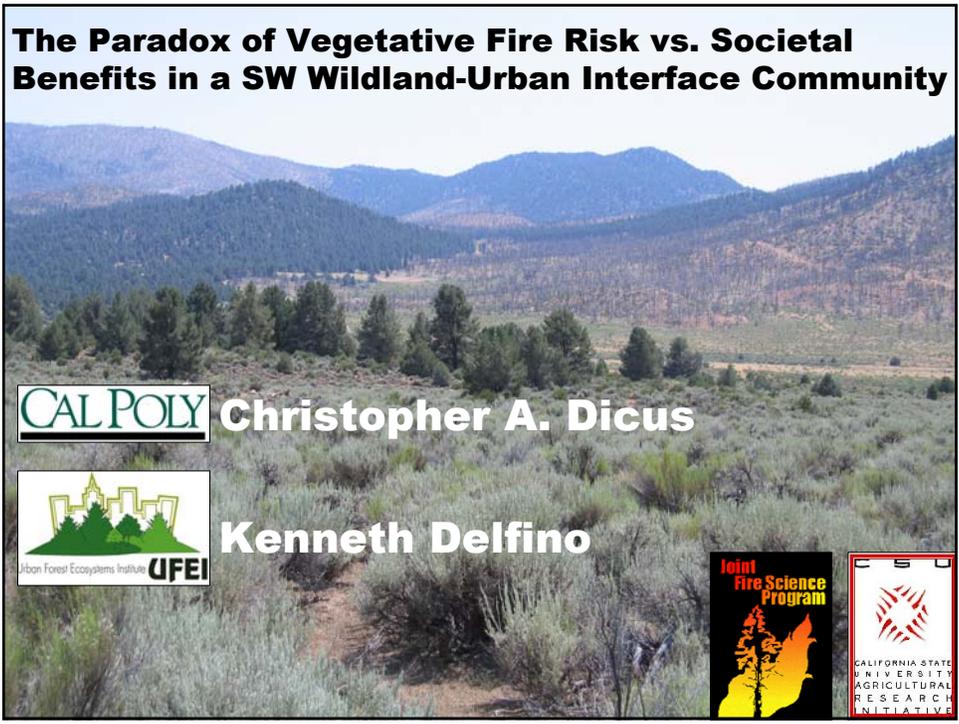


The Paradox of Vegetative Fire Risk vs. Societal Benefits in a SW Wildland-Urban Interface Community

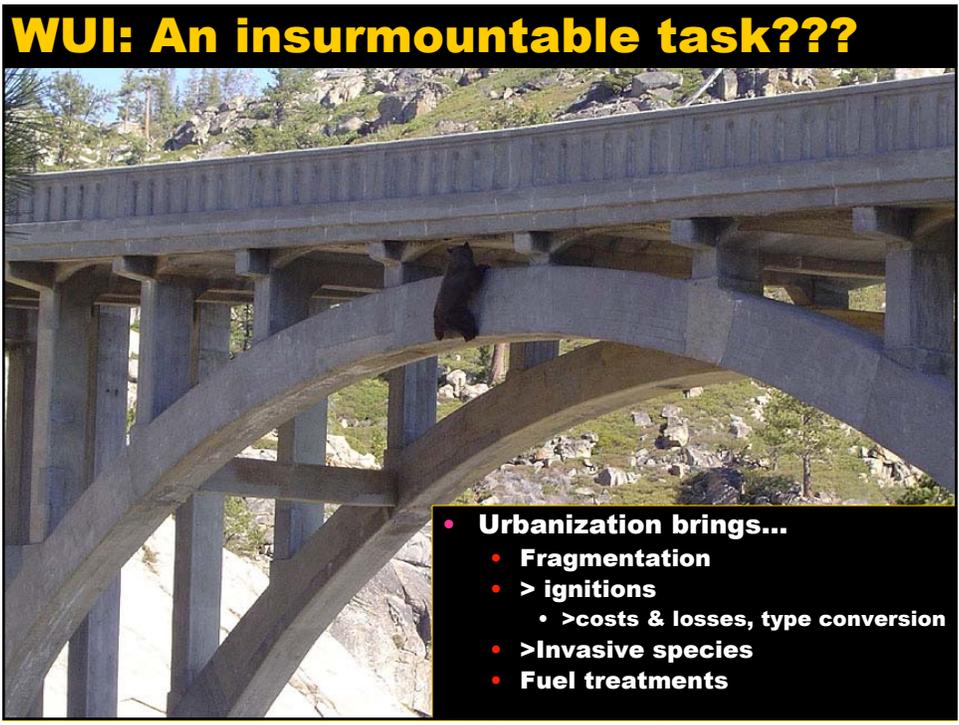


CAL POLY Christopher A. Dicus

 Kenneth Delfino

WUI: An insurmountable task???



- **Urbanization brings...**
 - **Fragmentation**
 - **> ignitions**
 - >costs & losses, type conversion
 - **>Invasive species**
 - **Fuel treatments**

Hazards vs. benefits

Pismo Beach, California



- **Vegetation provides benefits**
 - Air pollution removal
 - Carbon sequestration
 - (Take **THAT** peak oil!!!)
 - Soil stabilization
 - Home cooling costs
 - Stormwater retention
 - Wildlife habitat
 - And on and on...

Vegetation is more than fuel!!

Previously...



• **FARSITE not effective at fine-scale parcel-level analysis**

• **CITYgreen not effective at...**

- anything
- (except spending tax dollars)

• **Would I-tree work???**

- **UFORE**
 - (Urban Forest Effects Model)
 - Air pollution removal
 - C sequestration
 - Slew of other goodies



i-Tree Software Suite v1.0



Tools for assessing and managing
Community Forests

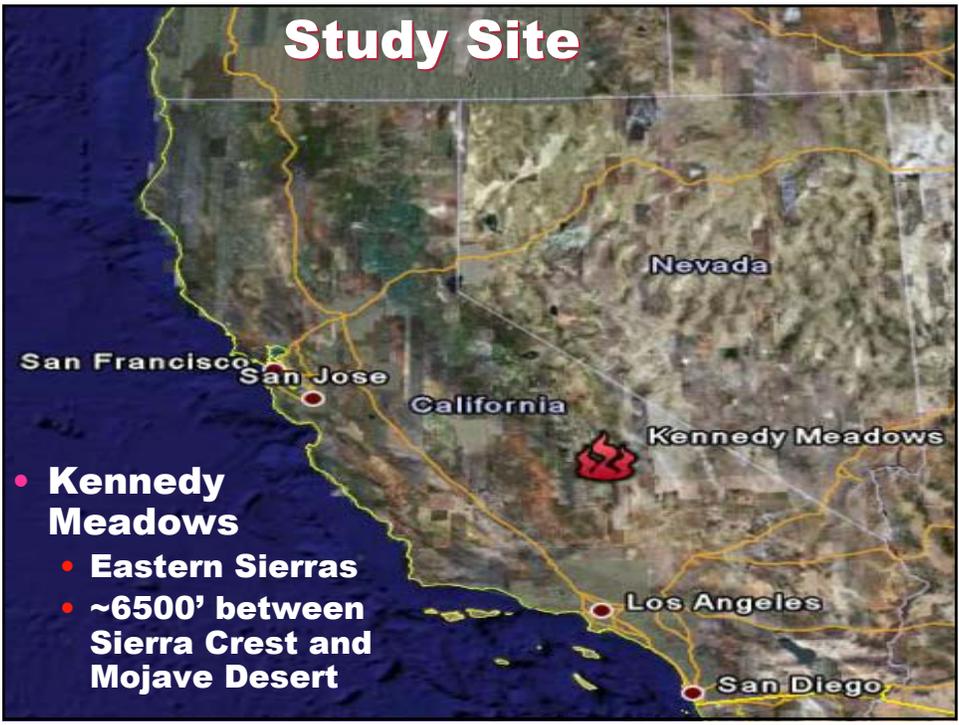
The objectives....

For major ecotypes in an E. Sierra, high-desert WUI community, determine ...

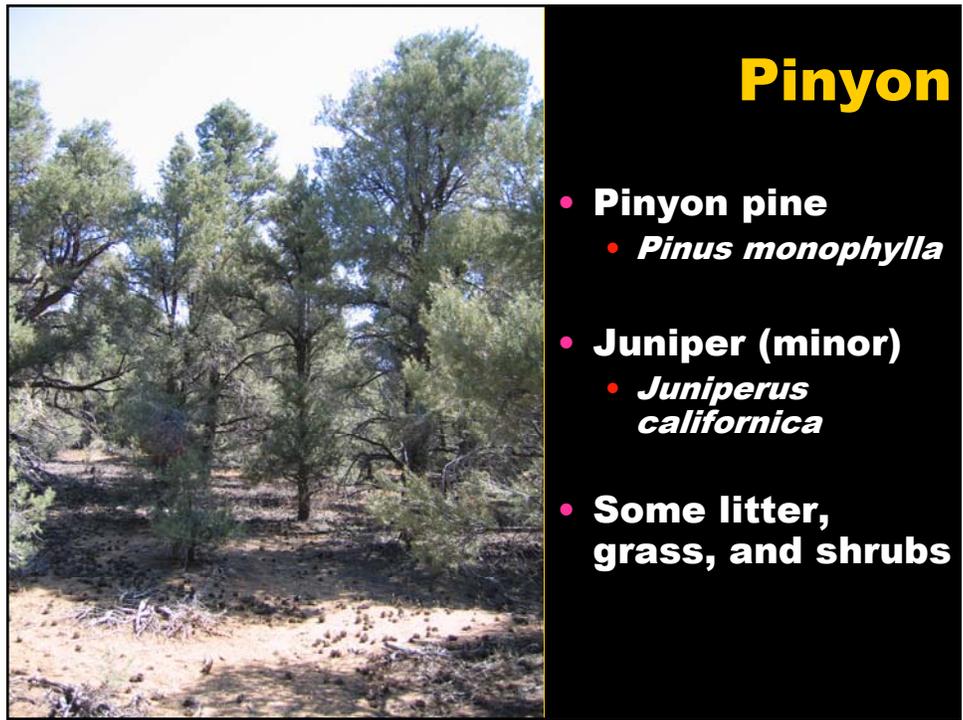
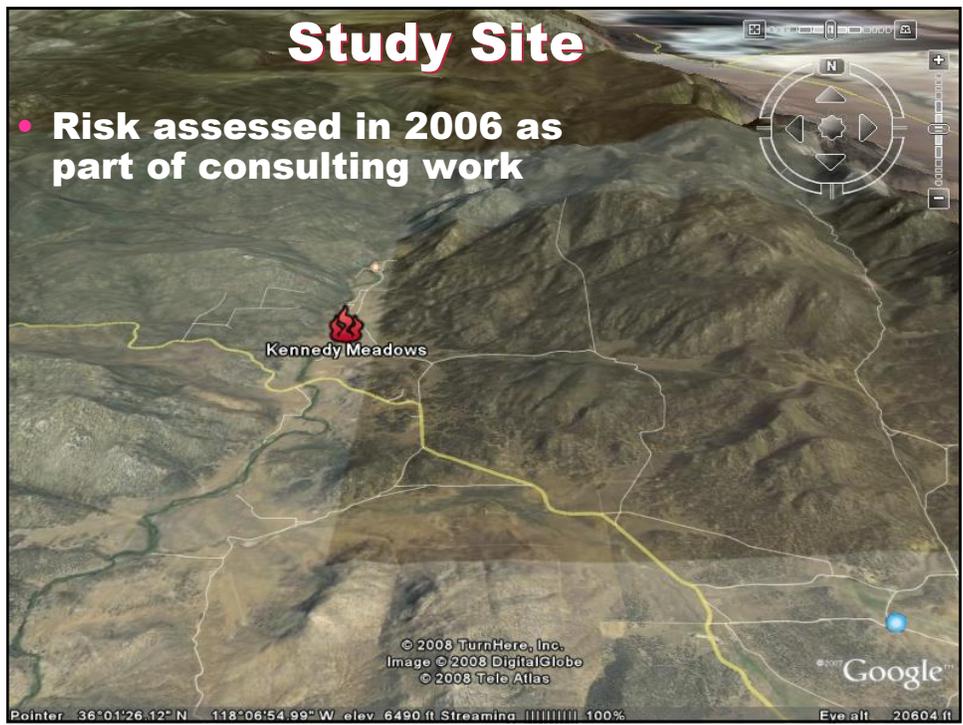
1. Potential fire behavior
2. Societal benefits
 - Pollution removal
 - C sequestration
3. If I-tree is going to work

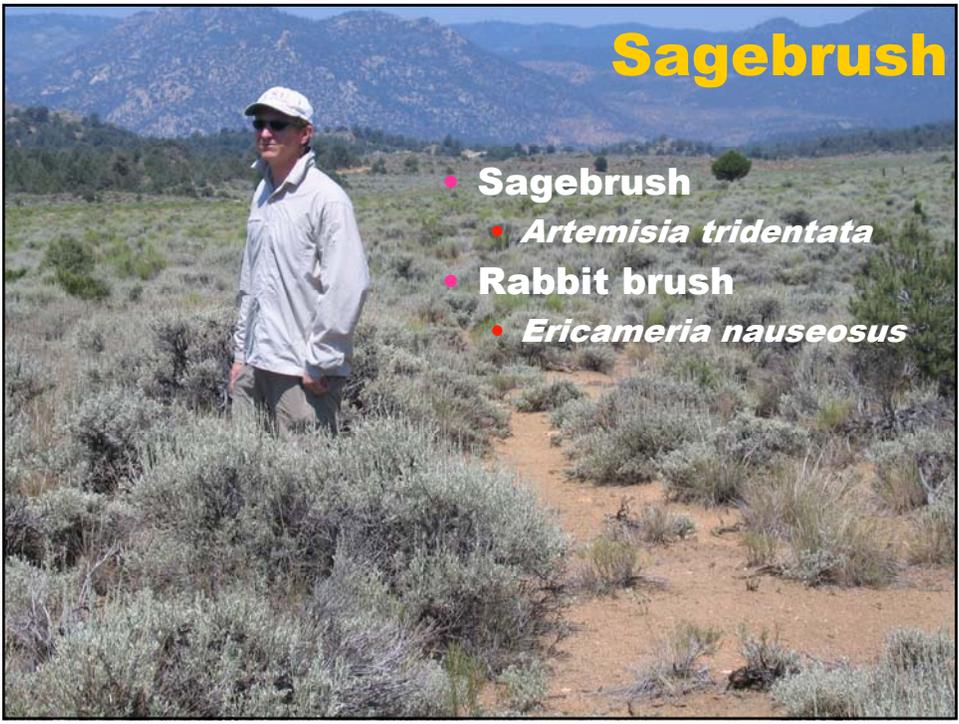


Study Site



- **Kennedy Meadows**
 - Eastern Sierras
 - ~6500' between Sierra Crest and Mojave Desert







Burned

- **Low annual grasses**
 - (when it rains)
- **Pinyon snags**
- **Very little regeneration**

Fire Behavior

**Southern Sierra Geographic
Information Cooperative**
Improving Public Safety & Protecting Resources

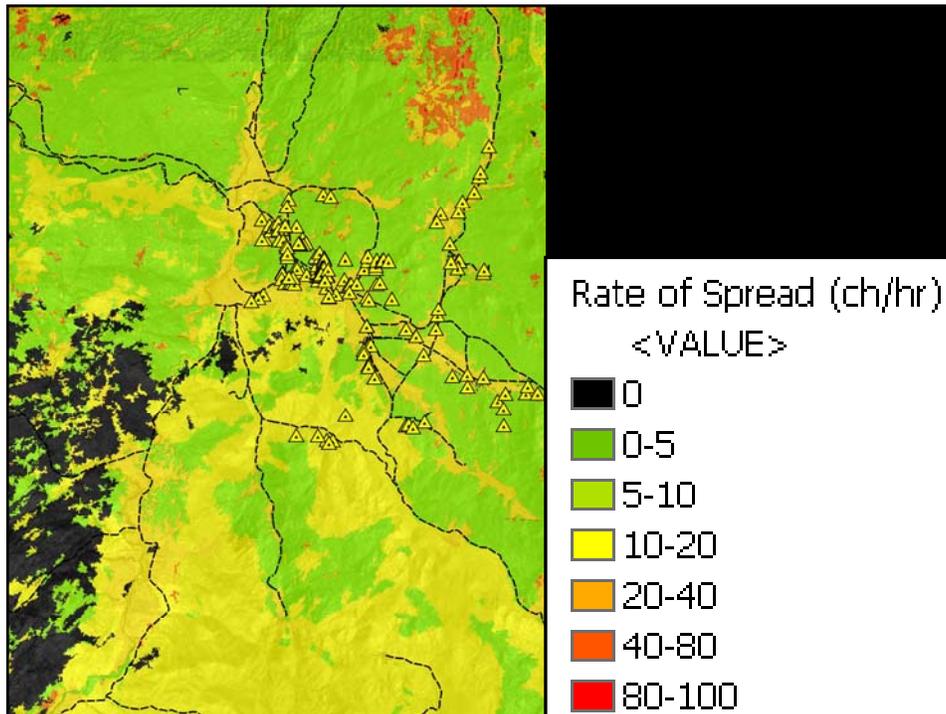


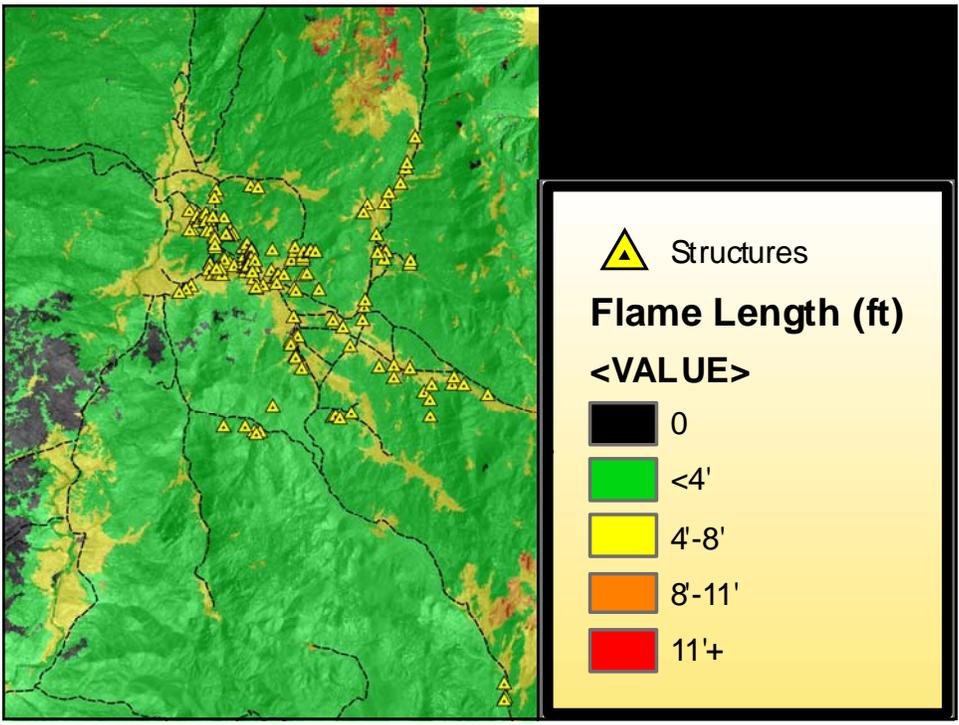
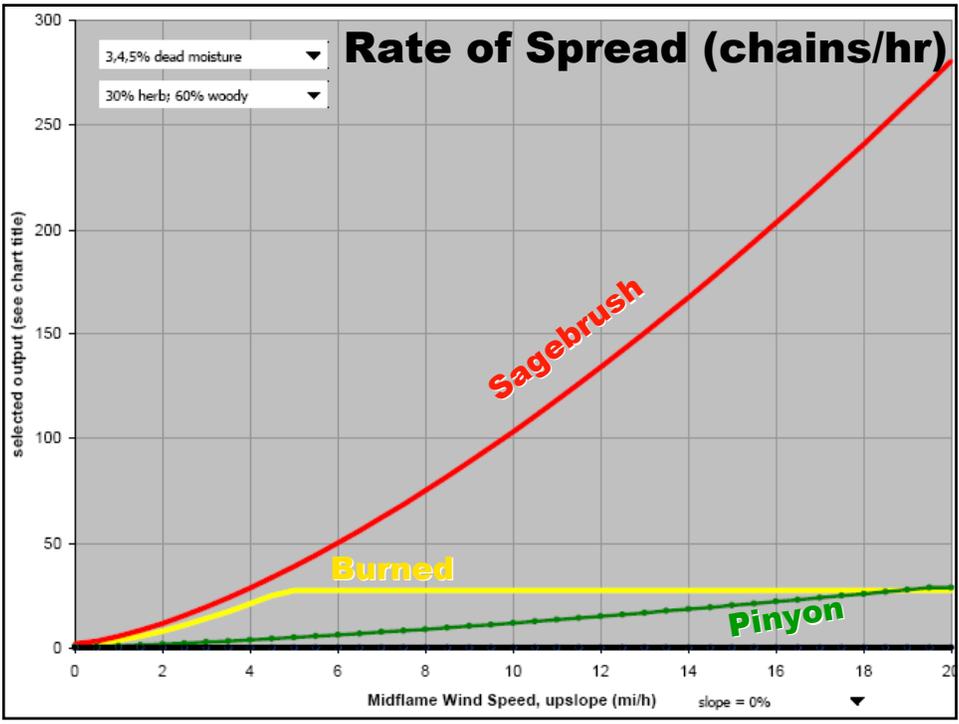
- **Fuel per SSGIC**
 - Pinyon = TU1
 - Sagebrush = GS2
 - Burned = GR1
- **Weather per Manter**
 - Calibrated in FARSITE per Manter progression
 - Midflame Winds = 15 mph upslope
 - High Temp = 95°F
 - RH = 10%

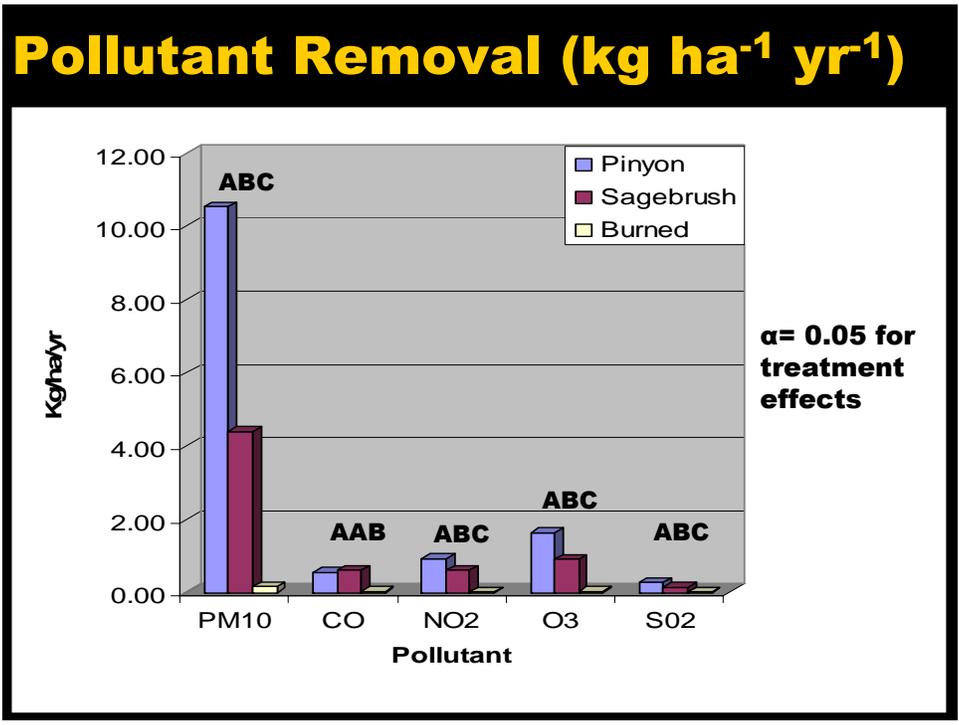
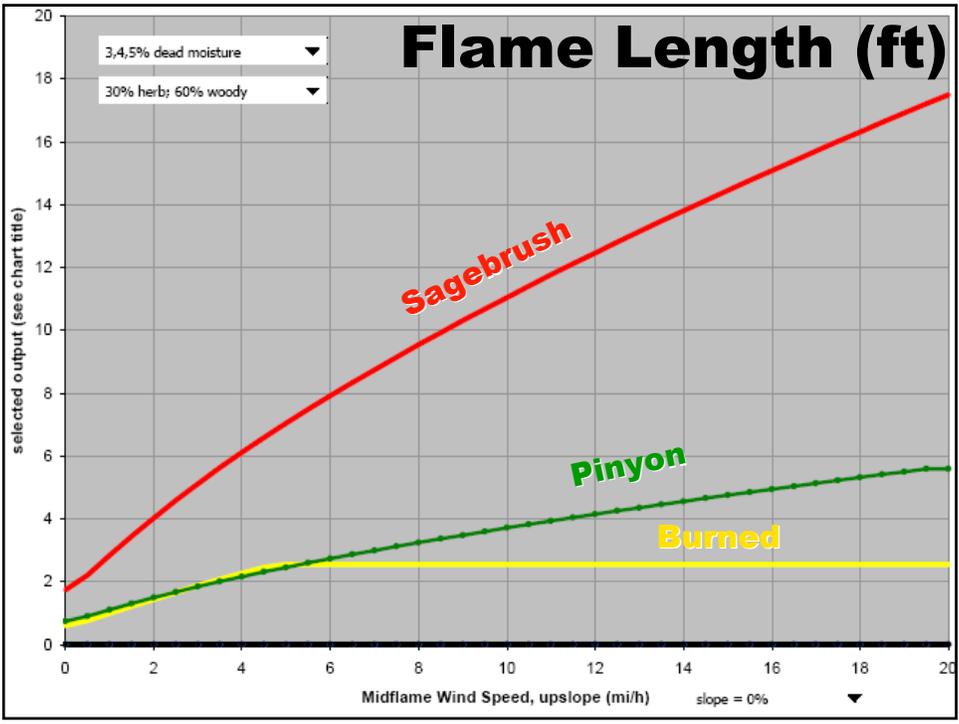
Societal benefits

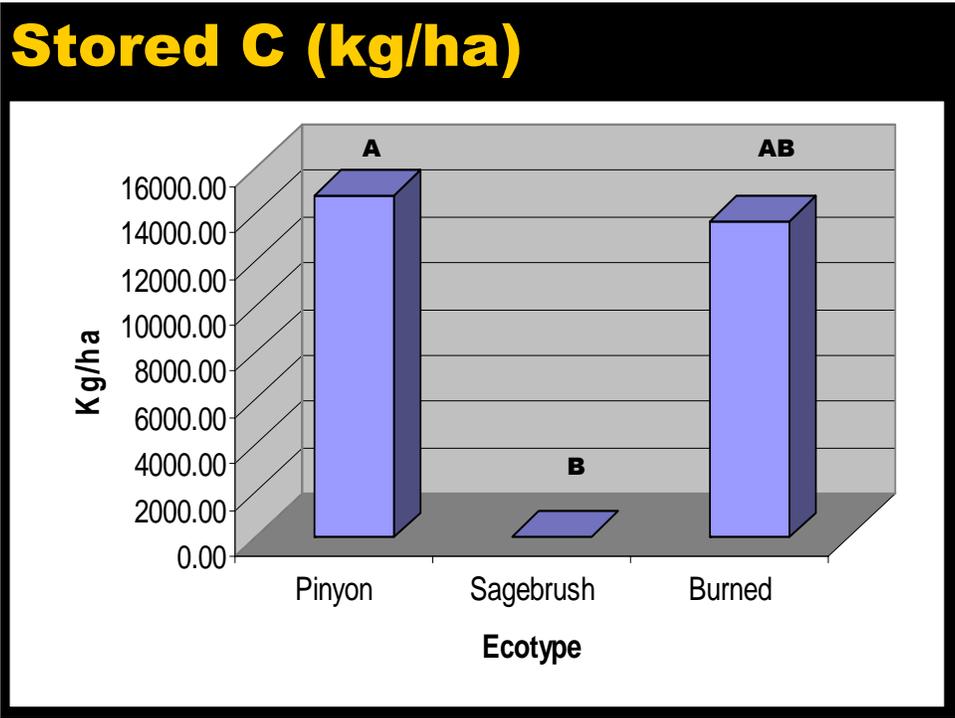
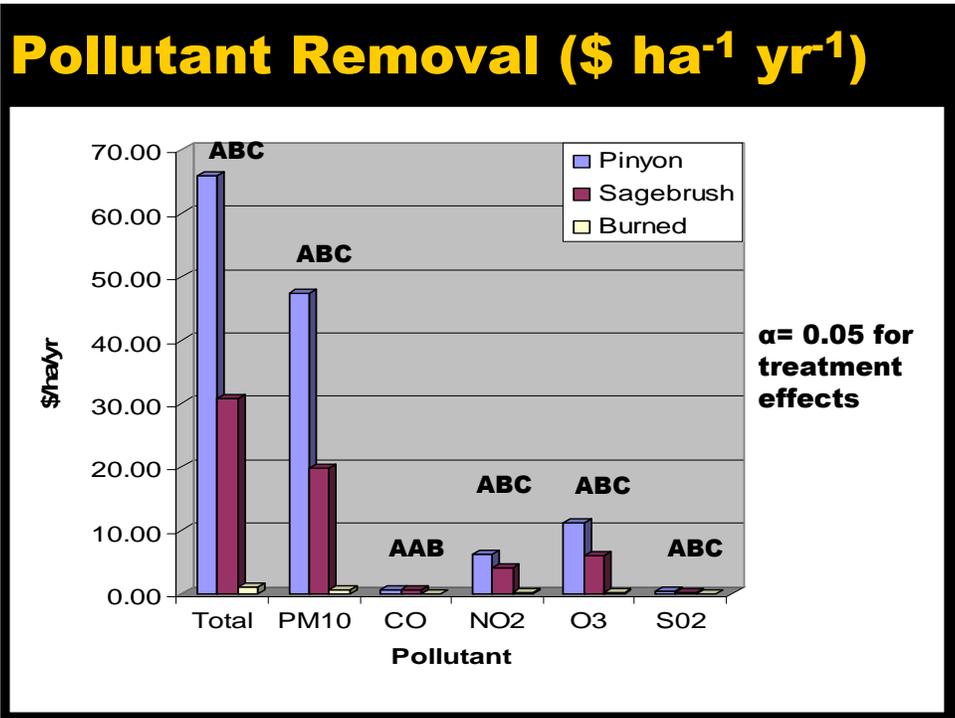


- **3 plots per ecotype**
 - **Trees**
 - Species, DBH, Ht, Crown Base Height and width
 - **Shrubs**
 - Species, Ht, Width, % Crown cover
- **Calculated benefits for entire study area**
 - **Partitioned benefits via leaf area estimates**
 - Trees easy
 - Shrubs hard

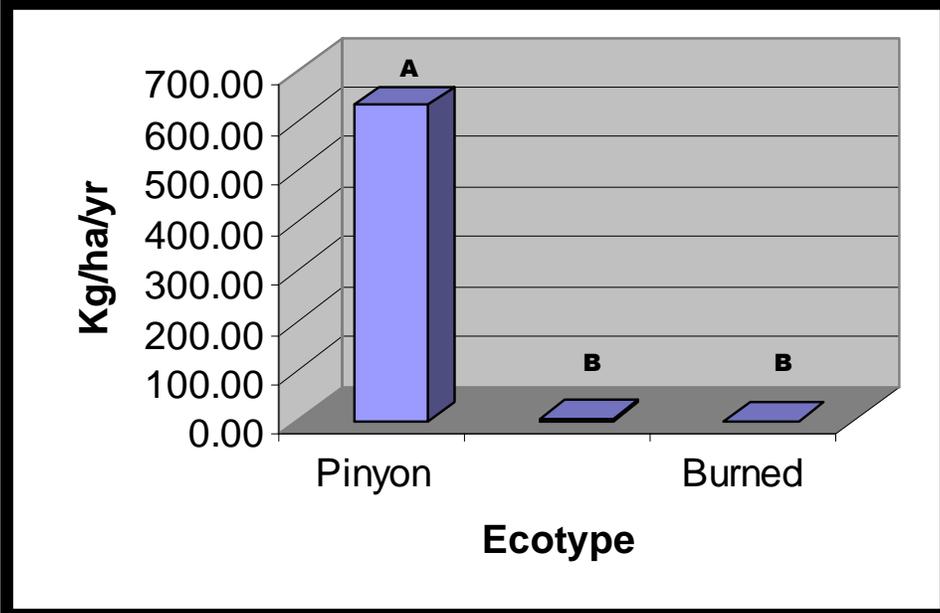






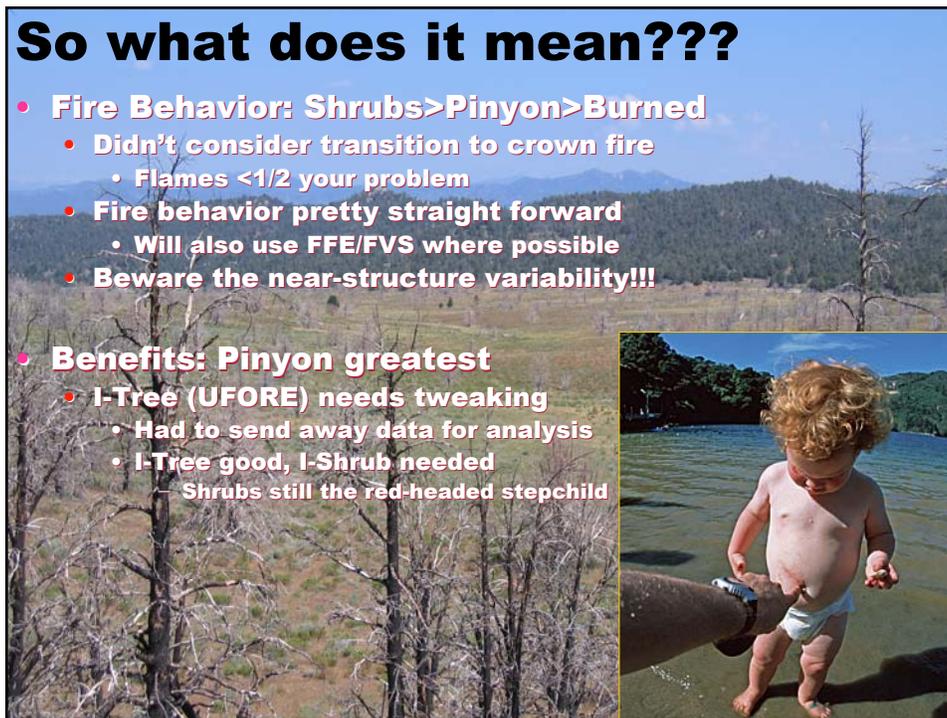


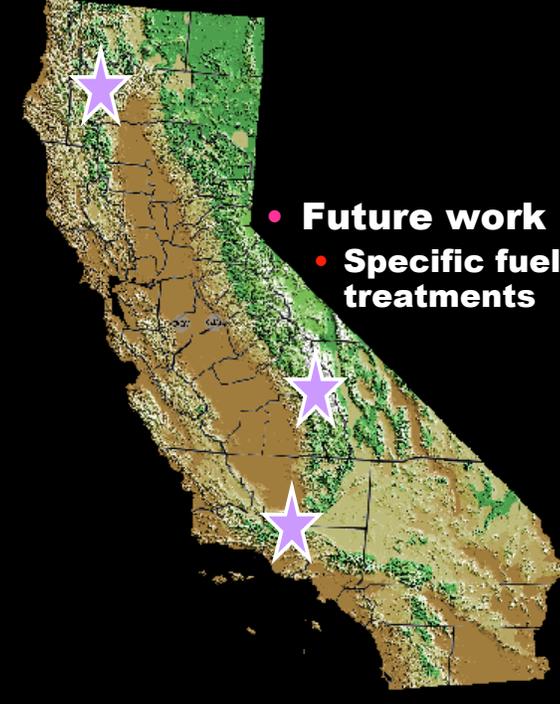
C sequestration



So what does it mean???

- **Fire Behavior: Shrubs>Pinyon>Burned**
 - Didn't consider transition to crown fire
 - Flames <1/2 your problem
 - Fire behavior pretty straight forward
 - Will also use FFE/FVS where possible
 - Beware the near-structure variability!!!
- **Benefits: Pinyon greatest**
 - I-Tree (UFORE) needs tweaking
 - Had to send away data for analysis
 - I-Tree good, I-Shrub needed
 - Shrubs still the red-headed stepchild

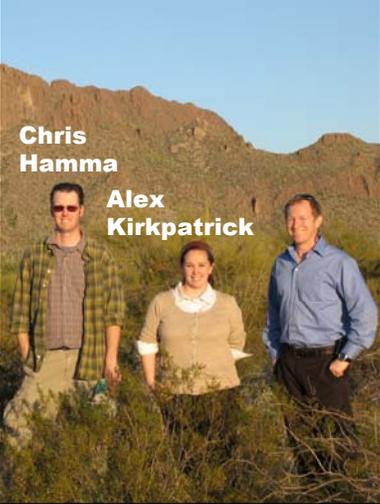




- **Future work**
 - **Specific fuel treatments**



Jon Large



Chris Hamma
Alex Kirkpatrick

Holistic approach needed...



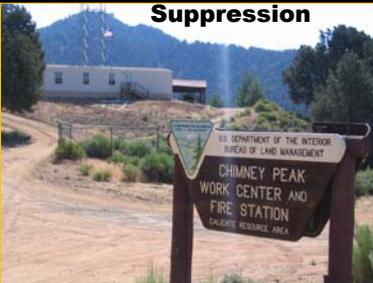
Fuels Management



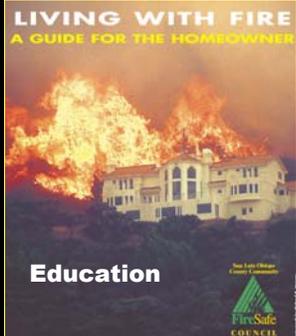
Construction



Land-use planning



Suppression



Education

LIVING WITH FIRE
A GUIDE FOR THE HOMEOWNER

FireSafe COUNCIL