California’s Successful Transition from Western Pilot EMAP to State Funded Bioassessment Program

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Use of Bioassessment

1993 Fish Hatchery NPDES Permit
Wildlife Areas
Rotenone Treatments
Enforcement of DFG Code 5650

Spill Response
Natural Resource Damage Assessment (NRDA)
or Bucks for Bugs
Rapid Bioassessment Protocols For Use In Streams And Rivers
Benthic Macroinvertebrates And Fish

AN INTRODUCTION TO THE AQUATIC INSECTS OF NORTH AMERICA
EDITED BY R. W. MERRITT K. W. CUMMINS
1993 California Stream Bioassessment Procedures (CSBP)
California Aquatic Bioassessment Workgroup
Formed in 1994
to bring together all entities involved in bioassessment in California, disseminate information on implementing biocriteria and providing a forum for scientific review of protocols used to develop biocriteria in California
1994  Established as a forum to communicate and exchange information

1995  Finalization of the California Stream Bioassessment Procedures (CSBP)

1996  Formulate the process for developing biocriteria in California

1997-1999  Provided a forum for updating attendees on bioassessment and gave examples of current projects

2000-2001  Changed format from 3 day workgroup to 2 day platform presentation and panel discussion
But DFG
Is not the DEQ
Targeted Sampling Site from Various Contracts as of 2000
Western Pilot EMAP and CMAP

2000 through 2007

CDFG
U.S. EPA
SWRCB
RWQCB
EMAP West Example of Proposed Sample scheme.

Reg 9 and 10 = 50 per state and 160 in each shaded area
Reg 8 = 50 in UT and CO, ~20-25 outside shaded areas of MT, WY, and ND, and ~280 within shaded area.
Blue shade is Region’s Special Interest Areas
Red shade is REMAP area
Application of a benthic invertebrate IBI to regional 305(b) reporting in southern California

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Aquatic Bioassessment Laboratory
Water Pollution Control Laboratory
California Department of Fish and Game
California State University, Chico

And Then Along Came SWAMP
Surface Water Ambient Monitoring Program
SWAMP Bioassessment Procedures

Finalized 2007

Based on NARS

Incorporated other protocol components

Calibrated data from CSBP
PSA Regions

Subunits provide regional perspective and assessments are closer to the scale of regulation.

A = North Coast
B = Oak Chaparral
   1 = Coastal Chaparral
   2 = Interior Chaparral
C = Sierra
   1 = Main Sierra
   2 = Central Lahontan
D = Central Valley
E = South Coast (SMC)
F = Other:
   • Modoc Plateau
   • Deserts
Reference Condition Management Plan
(adopted March 2009)

• RCMP is SWAMP’s standardized process for identifying & sampling “reference sites” throughout CA

• Now in implementation phase:

✓ Define reference criteria for streams throughout the state

✓ Identify data gaps and collect bio/chem/hab data where missing

✓ Monitor temporal variability (both inter-annual & intra-annual)
SWAMP Standards

Technical Infrastructure

Indicators
- BMIs
- Algae
- Habitat

Reference Condition Management Program

Data Management Tools

Methods (field/lab)

Narrative Objectives

Numeric Endpoints for Interpretation

implementation

401 Water Quality Cert
305(b) assessments
303(d), TMDL
NPDES/stormwater
BMP effectiveness
ambient screening
NPS monitoring

Regulatory Framework
(Objective + Implementation Plan)

Regulatory Applications

Regulatory Programs
Standardize Taxonomy and Laboratory QA/QC
Starting 1994 as CAMLnet and SAFIT since 2006
2011 Bug/Algae Field Classes

Costa Mesa April 12-13
Sacramento May 18-19
Redding June 14-15
Moss Landing April 26-27
Bishop June 7-8
Arcata July 18-19
Bioassessment Competency Training

2-day Introductory Field Sampling
2-day Introductory Lab/Data Analysis

Field Calibration/Advanced Training

Field Audits

DFG Sampling Permit (LAI/MOU)
MEMORANDUM OF UNDERSTANDING
BY AND BETWEEN

Individuals Conducting Macroinvertebrate Bioassessment Coordinated with the Office of Spill Prevention and Response’s Aquatic Bioassessment Laboratory

AND

CALIFORNIA DEPARTMENT OF FISH AND GAME (STATEWIDE)

REGARDING ROUTINE FRESHWATER BIOASSESSMENT ACTIVITIES

This Memorandum of Understanding (MOU) is made and entered into by and between the individual(s) listed under the List of Authorized Individuals (LAI) and the California Department of Fish and Game, California (Department). The Department has general authority to enter into MOUs in support of our missions. Each authorized individual has applied to conduct routine freshwater bioassessment activities that adhere to the protocols required by the Department’s Office of Spill Prevention and Response’s Aquatic Bioassessment Laboratory (ABL).

Routine freshwater bioassessment activities include: the collection of benthic macroinvertebrate (BMI) samples, measurements of physical/habitat parameters, laboratory analysis of BMI samples, incorporation of field and laboratory quality assurance procedures, and reporting of biological and physical/habitat data. Take of freshwater vertebrates is prohibited under the authority of this MOU.

It is understood by the Department that each monitoring event or program (ambient, compliance and enforcement) may have unique requirements (number of samples, sites, replicates and events per year). However all routine freshwater bioassessment activities follow the standardized Surface Water Ambient Monitoring Program (SWAMP) bioassessment procedures.

Therefore, it is mutually agreed and understood as follows:

PERMITTEE

There are three designations under this MOU, a Primary Monitor, Field Monitor and supervised individuals. The authorized individual that oversees the activities is designated as the Primary Monitor. Field Monitors are the authorized individuals who may conduct routine bioassessment activities under the general oversight of the Primary Monitor although the Primary Monitor need not be physically present on-site. Any other individuals assisting in freshwater bioassessment activities must be

Conserving California’s Wildlife Since 1870
All incidentally caught vertebrates shall be released unharmed back into the waters from which they were taken. Any incidental take of a listed species shall cease all collection activities and be immediately reported to the appropriate regional DFG biologist.

All sampling must be conducted during the appropriate Index Period. Note: It is important that macroinvertebrate samples be collected at the proper time of year for comparison to the appropriate criteria.

Macroinvertebrates must be identified according to the Standard Taxonomic Effort (STE) Level I or Level 2 of the Southwestern Association of Freshwater Invertebrate Taxonomists (SAFIT),¹ and using a fixed count of 600 organisms per sample.

To guarantee that the freshwater bioassessments are being conducted by qualified field and laboratory staff, Primary Monitor must prepare and make available to the Department, a Quality Assurance Project Plan (QAPP) that addresses field and laboratory activities. The QAPP should follow USEPA guidance and requirements as found in USEPA Requirements for Quality Assurance Project Plans (EPA QA Q-5, EPA/240/B-01-003, March 2001), and USEPA Guidance for Quality Assurance Project Plans (EPA QA/AG-5, EPA/240/R-02/009, December 2002) or fall under the umbrella of the official SWAMP QAPP.

The QAPP shall include, or be supplemented to include, a specific requirement for external quality assurance checks (i.e., verification of taxonomic identifications and correction of data where errors are identified). External QA checks shall be performed on one macroinvertebrate sample per year, or ten percent of the samples per year (which is greater). QA samples shall be randomly selected by the Primary Monitor and not by the taxonomic laboratory. The external QA checks shall be paid for by the Primary Monitor or the company/organization/agency that is responsible for the project, and performed by the Department’s Aquatic Bioassessment Laboratory. An alternate laboratory with equivalent or better expertise and performance may be used if approved in advance by the Department.

COORDINATION

The Department contact on matters relating to this MOU is the Department’s Regional contact (Jane Vorpagel, Region 1; Carol Oz, Region 2; Tim Stevens, Region 3; Andrew G. Gordus, Ph.D., Region 4; and Dwayne Maxwell, PhD Region 5), and the Regional designee James Harrington, Aquatic Bioassessment Laboratory, 2005 Nimbus Rd., Rancho Cordova, 95670.

¹ The current SAFIT STEs (28 November 2006) list requirements for both the Level I and Level II taxonomic effort, and are located at: http://www.swrcb.ca.gov/swamp/docs/safite/index_list.pdf. When new editions are published by SAFIT, they will supersede all previous editions. All editions will be posted at the State Water Board’s SWAMP website.

- No Fish, just bugs/algae
- Proper Index Period
- Use SAFIT STE
- Need to Develop QAPP
- Follow QAPP for field and BMI Laboratory so data will be CEDEN compatible
Bioassessment Administrators

Permit Writers
Contract Administrators
Thanks for Listening

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