

The background of the slide is a photograph of a waterfall cascading over rocks, with a semi-transparent blue overlay. The text is centered on the slide.

# Bioassessment Sample Processing

Laboratory Procedures

# Preservation and Processing

- Replace Ethyl Alcohol with 70%
- Ensure All Jars Are Secured and Properly Stored
- Inventory All Samples
- Track Processing Regularly
- Oversight by QA/QC Officer

# Equipment

- Stereo-zoom Scope
- Bench Sheets
- #5a Forceps
- Sorting Tray
- Grid Tray (2cm<sup>2</sup>)
- Random Number Table
- Tally Counter(s)
- Petri Dishes
- Ethyl Alcohol (70%)
- Storage Space for Archived Samples
- COC's
- Pre-Cut Labels
- Vials
- Time
- QAPP and Literature
- \$\$\$ to Buy Literature

# Lab Approaches

- Citizen
  - Combined Picking and Identifications
  - Picking Team and Identifying Team
  - Pay a Professional Lab to do the Work
- Professional
  - Assembly Line
  - Picking Contracted Out
  - Focus on Taxonomy and Reporting
  - Combined Approach

# Professional Laboratories

- CDFG OSPR Aquatic Bioassessment Laboratory
- David Herbst, SNARL CA
- Jim Carter, USGS - CO
- USFS - Provo, UT
- Mark Vinson, National Aquatic Monitoring Center, UT
- Rhithron Associates, Inc., MT
- Aquatic Biology Assoc., OR
- EcoAnalysts, Inc. ID
- Jon Lee Consulting, CA
- Wayne Fields, Hydrozoology
- Sustainable Land Stewardship Institute, CA
- Thomas King, CA
- Cressey & Associates, CA
- ECORP Consulting, Inc., CA
- Richard Bottorff, CA
- Andre Macedo, City of San Diego MWWD
- MEC Analytical, CA

# Processing

- Initial Cleaning
  - Remove Large Debris
  - Green, Solid Leaves
  - Rocks
  - Twigs
- All Debris Checked under Scope
- Use 500um Sieve
- QC Check Minimum 10%









# Picking and Sorting

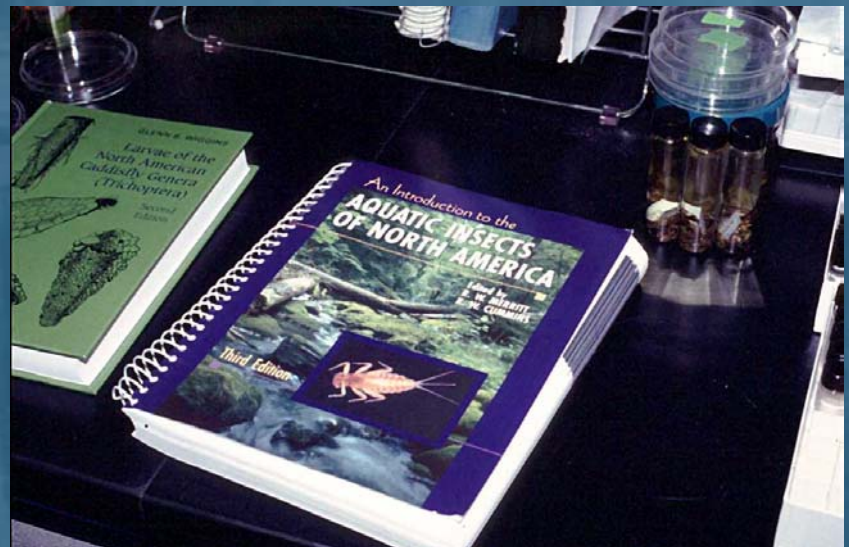
- Sub-sample Using Grid Tray, Random Selection
- Pick Through Debris
- 100 Organisms (Citizen)
- 300 Organisms (Professional)
- Count and Set Aside Remainders and Picked Debris





# Taxonomic Determinations

- Family (Citizens)
- Genus (Professional)
- QC
  - In House Validation
  - External Validation
- QA
  - Split Samples



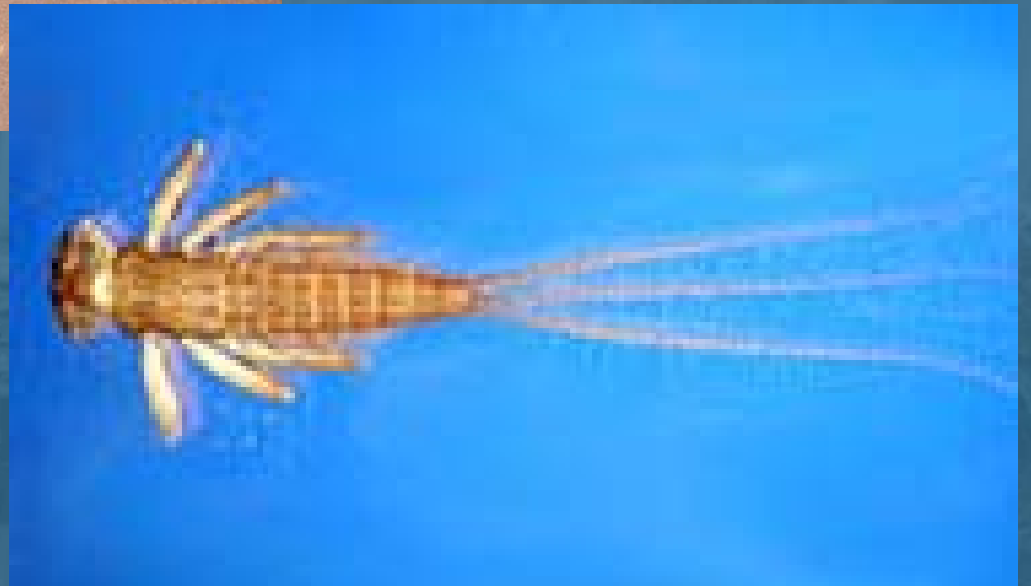
# Quality Assurance Program Plan

- Standard Operating Procedures
- Documentation
  - Sample Handling, COC's
  - Data Management
  - Lab Notebook, Calibration Records
  - Training Records, Corrective Actions
- Validations (Internal and External)
  - Taxonomic Validation
  - Bioassessment Validation
- Audits (Field and Lab)

# Benthic Macroinvertebrates

- Primarily Insects
  - Ephemeroptera
  - Plecoptera
  - Trichoptera
  - Coleoptera
  - Diptera
  - Hemiptera
  - Odonata
- Non Insects
  - Ostrocooda
  - Cladocera
  - Acari (Mites)
  - Aranae (Spiders)
  - Oligochaeta (Worms)
  - Nematoda (round worms)
  - Molluscs (clams & snails)
  - Amphipoda

# Ephemeroptera Mayflies

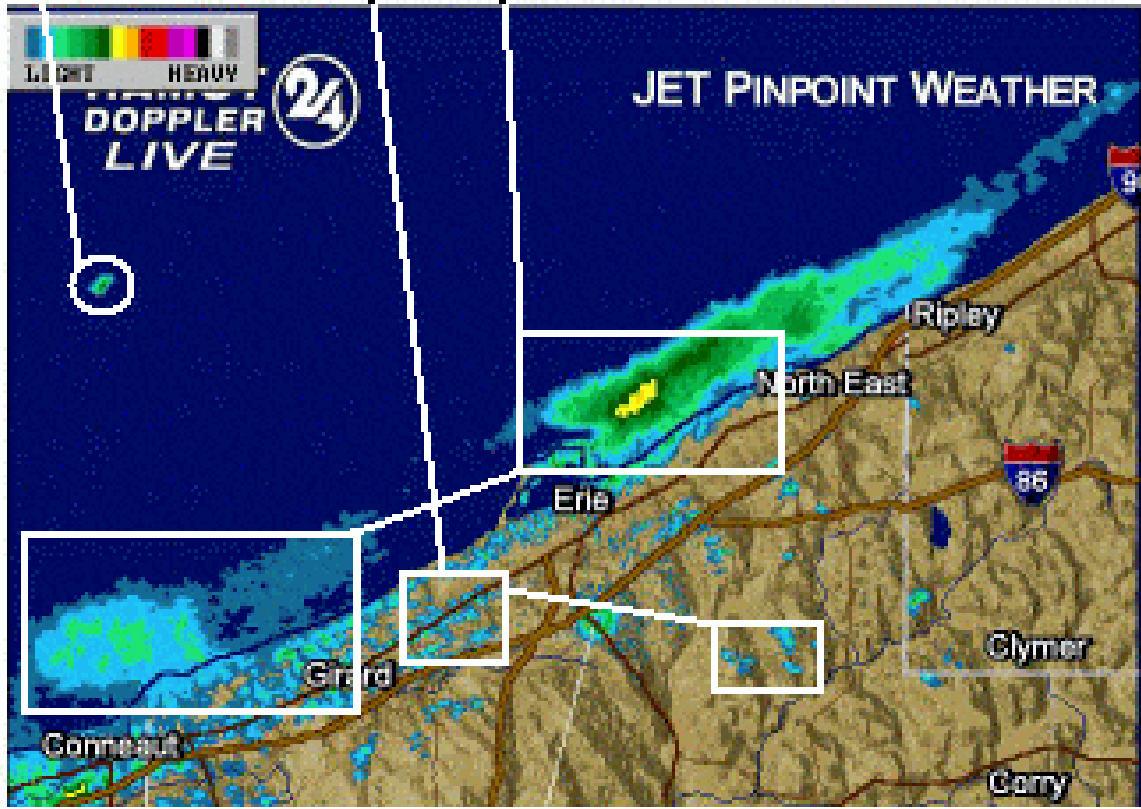


Groundclutter

Watercraft

Mayflies

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Lon: 79:33:15 W Az: 195 El: -0.1  
Az/Rsn: 000,000.0 AR/M: 44, 38/99999







# Trichoptera Case Builders





# Diptera Flies



Simuliidae  
Black Flies

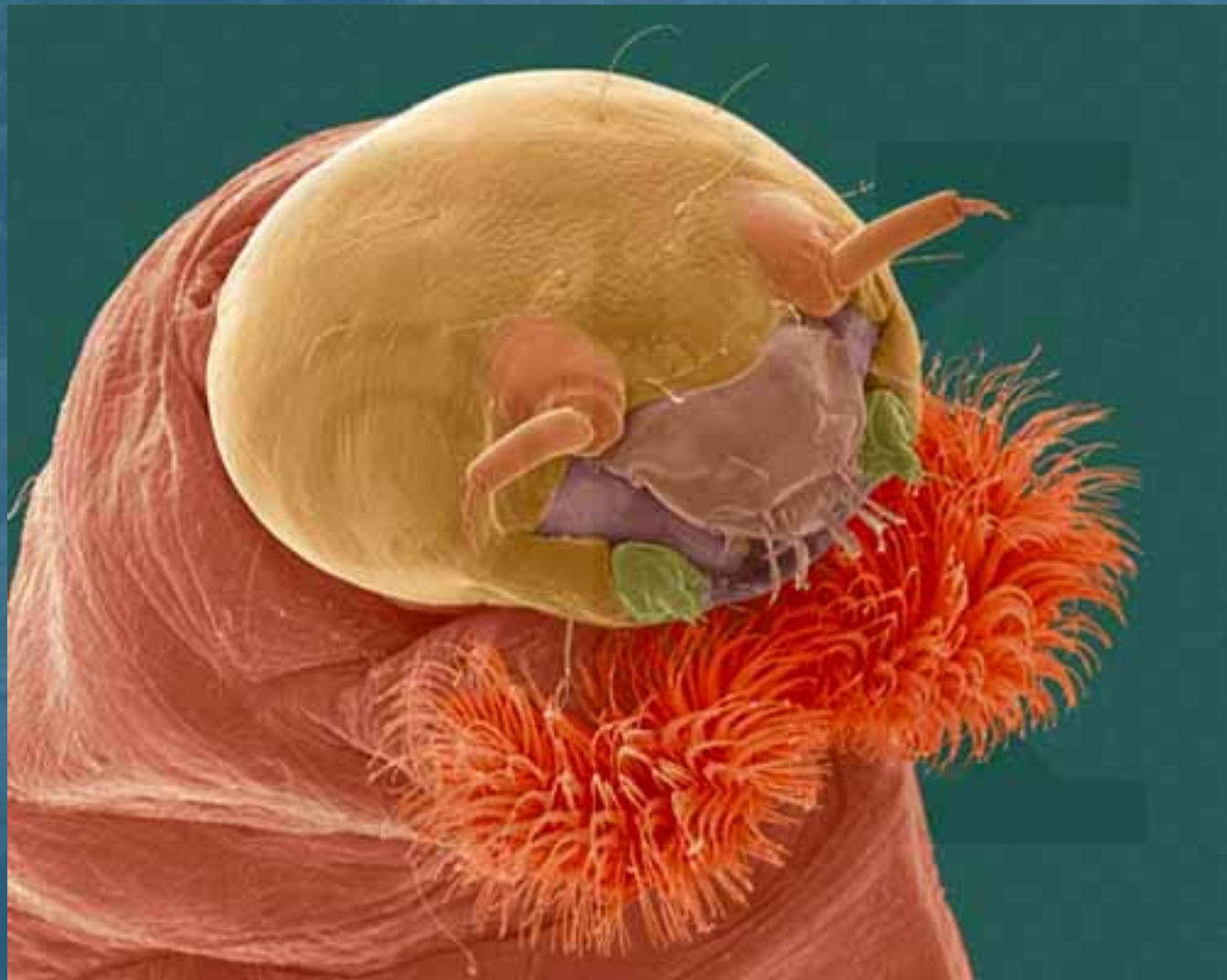




Chironomidae  
Midges

Empididae  
Dance Flies





Plecoptera  
Perlodidae





# Hemiptera - Bugs



Belostomatidae  
Giant Water Bug





Corixidae

Water Boatmen



Naucoridae

Creeping Water Bugs

- Nepidae
- Waterscorpions





Notonectidae  
Backswimmers

# Coleoptera - Beetles



Elmidae

Riffle Beetle

# Ostrocooda



# Odonata Dragonflies

