WILDFIRES AND WATER QUALITY PROTECTION ON NATIONAL FORESTS IN CALIFORNIA

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PRESENTATION OVERVIEW

- Wildfire effects on water quality
- USFS water-quality protection programs
- Overview of 2008 fire season
- Reduction of fire risks on national forests

NATIONAL FORESTS AND WATER IN CALIFORNIA

- About 45% of California's runoff originates on national forests
- National forests provide water to the CVP, SWP, EBMUD, and many other public drinking water systems
- National forests manage watersheds to meet objectives for beneficial uses (FSM 2540)

WILDFIRE CONSEQUENCES AFFECTING WATER RESOURCES

- Removal of vegetation and soil cover
- Ash deposition
- Soil hydrophobicity

2007 Angora Fire, Lake Tahoe Basin Management Unit
(2008 photo)


2007 Moonlight Fire, Plumas National Forest
(2008 photo)


2008 Panther Fire, Siskiyou Complex, Klamath National Forest
(2008 photo)


2008 Gap Fire, USGS hydrologic instrumentation on private land near the Los Padres NF (USGS 2008 photo)

RUNOFF AND EROSION: RECENT RESEARCH RESULTS

- Hillslope runoff increased 2 to 1,200 X above pre-fire flows
- Short-term increases in groundwater discharge and base flow
- Hillslope erosion increased up to 5 orders of magnitude above pre-fire rates

USFS PROGRAMS TO PROTECT WATER QUALITY DURING AND AFTER WILDFIRES

- Suppression actions
- Suppression rehab
- BAER
- LaSER

WILDFIRE SUPPRESSION POLICIES FOR WATER-QUALITY PROTECTION

- Standards/guides from Forest Plans
- Delegations of authority (large fires)
- AREPs/READs
- Fires managed to minimize adverse effects of unplanned ignitions
- MIST
- Aerial retardant guidelines
- BMPs

SUPPRESSION REHABILITATION

- Restoration of areas affected by fire suppression
- Uses firefighting resources
- Funded by fire suppression program

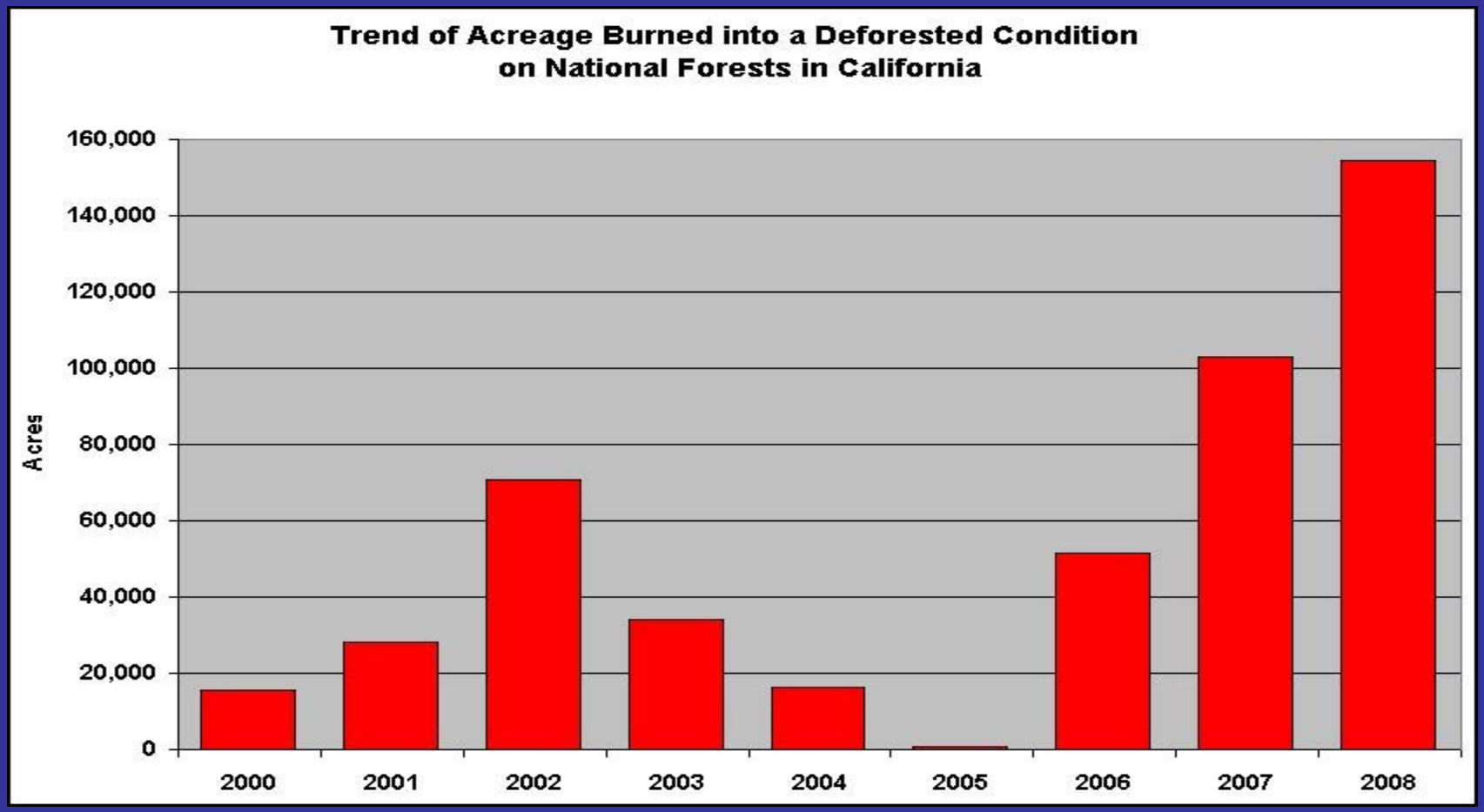
Burned Area Emergency Response (BAER)

- Protection for lives, property, and critical natural and cultural resources
- Not intended to prevent all erosion
- Assessment, Implementation, Monitoring
- Funded by fire program

Large Scale Event Recovery (LaSER)

- Replanting of native conifers in areas where natural regeneration is unlikely
- Funded by a combination of USFS fire, vegetation, and watershed programs and grants
- Limited by available funding (in contrast to timber harvests)

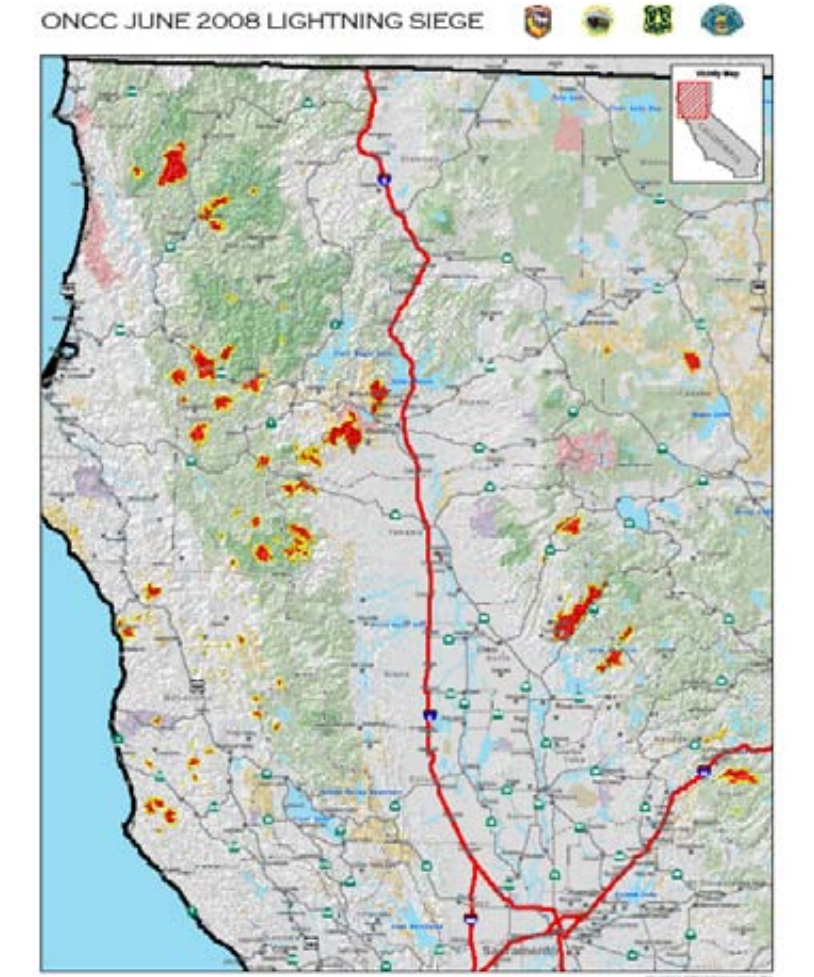
FIRE SEVERITY HAS INCREASED IN RECENT YEARS



2008 NATIONAL FOREST FIRE SEASON IN CALIFORNIA: OVERVIEW

41 major fires and complexes
Total burned area 1,082,700 acres
Total cost $734 million

2008 NORTHERN CALIFORNIA LIGHTNING FIRES



USFS 2008 FIRE SEASON: HUMAN COSTS

- 12 firefighter fatalities
- 219 structures destroyed
- Numerous evacuations
- Extended periods of poor air quality

USFS 2008 FIRE SEASON: RESOURCE COSTS

- Total burned area 1,082,700 acres
  - 730,540 acres NFS lands
  - 84,184 acres deforested
- Water and air quality impacts—extent unknown
- Fish and wildlife impacts—extent unknown
- Global warming—extent unknown

Burned Area Emergency Response (BAER): 2008 Fire Season

- 119,000 acres high burn severity
- Total BAER funds $21,350,000
  - 65% hillslope erosion treatments
  - 4% channel treatments
  - 19% road and trail treatments
  - 6% protection and safety
  - 1% monitoring
  - 8% assessment

2008 NATIONAL FOREST FIRE SEASON IN CALIFORNIA--REFORESTATION

- 84,184 acres deforested in areas open for reforestation
- Total cost estimated at $33 million
- Unit cost $389 per deforested acre
- USFS currently able to replant about 25% of burned and deforested acres per year (in constrast to 100% for timber harvests)

REDUCING FIRE RISK ON NATIONAL FORESTS—FUELS MANAGEMENT

- Hand and mechanical thinning
- Prescribed fire
- Timber harvests/salvage

SCOPE OF THE FUELS CHALLENGE

- 400,000 acres/yr lost to wildfire
- USFS treats fuels on 200,000 ac/yr
- About 45% of NFS lands are high priorities for treatment
- Treatments need to be repeated every 20 yrs
- Need to treat at least 450,000 ac/yr to break even

FUELS TREATMENTS EFFECTS ON WATER QUALITY

- Runoff and peak flows
  - Mechanical thinning-- up to 4X
  - Prescribed fire-- up to 2X
  - Salvage logging-- not enough info available
- Erosion and sediment transport
  - Mechanical thinning– 1to 22 X
  - Prescribed fire– 2 to 33 X
  - Salvage logging– 1 to 100X
- Effects of fuels treatments are variable but generally less adverse than effects of wildfire

REGULATORY ISSUES

- Statewide MAA covers USFS fire and fuels activities
- MAA status currently under negotiation
- Regional waivers of WDRs cover most fire and fuels activities
- Reporting and monitoring requirements vary between regions
- Proposed changes are likely to lower unit costs and increase production

CONCLUSIONS

- Wildfires adversely affect water quality
- The USFS has programs to reduce adverse effects of fires
- These programs cannot eliminate erosion from burned areas
- Fire numbers, size, and severity are increasing
- Fuels treatments may have limited and temporary adverse effects on water quality but can prevent substantially greater impacts from wildfires
- An increase in the rate of fuels treatments is needed to protect lives, property, and water quality

THANK YOU