Monitoring stream ecosystems to distinguish between the effects of runoff from a wildfire from anthropogenic disturbances.

Chester Anderson, B.U.G.S. Consulting and Michiko Burns, Southern Ute Indian Tribe
Fire

- June/July 2002
- Area 72,962 acres
  - 22,542 acres burned at a high severity
  - 21,822 acres at moderate severity
  - 13,872 at low severity and
  - 14,728 acres essentially unburned.
- Occurred at the height of a record drought
Concerns:

• Large quantities of
  – organic matter and sediment
  – impacts to habitat
  – impacts to water chemistry

• Monitoring
  – Distinguish effects of fire from human disturbance
S. Ute Monitoring Program

Collected:

• Water chemistry data since 1991 (TN, TP, turbidity)

• Macroinvertebrate data since 1995
  – (single habitat - riffle)
Methods - Low Flow

• Habitat
  – 3 Transects at each sample site (riffles)
  – Water depth profile
  – Characterized stream bottom (intermediate axis)
  – Measured percent embeddedness
• Organic matter
  – Collected composite samples below point bars
  – Ash samples - percent organic matter
• Periphyton as chlorophyll-a
• Macroinvertebrate and water chemistry
2003 Spring

2003 Fall

Percent Organic Material
Estimated debris flow peak discharges in response to 25-year, 1-hour storm of 1.3 inches.
Preliminary Conclusions

- Chronic effects of dams, urban development, and agriculture are greater than immediate effects of runoff from burn area
- Compounded by low flows due to drought
- Long-term effects need to be assessed
To do:

• Multivariate analysis
  – Stressor variables: percent embedded, intermediate axis, stream size, water chemistry
  – Response variables: macroinvertebrates & periphyton

• Continued monitoring
Funded

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