Riparian Areas and Rim Fire Recovery

How recovery efforts could incorporate landscape-scale riparian area considerations

Corral Creek after Rim Fire

USDA Forest Service, Research & Development

Pacific Southwest Research Station

Riparian areas are generally **resilient** to wildfire, but there are special concerns

- **Hydrologic effects** of high soil burn severity
- **Long-term productivity and resiliency of riparian habitats**
  - Can grow large trees and provide sources of large woody debris
  - Wildlife habitat and corridors
  - Climate change refugia

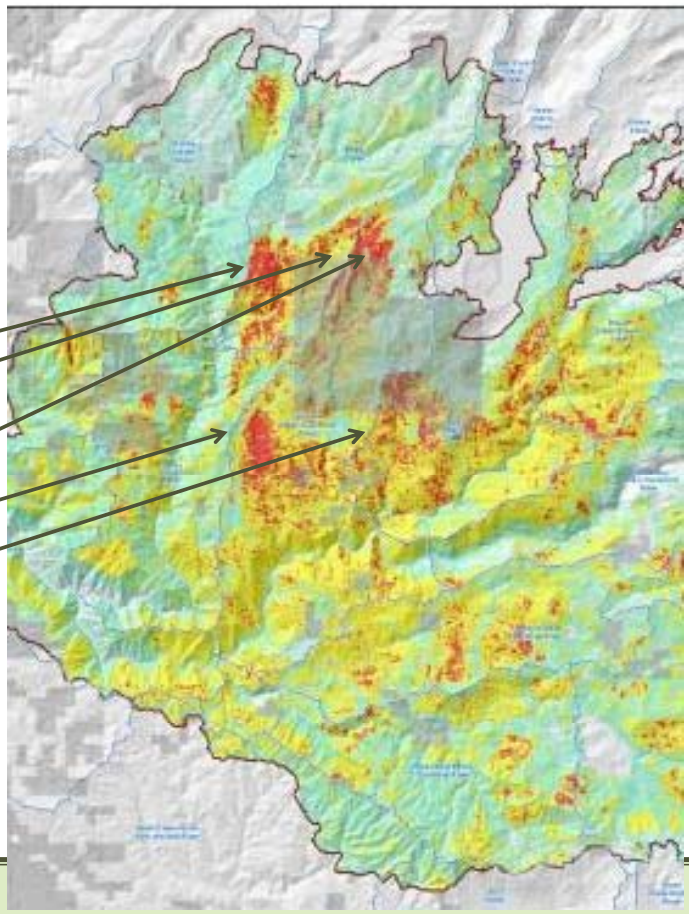
Hydrology concerns

- **Minimize undesirable hydrologic connectivity** while **restoring natural hydrologic connectivity**
  - Target erosion control treatments to both protect road system and reduce impacts from roads, culverts, skid trails, and other disturbed areas
  - Apply BMPs to operate along contours, avoid flow concentrations, and reestablish cover in disturbed areas

Watersheds with high soil burn severity

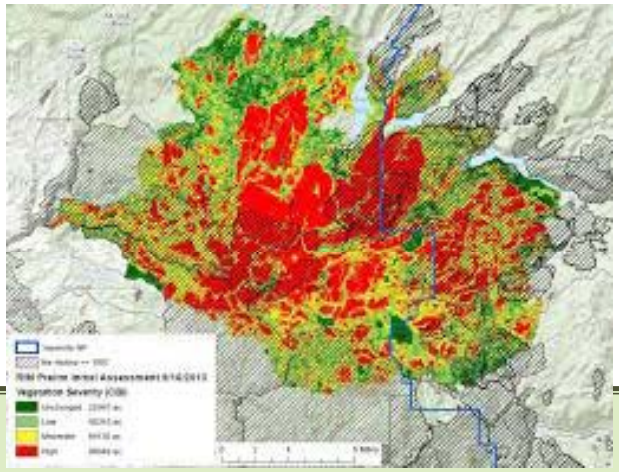
- Reed Creek
- Bear Creek
- Jawbone Creek
- Corral Creek
- Granite Creek

Evaluate values at-risk and vulnerability to channel erosion



Riparian habitat concerns

- Avoid disrupting natural recovery of riparian deciduous communities
- Evaluate recovery of stream-riparian functions to guide grazing management
- Aid recovery of mature riparian forests within parts of the high-severity patches



Guidelines from Wet Pacific Northwest Forests do not translate well to drier, more fire-dominated systems

1. In-stream woody debris
2. Down logs for amphibians and other wildlife
3. Shade to moderate stream temperatures

For example, Ruediger and Ward (1996) found that large woody debris "played a relatively minor role in geomorphism of stream channels" on the Stanislaus NF

Functions vary within the landscape

- Gradient/channel type, stream order, elevation, flow regime, aspect, disturbance history, etc.
- Do not expect "simple, effective, standardized prescriptions, formulas, or procedures" (see Lisle "How Much Dead Wood in Stream Channels Is Enough?" GTR-181)
- It may help to analyze hotspots and deficiencies (NetMap may be useful tool)

Little research on long-term effects of post-fire riparian treatments

- **Deliberately experiment to promote social learning and landscape heterogeneity**

*"Without a commitment to monitor management experiments, the effects of postfire riparian logging will remain **unknown and highly contentious**"*

– Reeves et al. 2006, "Postfire Logging in Riparian Areas" Conservation Biology

Experimental salvage treatments

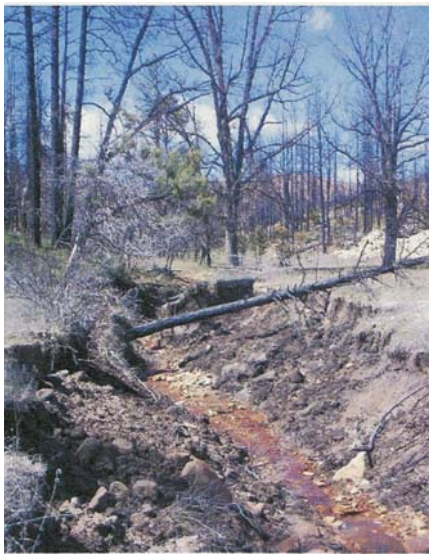
- **Thin riparian areas of high dead tree density**
  - reduce future fuels
  - increase light
  - moderate near-term woody debris loading (target overabundant sizes)
  - encourage steadier long-term input of woody debris (retain larger and more stable snags)

Experimental planting treatments

- **Replant some conifers** where they were dominant historically in riparian forests
  - Identify high productivity areas to speed recovery of large trees
  - Target high terraces and lower slopes, not low floodplains or wet areas

Other channel considerations

- Collect rock materials to inhibit incision and promote wetland development in low-gradient reaches
- Monitor and evaluate opportunities to treat incising channels, eroding streambanks, and large debris jams where there are values at-risk



Incising meadow on Rodeo-Chediski fire, AZ