California Stream Bioassessment Procedure

Field and Laboratory Techniques

Sampling Designs

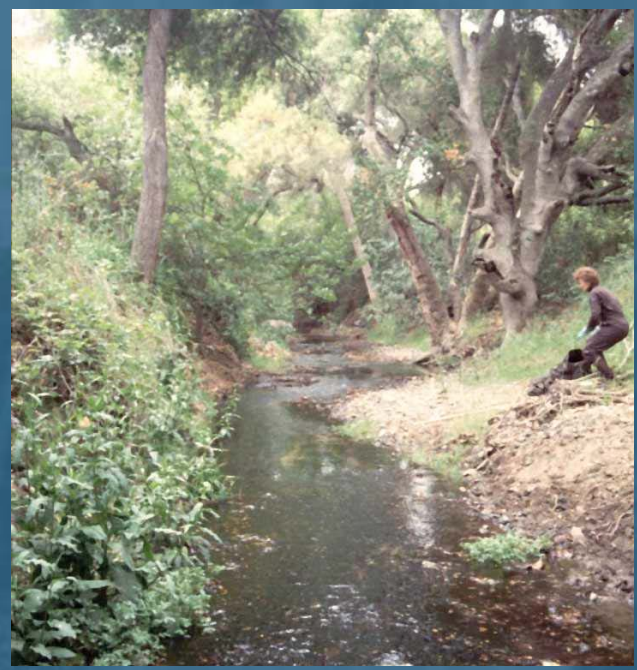
- Point Source
  - 3 Replicates/Site
  - 1 Site Upstream, 1-3 sites Downstream
- Non Point Source
  - 1 Replicate/Site
- Ambient
  - Combination of Point Source and Non Point Source approaches

Sample Site Selection

- Sample Site Criteria
  - Legal, safe access
  - Watershed Characteristics
  - Watershed/Tributary Approach
  - Suitable for Impact Assessment
  - Physical Characteristics (riffles, runs and pools)
  - Stream Class (Perennial vs. Intermittent)
  - Historic Monitoring
  - Collaborative Monitoring

Reconnaissance

- Objective: Evaluation for suitability and characterization of site.
  - Verify Documentary/Historic Conditions
  - Characterize Conditions
  - Classify the Site
- Products:
  - Go/No Go Decision,
  - Ranking of Sites
  - Documentation



Reconnaissance

- SWAMP/EMAP Protocol (April 2001)
  - Verify Access - Legal and Safe, Record Contact Info
  - Predictable Flow Regime (Perennial or Intermittent)
  - No Tidal Influence or Impoundments
  - Characterize Flow, Hydrology, Vegetation, Substrate, and Canopy Cover.
  - Identify potential near stream and watershed scale impacts
  - Physical Habitat Assessment

Challenging Sites

Physical Habitat Assessment

- Characterizes and Documents Physical Conditions of the Stream Reach
  - Primarily Visual
  - CSBP Based on 1999 US EPA Guidance
  - Performed for Each Sampling Event
  - Includes Quantitative Measurement of:
    - DO, Temp, Specific Conductance, pH.
    - Reach Length, Stream Width and Cross Section
    - Flow Rate and Discharge

Physical Habitat Assessment

- Epifaunal Substrate and Cover
- Embeddedness
- Pool Substrate Characterization
- Velocity/Depth Combinations
- Pool Variability
- Sediment Deposition
- Channel Flow Status
- Channel Alteration
- Frequency of Riffles
- Channel Sinuosity
- Bank Stability
- Bank Vegetative Cover
- Riparian Zone Width
- % Canopy Cover
- Substrate Composition
- Substrate Consolidation
- % Gradient of Riffles

Epifaunal Substrate and Canopy Cover

Consolidation and Embeddeness

Channelization and Bank Stability

Quality Assurance & Quality Control

- Team Approach
- Cross Checking Results in Field
- Review by QA/QC Officer

- Field Audit by Third Party

Sampling Equipment

Nets and Alternatives

- Recommended
  - D- Frame “Turtox Type” Aquatic Dip Net
  - Surber Sampler
- Not Recommended
  - Kick Net
  - Round, Square, or Rectangular Dip Nets
  - Fish Nets
- Mesh Size: 500um Mesh (#35)

- Net
- Measuring Tape 100m
- 500 um Sieve
- 500 ml Jars (wide)
- Sorting Pan
- Forceps
- 95% Ethyl Alcohol
- Plastic Wash Bottle
- First Aid Kit
- Stream Boots
- CSBP/P-Hab Forms
- Chain of Custody Form
- Random Number Table
- WQ Meters
- Stadia Rod
- Clinometer
- Densiometer
- GPS Unit (D.ddd, WGS 84)
- Flow Meter
- Backpack
- Strong Back

Sampling

- 3 Samples/Replicate
- Each 1’x2’ (2ft^2)
- Composited (6ft^2)
- Sample Time 60-120 s
- Complete Coverage
- Net/Flow Control
- Clear Large Debris

It's Not Always Easy

But It Is Rewarding!