

An underwater photograph showing a fish swimming through a dense field of green seaweed or eelgrass. The fish is positioned in the lower center of the frame, facing right. The water is slightly murky, and the lighting is natural, coming from above.

SWAMP BIOLOGICAL ASSESSMENT TRAINING SOP

Jim Harrington
California Department of Fish and Game
Office of Spill Prevention and Response
Aquatic Bioassessment Laboratory

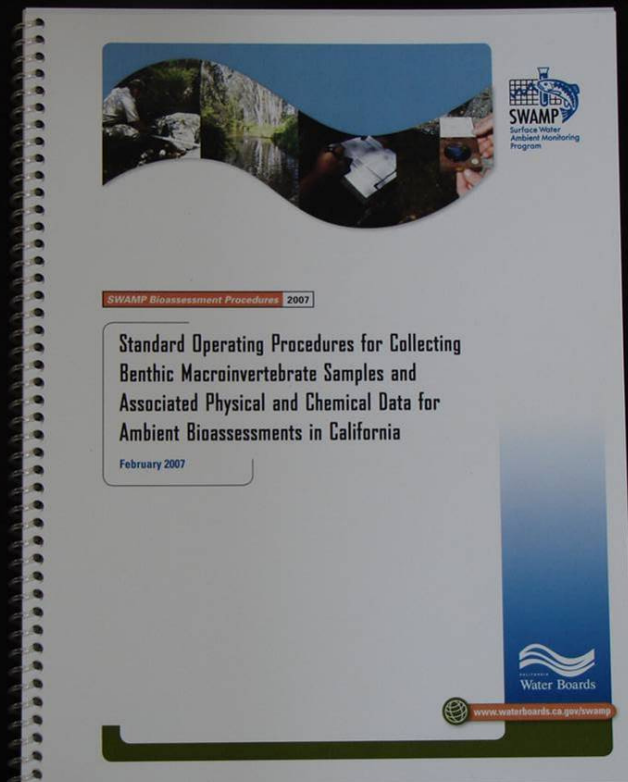
**Bioassessment Competency Training
DFG SOP and LAI
Bioassessment Training Pathways**

Biological Assessment 2007 SWAMP Procedures

Collect BMIs

Measure Phab

Measure Basic
Chemistry



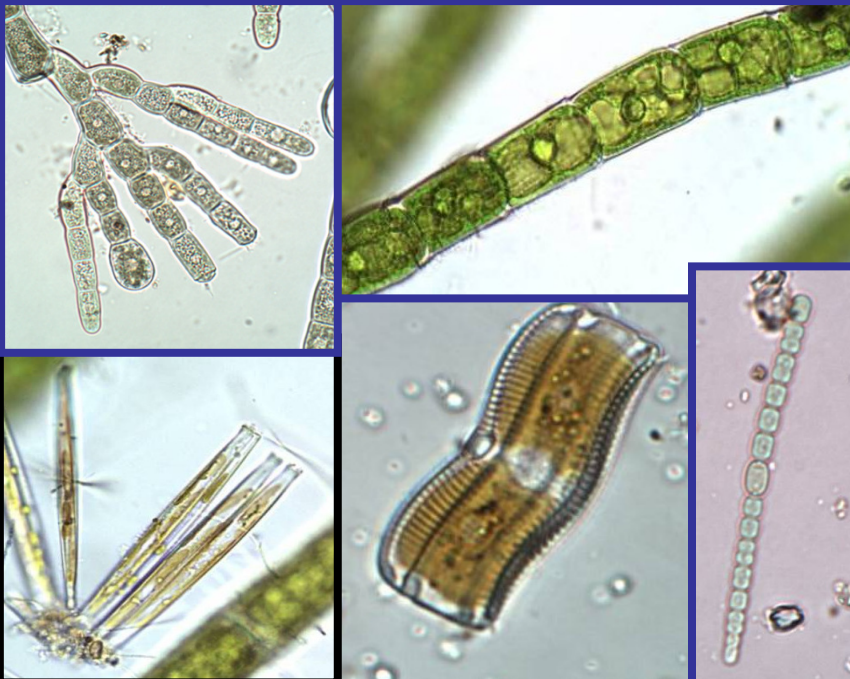
Overview of Multihabitat Sampling of Stream Algae in California

Betty Fetscher

So Cal Coastal Water Research Project

Jim Harrington

California Department of Fish and Game



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)



State of California - The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
830 S Street
Sacramento, CA 95814
(916) 327-8840

ARNOLD SCHWARZENEGGER, Governor
John McCamman Director



May 27, 2010

**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:

PERMITEE

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



State of California - The Resources Agency
JERRY BROWN, Governor
FISH AND WILDLIFE WATER POLLUTION CONTRL LABORATORY
OFFICE OF SPILL PREVENTION AND RESPONSE



**LIST OF AUTHORIZED INDIVIDUALS
Conducting Macroinvertebrate Bioassessment
COORDINATED WITH
The Office of Spill Prevention and Response's Aquatic
Bioassessment Laboratory
AND THE
CALIFORNIA DEPARTMENT OF FISH AND GAME (STATEWIDE)**

This Letter of Authorized Individuals (LAI) is made and entered on April 18, 2011 as supplement to the Memorandum of Understanding (MOU) by and between the names listed and the California Department of Fish and Game (Department).

The Department has reviewed the qualifications of the following individual(s) and has determined they are eligible to be designated as Primary Monitor(s) or Field Monitor(s) as described in the MOU:

Names: Annie Gillespie - Primary Monitor
Morro Bay National Estuary Program
601 Embarcadero, Ste. 11
Morro Bay, CA 93442

Anna Halligan - Field Monitor


Supervised individuals may conduct activities under this permit only under the direct on-site supervision of one of the above named individuals.

A copy of the MOU dated May 27, 2010 and Amendment 1 for 2011 must be carried with a copy of this LAI when conducting activities authorized by the MOU. The signature signifies his/her/their understanding of and agreement to abide by the conditions and authorizations of the MOU.

Date

Signature of PM

Contact Phone Number


James Harrington
Staff Environmental Scientist
DFG Water Pollution Control Laboratory
2005 Nimbus Road
Rancho Cordova, CA 95670

This list is only valid if it is dated on or after the MOU issuance date.

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/R-5, EPA/240/B-01-003, March 2001), and *USEPA Guidance for Quality Assurance Project Plans* (EPA QA/G-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 (whichever 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 Vorpapel, 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/safit/ste_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 TRAINING PATHWAYS

Bioassessment
Administrator

Bioassessment Field
Crew Member

Bioassessment
Instructor

BIOASSESSMENT TRAINING PATHWAYS

Bioassessment Field
Crew Member

2-day Bioassessment Concepts and Field Techniques

2-day Bioassessment Laboratory and Data Analysis

Annual Pre-season Calibration and Training Exercise

Annual Early and Late Season Field Audits

Attend Annual CABW Meetings

BIOASSESSMENT TRAINING PATHWAYS

Bioassessment
Administrator

2-day Bioassessment Concepts and Field Techniques

2-day Bioassessment Laboratory and Data Analysis

Attend Annual CABW Meetings

BIOASSESSMENT TRAINING PATHWAYS

Bioassessment
Instructor

2-day Bioassessment Concepts and Field Techniques

2-day Bioassessment Laboratory and Data Analysis

Annual Pre-season Calibration and Training Exercise

Bioassessment Course Co-Instruction and Annual Review

Participate in Annual CABW Meetings



2011 NorCal SWAMP Crew

Annual Pre-season Calibration
and Training Exercise - May 5

2011 Bug/Algae Field Classes

A group of six people, three men and three women, are standing in a line outdoors on a grassy area. They are dressed in casual outdoor attire, including hats, sunglasses, and t-shirts. Some are holding papers or clipboards. In the background, there is a tennis court, a small building, and a range of mountains under a blue sky with scattered clouds.

Costa Mesa April 12-13

Moss Landing April 26-27

Sacramento May 18-19

Bishop June 7-8

Redding June 14-15

Arcata July 18-19