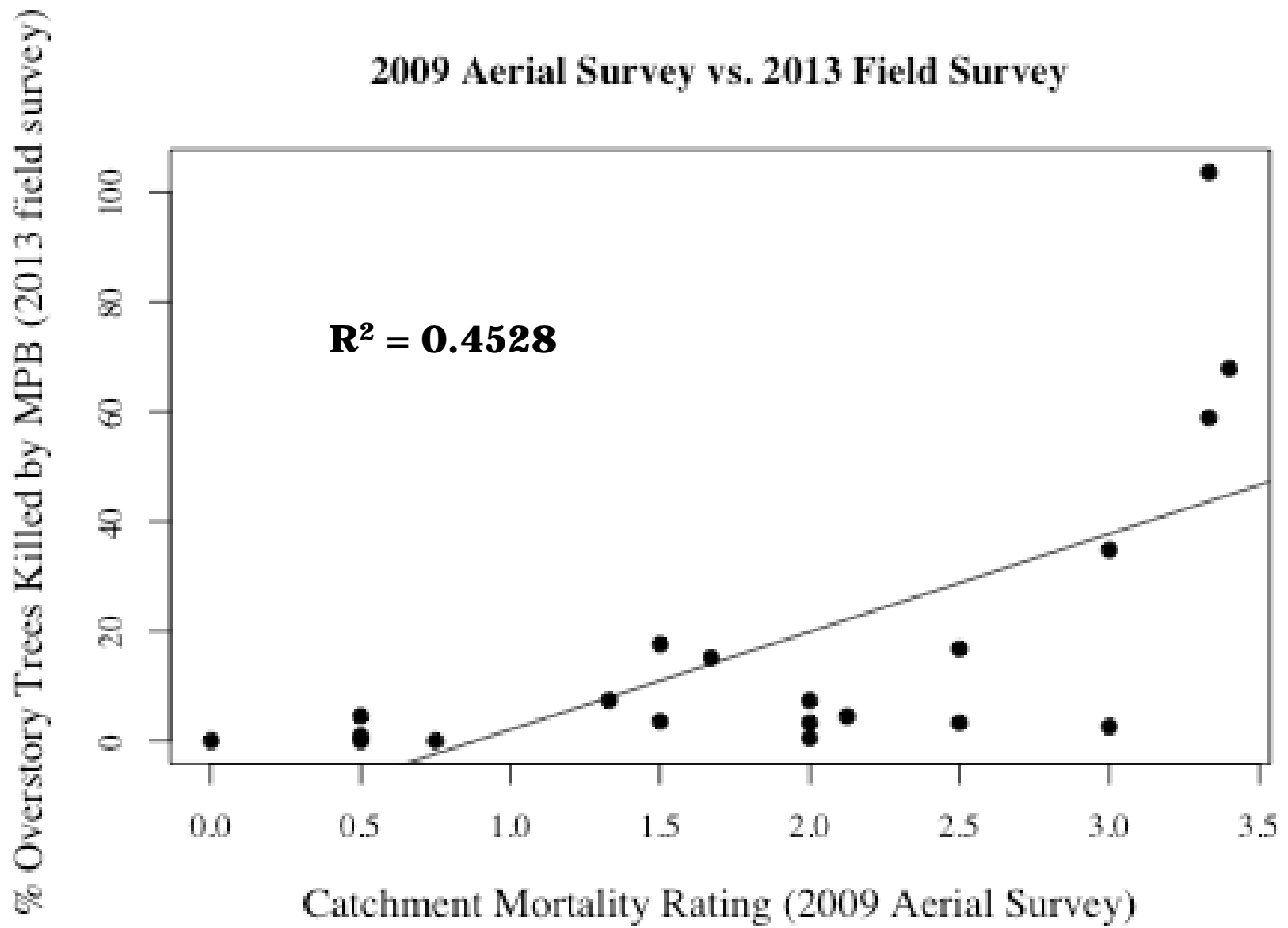
Tree Sizes and Disease Incidence



Recruitment Trees and Blister Rust



2009 Aerial Survey vs. 2013 Field Survey



Conclusion



Preliminary Trends



1. Mountain Pine Beetle

- | Greater than **75%** of catchments so far show **current outbreak**
- | The **4 out of 20** catchments with **no current outbreak** are all in the **Beartooth range**

2. Blister Rust

- | Present in **100% of catchments** so far

3. Size Trends

- | **Blister rust** seems to preferentially kill **small size classes**
- | **MPB** preferentially attack **large size classes**



Community Science Involvement

- Strenuous multi-day hikes over challenging terrain
- Interpretive hike at Line Creek Plateau



Special Thanks To...



- **Clean Air Cool Planet**
- **Adam Markham and Union of Concerned Scientists**
- **David Kallenbach and the AB Wilderness Foundation**
- **Taza Schaming and Cornell University**
- **Diana Six**
- **Jane Taylor, Jeff DiBenedetto, and the Forest Service: Beartooth Ranger District**

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