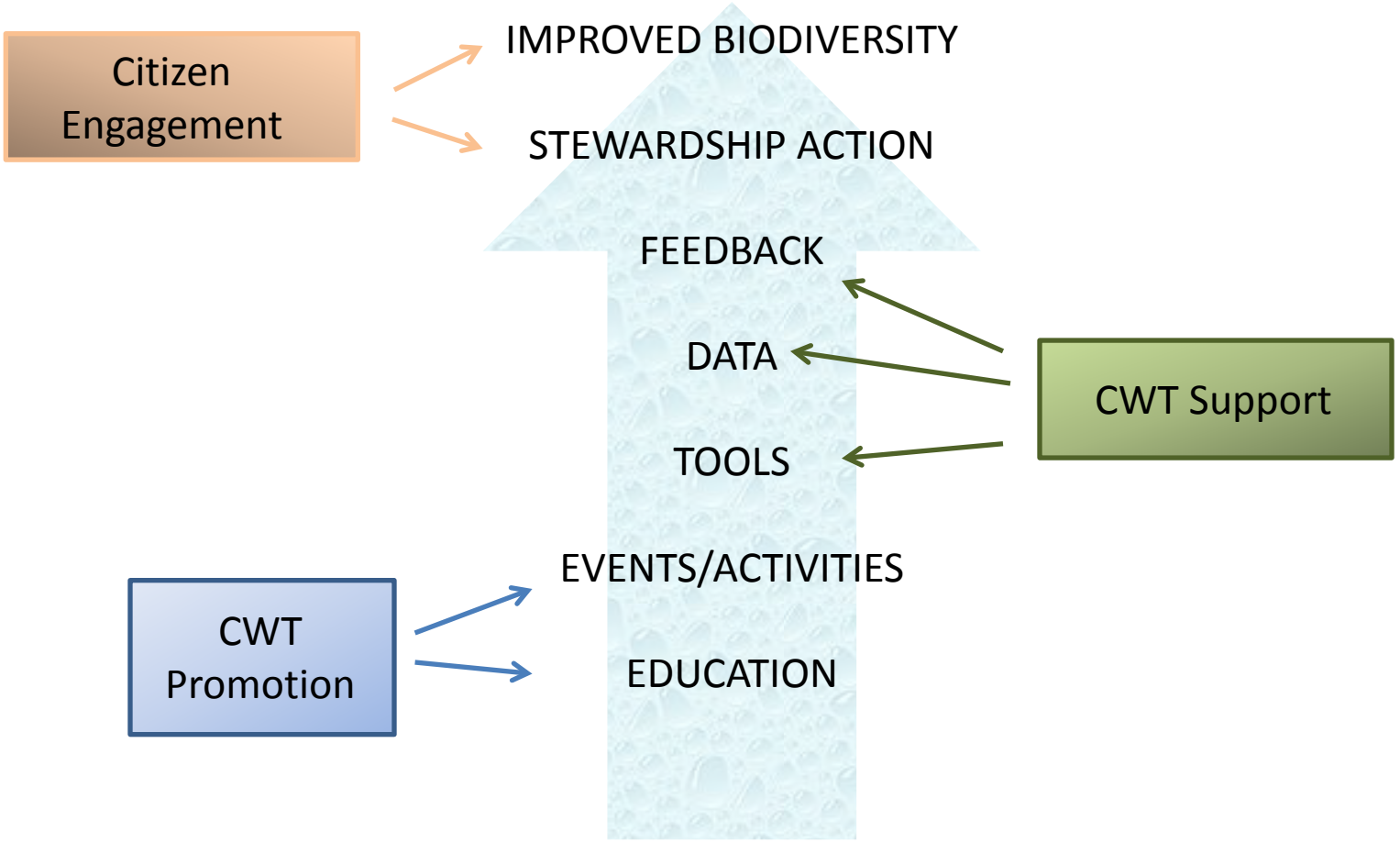
New Tools and Videos from the SWRCB's Clean Water Team

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml
www.YouTube.com/CleanWaterTeamVideos
www.YouTube.com/CWQMCN
www.waterboards.ca.gov/resources/email_subscriptions

Erick Burres
Citizen Monitoring Coordinator
SWRCB's Clean Water Team
eburres@waterboards.ca.gov

CLEAN WATER TEAM'S AREAS of IMPACT

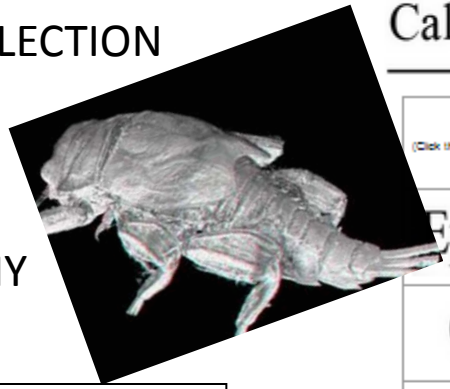
Citizen Monitoring (*Citizen Science & Volunteer Monitoring*)
for the protection of Stream Biodiversity



FUTURE APPS:

- CA DIGITAL REFERENCE COLLECTION
- VISUAL PHYSICAL HABITAT ASSESSMENT
- 3D IMAGES SUPPORTING

BMI ANATOMY AND TAXONOMY



Watershed/ Stream: _____ Date/ Time: _____

Company/ Agency: _____ Sample ID Number: _____

Site Description: _____

Circle the appropriate score for all 20 habitat parameters. Record the total score on the front page of the CBW.

Parameters to be evaluated within the sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 70% (50% for low gradient streams) of substrate favorable for epifaunal colonization and fish cover; most favorable is a mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% (30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% (10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% (10% for low gradient streams) stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/ Depth Regimes *(deep<0.5 m, slow<0.3 m/s)*	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow).	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

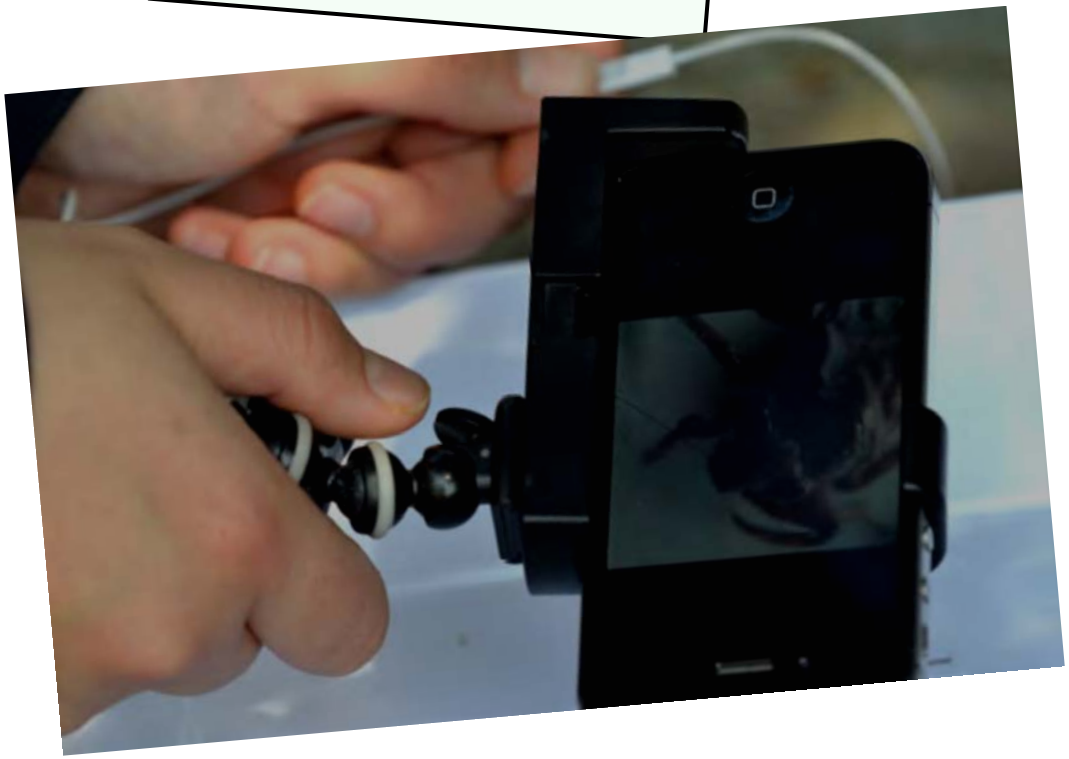
California Digital Reference Collection

Orders (Click the banner to jump to a specific order within the family-level page)	Habitus photo (Click thumbnail for larger image)	Distinguishing characteristics
Ephemeroptera		Three "tails" or cerci, wi… dorsal or lateral, usually …
Odonata		Mask-like labium; gi… abdomen (Dragon… abdomen (Dam…
Plecoptera		Two "tails" or cerci; gills (e… present on thorax, or on th… abdominal segments; two t…
Hemiptera		"Half wings" – first set of wings half membranous and half sclerotized (looks like an "X"); piercing-sucking mouthparts
Megaloptera		Well-developed mandibles, four-segmented antennae. Head and abdomen are patterned; the head is also quadrate. Two claws on thoracic legs. Segmented lateral gillis on abdomen.
Neuroptera		Long antennae, slender legs with single claws. Transparent gills on ventral side of abdominal segments. Mouthparts elongate and unsegmented.
Trichoptera		No "tails." Just anal prolegs with claws; thorax partially or fully sclerotized; membranous abdomen. May have a "case" built of various materials
Lepidoptera		Head is distinct with a ring of simple eyes. Thorax and legs are segmented. Prolegs and anal prolegs present on abdominal segments.
Coleoptera		No anal prolegs but possibly claws.Bodies of larvae may be completely sclerotized; adults have a hardened first pair of wings ("elytra").
Diptera		Head may be sclerotized (and visible) or reduced. Legs are not sclerotized. Body fleshy (possibly with clawed prolegs) with various types of breathing structures on the tail end.
Non-Insects		Various characteristics, please see non-insects page.

As Discussed at 20th CABW

www.dfg.ca.gov/abl/Lab/california_referencecollection.asp

Mobile Device
Macro Lens Converters



California Digital Reference Collection

CLEAN WATER TEAM

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Aquatic Bioassessment Laboratory

A digital resource tool to assist citizen scientists identify and learn about California's stream dwelling benthic macroinverbrates.

Made to be portable for easy access streamside.

Created to assist identification of organisms to the family level.

When using other field guides or taxonomy books, you can refer to this collection of images.

Erick Burres, Citizen Monitoring Coordinator – SWRCB Clean Water Team
Janet Hsiao, Scientific Aid – SWRCB Clean Water Team
Daniel Pickard, Aquatic Entomologist Chico Aquatic Bioassessment Laboratory
Brian Taylor, Student Assistant – SWRCB Clean Water Team

A similar version of this document is available online at:
www.dfg.ca.gov/abl/Lab/referencecollection.asp.
This version was prepared April 2014.

Benthic Macroinvertebrate (BMI)

Benthic - live on, under, and around rocks and sediment on the bottoms of lakes, rivers, and streams.

Macro- are visible to the eye without the aid of a microscope.

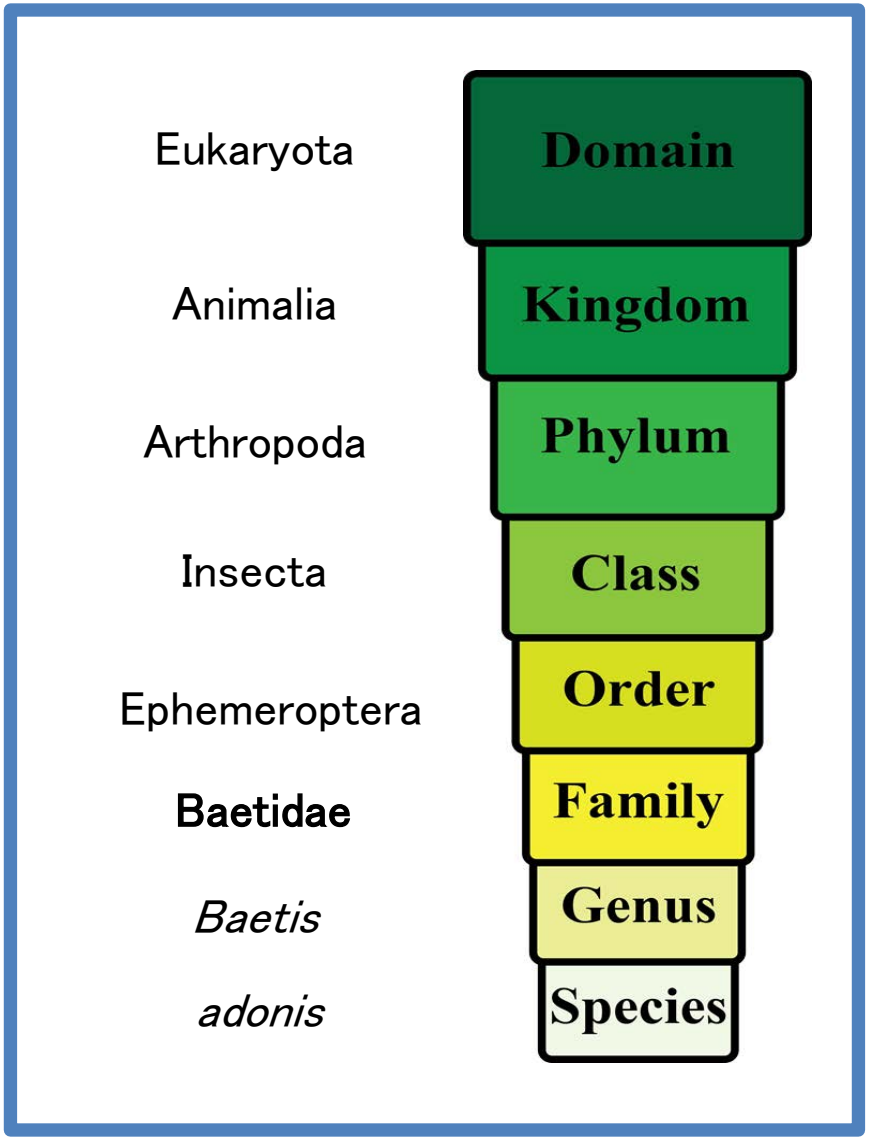
Invertebrates- organisms without backbones

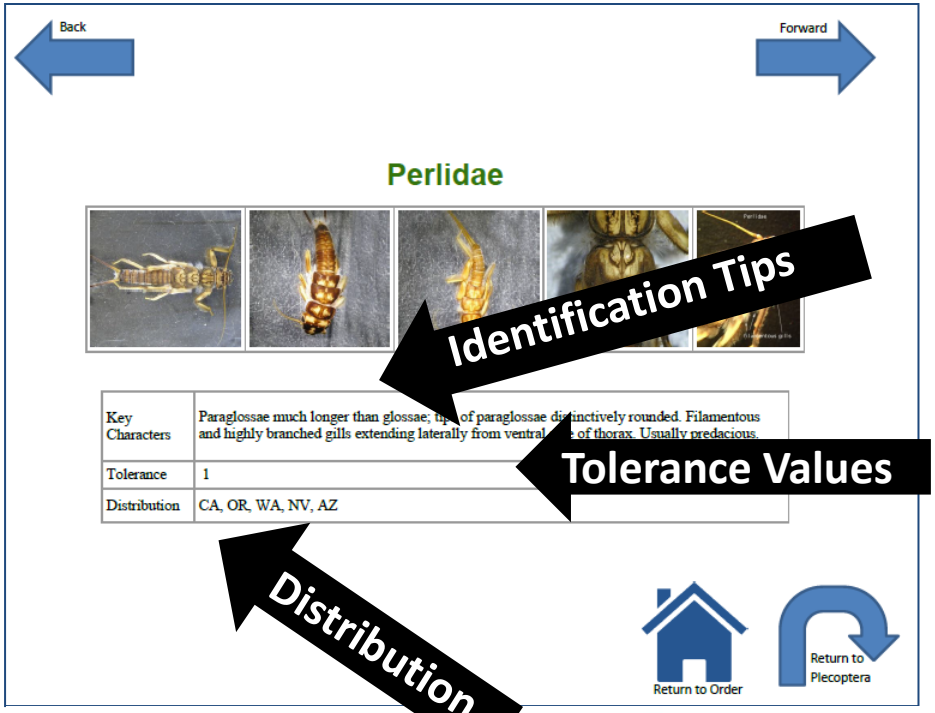
Some of the organisms you may find will be larvae (immature) and some will be adults.

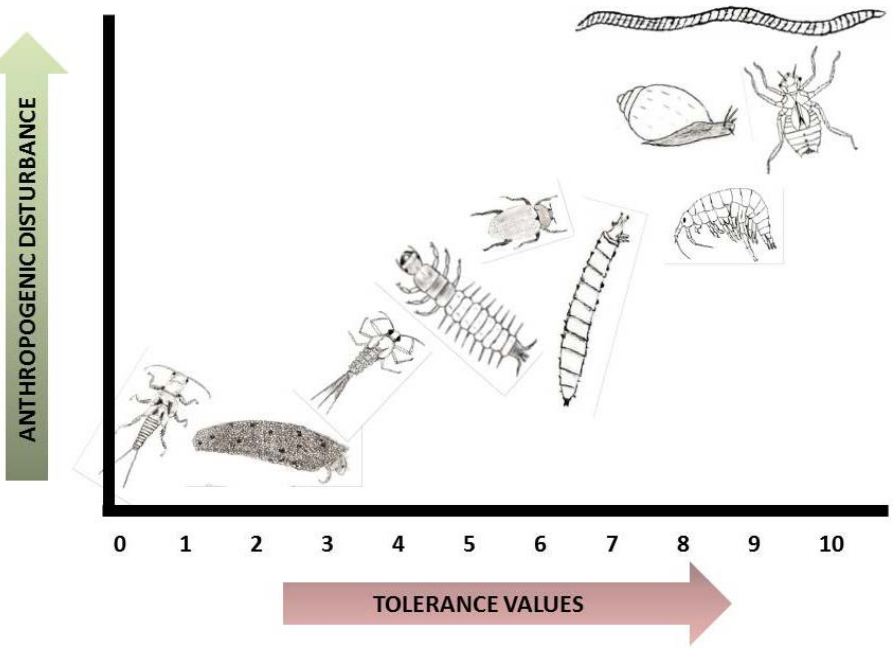
A larval *Baetis adonis* mayfly.

An adult Elmide, riffle beetle.

Taxonomic Hierarchy







Many benthic macroinvertebrate families can only be found in select locations within preferred habitat are not found everywhere in California.

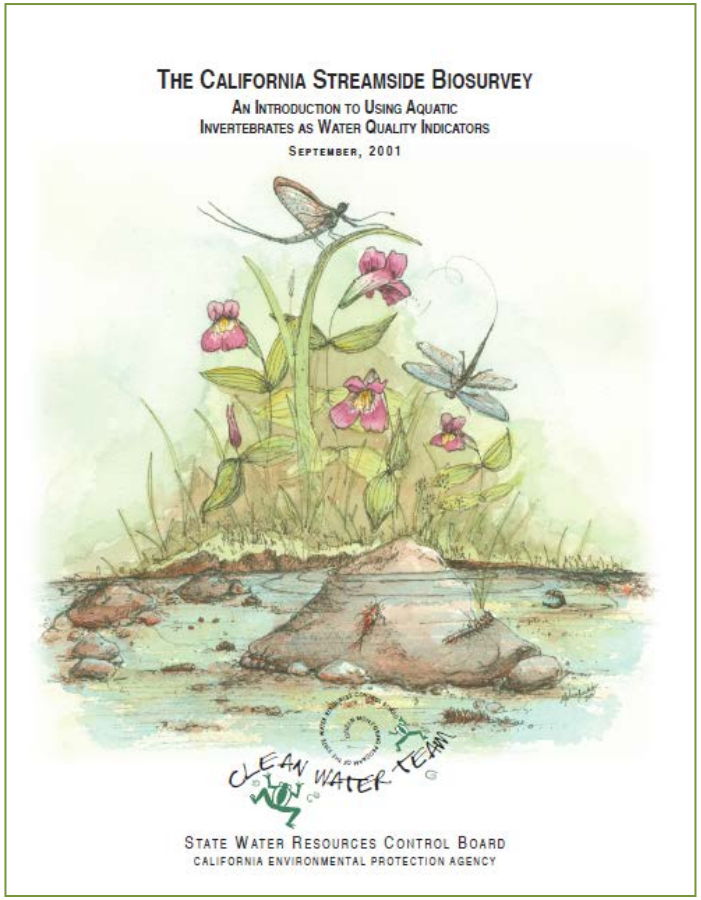
Some of the benthic macroinvertebrates found in California can also be found in its neighboring states, other western states, Canada and or Mexico.

Tolerance Values provide a measure of the sensitivity of aquatic organisms to anthropogenic disturbances and have historically provided a useful tool for assessing the biological condition of streams and rivers.

Tolerance are based on a family's tolerance, ranging from 0 (least tolerant) to 10 (most tolerant).

A **biosurvey** is literally a "life-survey", a simple test of stream health that involves collecting and classifying stream life. The biosurvey described here, and more extensive sampling known as **bioassessment**, are tools for measuring stream water quality and habitat health based on the types of invertebrate organisms that live on the stream bottom.

Aquatic insects and other invertebrates are the most common form of animal life in streams. They live among algae, aquatic plants, and many microscopic organisms (like bacteria). **Macroinvertebrates** (those invertebrates visible to the unaided eye) play many roles in the aquatic food web--they help break down organic debris, recycle nutrients, and provide food for fish, amphibians and riparian birds. Some of these organisms can live and even thrive under polluted conditions but many others require clean and cold water to survive**. The variety and types of organisms present are indicators of the health of the stream.**

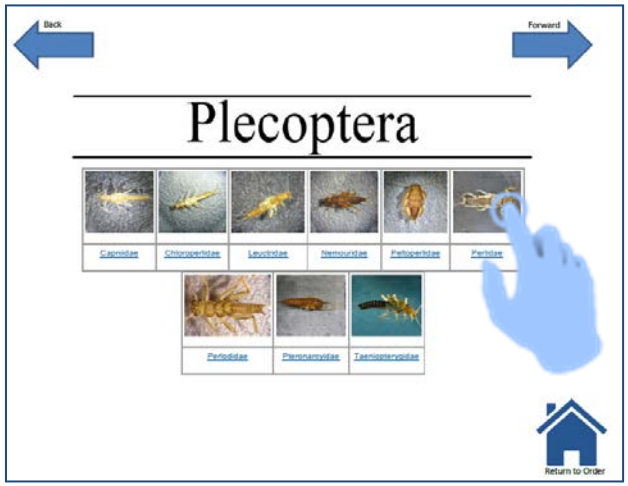


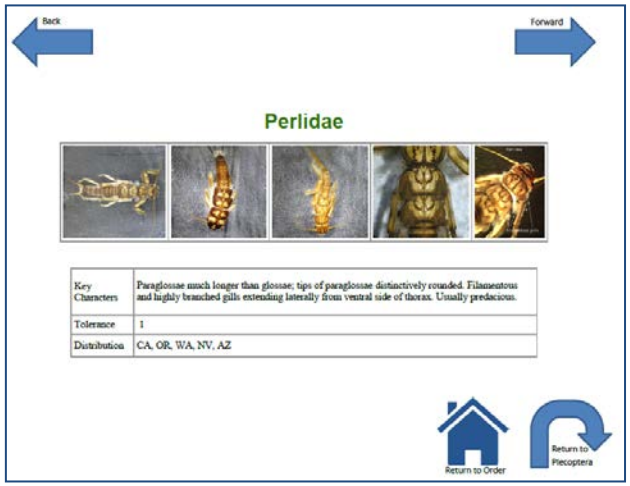
The California Streamside Biosurvey & Bio-encuesta para los arroyos de California
www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.shtml#30

Citizen Science & Water Quality Monitoring
www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml

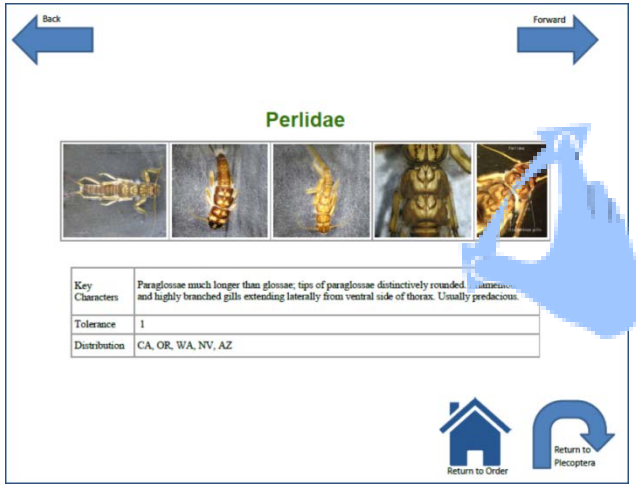
The Standard Taxonomic Effort List is a complete list of all the bentic macroinvertebrates found in California's wadeble streams. http://safit.org/ste.html

ORDER	HABITUS PHOTO	DISTINGUISHING CHARACTERISTICS
Ephemeroptera (mayflies)		Three "tails" or cerci, with gills on abdomen (either dorsal or lateral, usually plate-like) and one tarsal claw.
Odonata (dragonflies, damselflies)		Mask-like labium; gills are internalized within the abdomen (Dragonflies) or external on the end of the abdomen (Damselflies).
Plecoptera (stoneflies)		Two "tails" or cerci; gills (either plumose or finger-like) present on thorax, or on thorax and first few abdominal segments, two tarsal claws.
Hemiptera (true bugs)		lf wings" – first set of wings half membranous and half hized (looks like an "X"); piercing-sucking mouthparts
Megaloptera (alderflies, dobsonflies, fishflies)		loped mandibles, four-segmented antennae. Head and re patterned; the head is also quadrate. Two claws on s. Segmented lateral gills on abdomen.
Neuroptera (spongeflies)		nae, slender legs with single claws. Transparent gills de of abdominal segments. Mouthparts elongate and d.
Trichoptera (caddisflies)		s," just anal prolegs with claws; thorax partially or fully sclerotized, membranous abdomen. May have a "case" built of various materials
Lepidoptera (moths, butterflies)		Head is distinct with a ring of simple eyes. Thorax and legs are segmented. Prolegs and anal prolegs present on abdominal segments.
Coleoptera (beetles)		No anal prolegs but possibly claws.Bodies of larvae may be completely sclerotized; adults have a hardened first pair of wings ("elytra").
Diptera (true flies)		Head may be sclerotized (and visible) or reduced. Legs are not sclerotized. Body fleshy (possibly with clawed prolegs) with various types of breathing structures on the tail end.
Non-Insects		Various characteristics, please see non-insects page.





TOUCH SCREEN NAVIGATION



Anatomic Detail

www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/351e_bugstogo0414.pdf

A California Water Quality Monitoring Collaboration Network Presentation

CALIFORNIA WATER QUALITY MONITORING COUNCIL

Aquatic Bioassessment Laboratory

CLEAN WATER TEAM
CITIZEN MONITORING PROGRAM OF THE STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

SWAMP
Surface Water Ambient Monitoring Program

SAFIT

Introduction to Identifying the Freshwater Stream Dwelling Insect Orders of California

October 2014

Presenter:

Joseph Slusark
Taxonomist
Chico Aquatic Bioassessment Lab

Joe joined the Aquatic Bioassessment Lab (ABL) in 2001. He has over 20 years of macroinvertebrate identification from across the US. His current work includes identification of all ABL projects, and internal QC of other ABL projects. Joe is involved with the development and implementation of bioassessment QA and standardized data reporting efforts for the state of California. Joe is a member of SAFIT's board of directors and is active in organizing taxonomic workshops and web based taxonomic training sessions for professionals and citizen monitors. His taxonomic expertise is with *Ephemeroptera* and *Chironomidae*. He holds a B.S. in Wildlife Science and M.S. in Entomology/Ecology from Penn State University.

www.youtube.com/watch?v=o_kAzdG17-o&list=UUlrumrB_lrzOL8S-xv9FaPQ

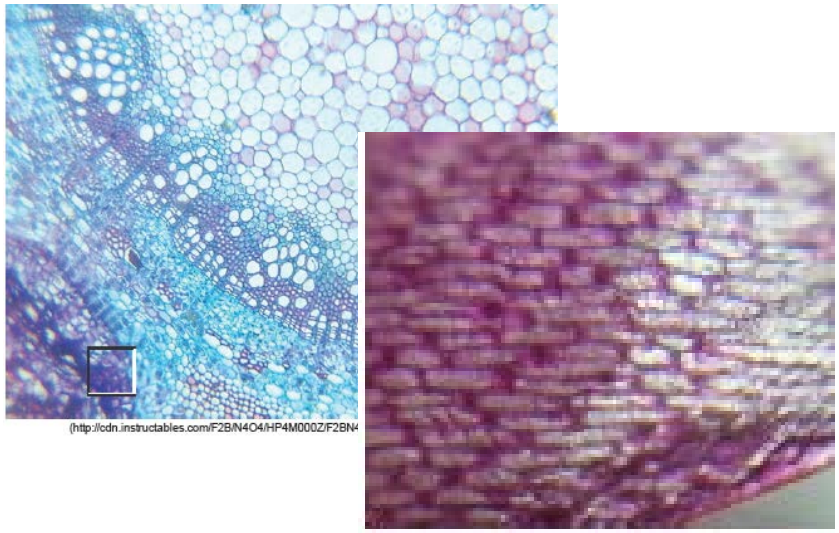
Soft-Bodied Stream Algae of California

Algae as Indicators for Ecosystem Health

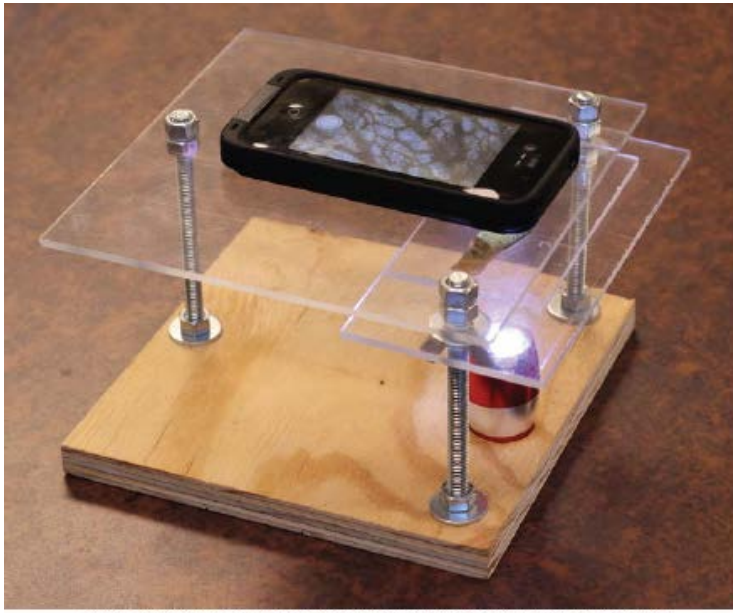
To incorporate algae into the bioassessment toolbox, SWAMP funded the development of a guidance document (the "Algae Plan") that established a detailed road map for achieving robust and consistent algae bioassessment in California. The Algae Plan recommends a structured and standardized approach to algal bioassessment. Standardized infrastructure and tools will ensure consistency among users.

SWAMP
Surface Water Ambient Monitoring Program

http://dbmuseblade.colorado.edu/DiatomTwo/sbsac_site/proj_desc.html



This DIY conversion stand is more than capable of functioning in an actual laboratory setting. With magnification levels as high as 175x With the addition of a second lens magnification can be as high as 375x, plant cells and their nuclei are easily observed!



www.instructables.com/id/10-Smartphone-to-digital-microscope-conversion/

Visual Physical Habitat Assessment Enhanced Data Sheet (Excel/PDF/Video)

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

STREAM NAME	
LOCATION	
STATION NUMBER	
STREAM CLASS	
LAT/LONG	
RIVER BASIN	
STORET # / CEDEN #	
GROUP or AGENCY	
INVESTIGATORS	

FORM COMPLETED BY							
DATE		TIME			AM		PM
REASON FOR SURVEY							

Habitat Parameter	Condition Category					
	Poor		Marginal	Suboptimal	Optimal	
1. Epifaunal Substrate/ Available Cover	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.		20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	Video Tip 1.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
2. Embeddedness	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.		Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Video Tip 2.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
3. Velocity/Depth Regime	Dominated by 1 velocity/ depth regime (usually slow-deep).		Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Video Tip 3.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
4. Sediment Deposition	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.		Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Video Tip 4.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
5. Channel Flow Status	Very little water in channel and mostly present as standing pools.		Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Video Tip 5.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
6. Channel Alteration	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization or dredging absent or minimal; stream with normal pattern.	Video Tip 6.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
7. Frequency of Riffles (or bends)	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.		Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Video Tip 7.wmv / Watch on YouTube
SCORE	0 1 2 3 4	5 6 7 8 9	10 11 12 13 14	15 16 17 18 19 20		
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.		Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Video Tip 8.wmv / Watch on YouTube
SCORE Left Bank	0 1	2 3 4	5 6 7	8 9 10		
SCORE Right Bank	0 1	2 3 4	5 6 7	8 9 10		
9. Vegetative Protection (score each bank)	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than onehalf of the potential plant stubble height remaining.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not wellrepresented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	Video Tip 9.wmv / Watch on YouTube
SCORE Left Bank	0 1	2 3 4	5 6 7	8 9 10		
SCORE Right Bank	0 1	2 3 4	5 6 7	8 9 10		
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.		Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Video Tip 10.wmv / Watch on YouTube
SCORE Left Bank	0 1	2 3 4	5 6 7	8 9 10		
SCORE Right Bank	0 1	2 3 4	5 6 7	8 9 10		

Total Score 0

2. Embeddedness	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble p… space.
SCORE	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 … 19 20			
3. Velo… epth Regime	Dominated by 1 velocity/ depth regime (usually slow-deep).	Onl… f the 4 habitat re… s present (if fast-…w or slow-shallow are	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	A… me… p… fa… (S… >
SCORE	0 1 2 … 11 12 13 14 … 19 20			
4. Sediment Deposition	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	gra… …diment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Some new increase in bar form… grav… sedi… bott… dep…	L… …islands or

Video Tip 2.wmv

Watch on YouTube

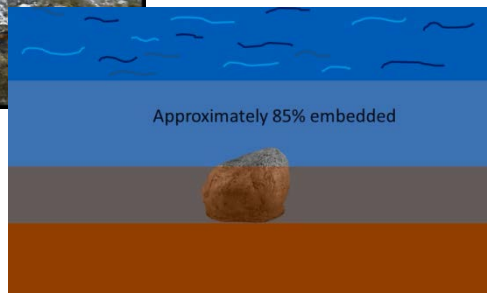
Video Tip 3.wmv

Watch on YouTube

Short Video Tip WMV File

Touch/Click to Select Score

YouTube Video Weblink



Auto Summation of Scores

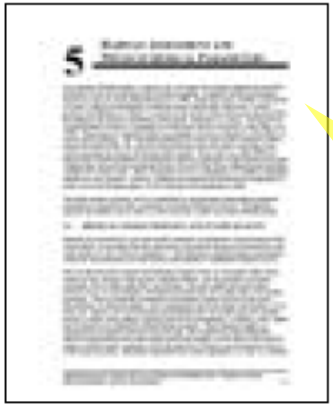
SCORE	Right I

Total Score 0

INSTRUCTIONS AND RELATED RESOURCES

NOTICE: **The spreadsheet above ranks and scores assessment questions from POOR to OPTIMAL (0 - 20). However, the accompanying document and Bioassessment Protocols for Use in Wadeable Streams and Rivers EPA 841-B-99-002, ranks these same questions from OPTIMAL to POOR (20 - 0)**

INSTRUCTIONS: Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish - Second Edition



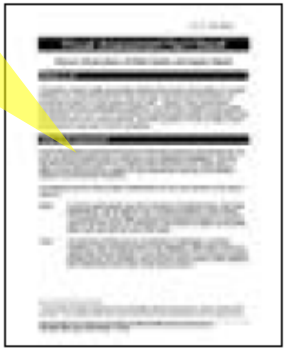
http://water.epa.gov/scitech/monitoring/rsl/bioassessment/index.cfm

CWT's Training PPT: Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Visual Habitat Assessment (PDF)

Inserted PDF Documents

Information Paper 4.2.1 Visual Assessments (PDF)

Visual Assessment Fact Sheet Sensory Observations of Water Quality and Aquatic Habitat (PDF)

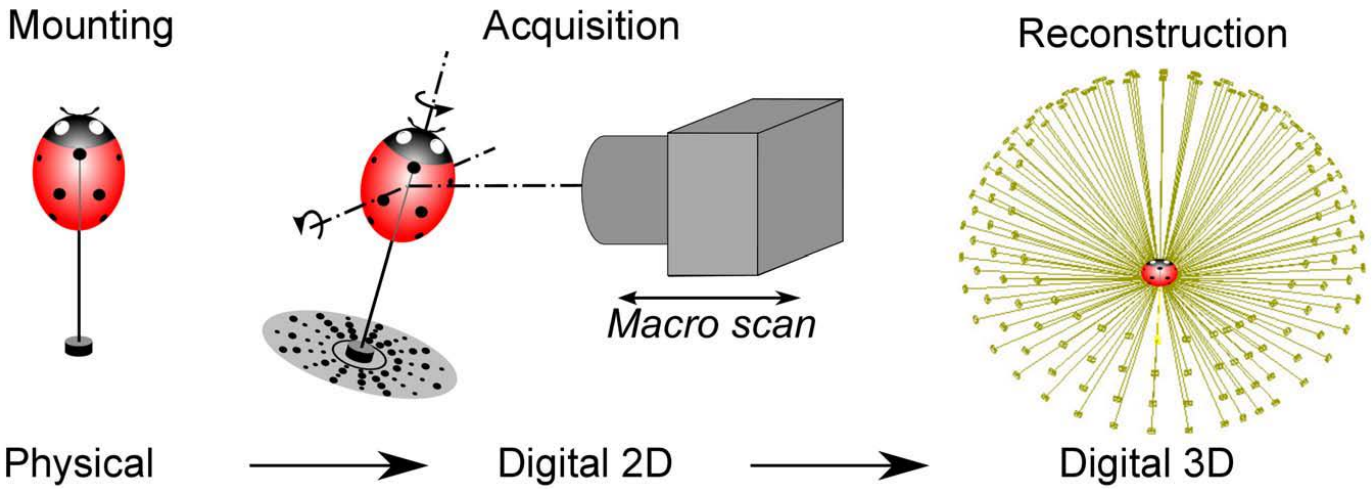


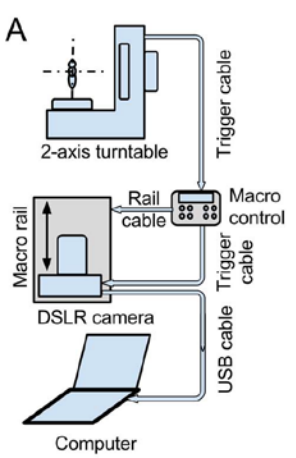
CLEAN WATER TEAM COMPENDIUM www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.shtml

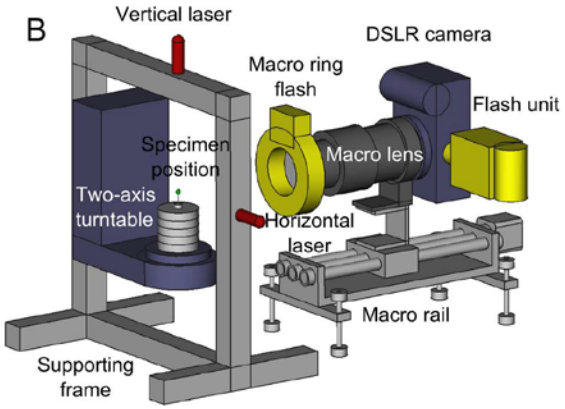
21ST CENTURY CWT

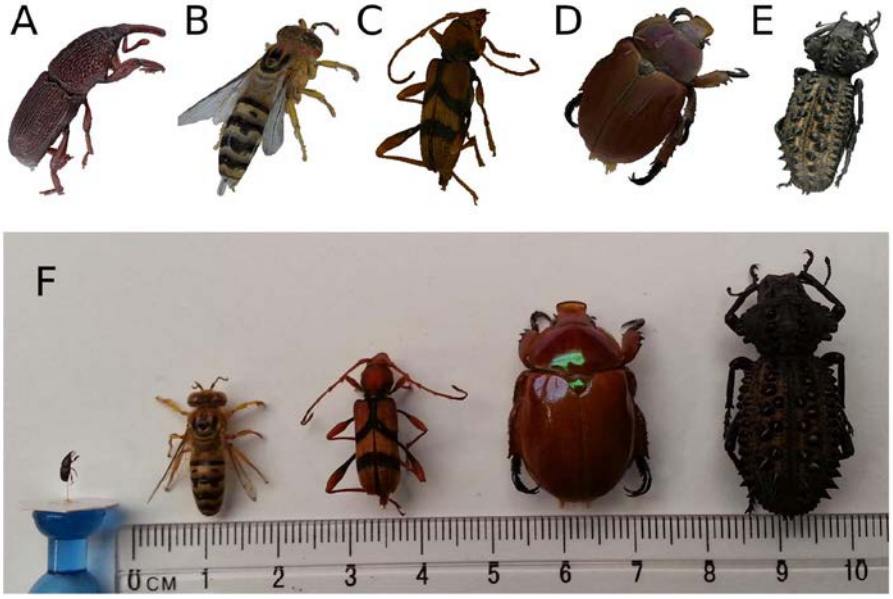
3D – Insect Models


Mayfly by Enupnion
https://sketchfab.com/models/35vujC096yySzhqbTkgIm8TZUg1







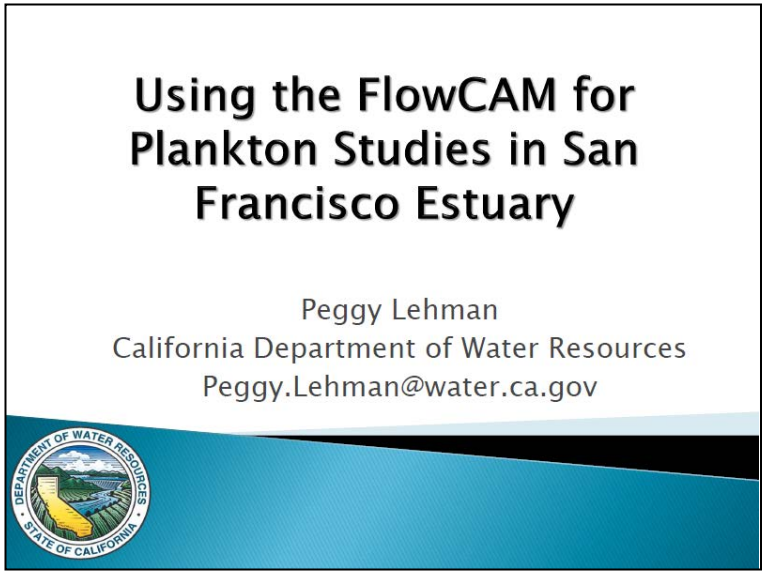


www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0094346

Additional 2014 Activities

2014 Bio-Related CWQMCN Webinar Videos

Using Citizen Scientists to Map Streams During the Hottest Driest times of the Year Dale Turner, TNC AZ



Application of FLowCam in California Peggy Lehman, DWR

www.YouTube.com/CWQMCN & www.YouTube.com/CleanWaterTeamVideos

2014
Conf. Presentations & Posters

9th National Monitoring Conference – Cincinnati, OH

Combined Aquatic Sciences Conference – Portland, OR

Southern California Academy of Science – Camarillo, CA

NWQMC

JOINT AQUATIC SCIENCES MEETING
2014
Portland, Oregon

BRIDGING GENES TO ECOSYSTEMS:
AQUATIC SCIENCE AT A TIME OF RAPID CHANGE
MAY 18-23 / OREGON CONVENTION CENTER

SOUTHERN CALIFORNIA ACADEMY OF SCIENCES
FOUNDED 1891
INCORPORATED 1907
LOS ANGELES

TEST THE WATER

MOBILE LABBOOK

Data Collection
& Digital Record

DATA MANAGEMENT

Data Compliance
& Quality Assurance

REPORT TOOL

Data Trending
& Analysis

FORUM

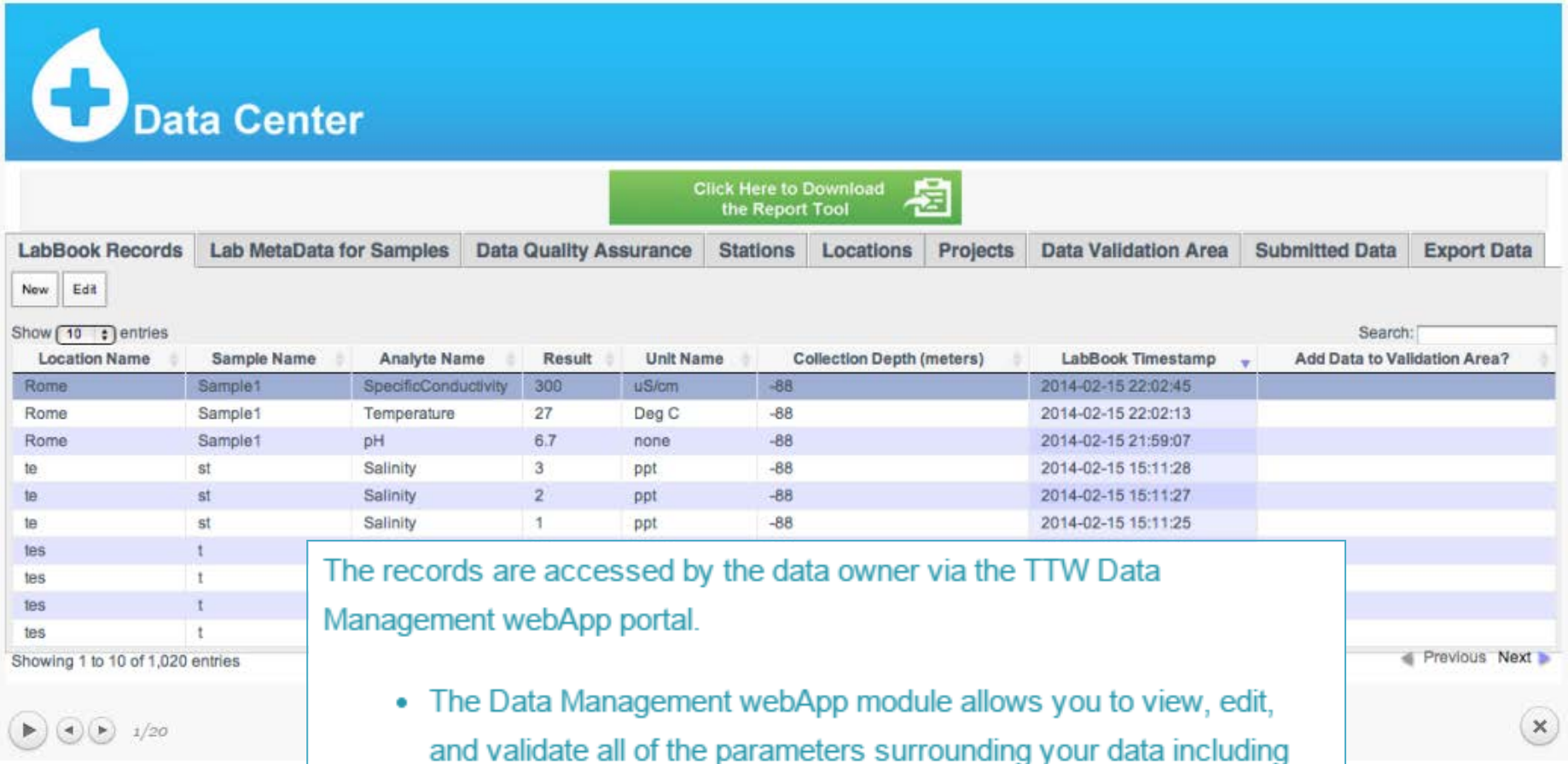
Promote Your Efforts
& Coordinate

http://testthewater.org/

MOBILE LAB BOOK

Our MobileLabBook webApp is designed to support in-the-field activities, by digitally assisting water sample collection and measurement record keeping.

- The MobileLabBook is operational on any mobile smart-phone, Pad, or Computer and maintains operations and data integrity, even in the absence of Internet connection.
- Samples and measurements can be precisely positioned with GPS coordinates and timestamped offering a highly accurate Geospacial Time coordinate positioning of samples and data results.
- After review, digital records are synchronized with the TTW central database



The records are accessed by the data owner via the TTW Data Management webApp portal.

- The Data Management webApp module allows you to view, edit, and validate all of the parameters surrounding your data including comprehensive Quality Assurance fields for equipment and protocol metadata of the digital records.
- TTW data management system has been designed to integrate seamlessly with CEDEN, California's water monitoring database, and allows for an easy data submission process that helps users to have their data meet CEDEN compliance standards.

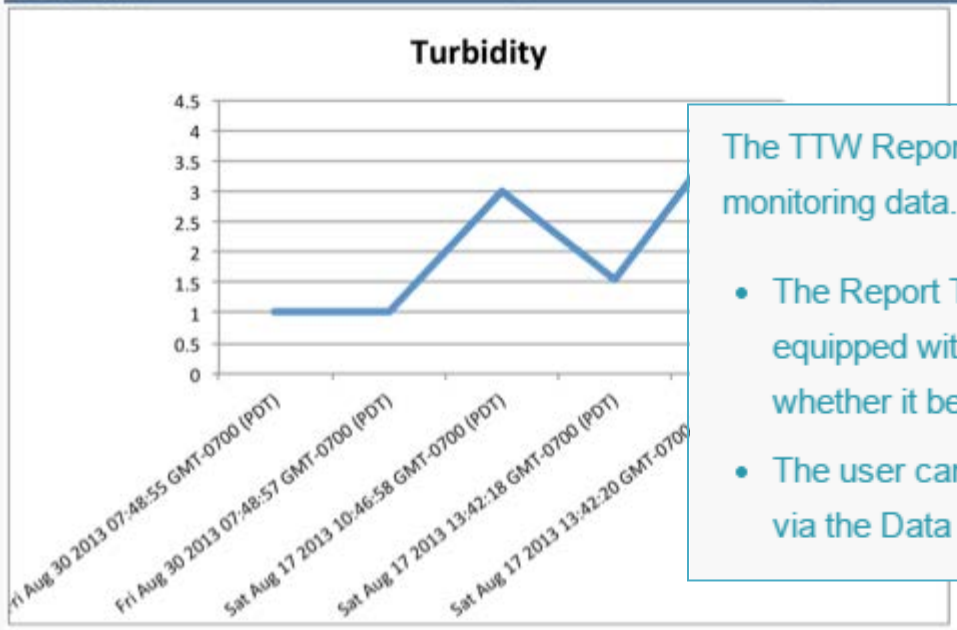
REPORT TOOL

MOBILE LAB BOOK

Location Name	Alameda Watershed
Sample Name	Creekside4

Select a Location

Average of Result	Date & Time Stamp				
Analyte Name	Fri Aug 30 2013 07:48:55	Fri Aug 30 2013 07:48:57	Sat Aug 17 2013 10:46:58	Sat Aug 17 2013 13:42:18	Sat Aug 17 2013 13:42:20
Turbidity	1	1	3	1.538461538	4
Grand Total	**1**	**1**	**3**	**1.538461538**	**4**

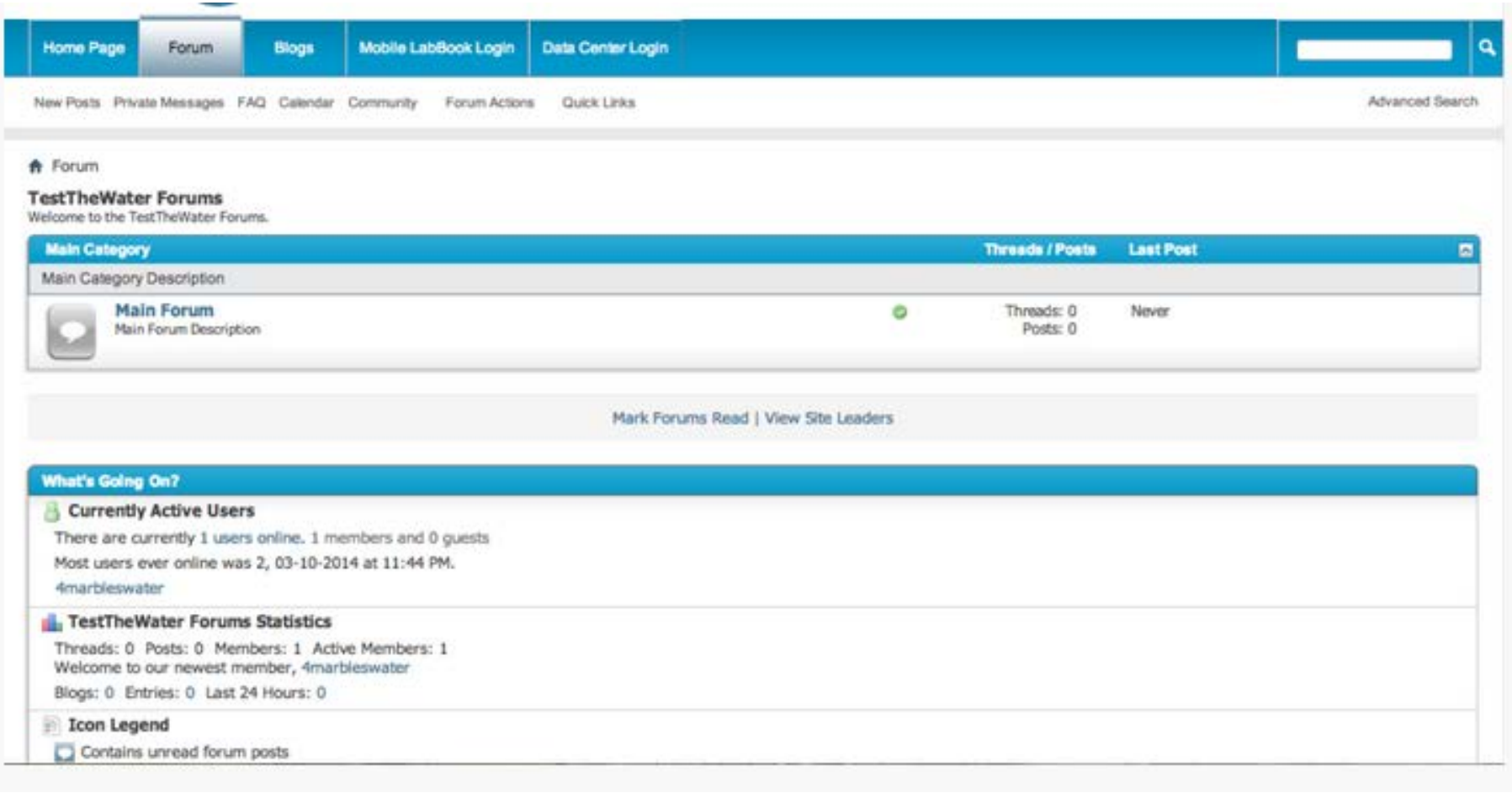


The TTW Report Tool empowers the user to take control of their monitoring data.

- The Report Tool is an excel based data analysis model that comes equipped with tools that enable the user to analyze and trend their data whether it be by location, measurement or data etc.
- The user can export their measurements and observations to the report via the Data Management webApp portal.

FORUM

Our Forum provides a means to connect with other watersheds to share your findings, organize meet-ups, and provide valuable feedback to the Test The Water team to help us continue to deliver the best data gathering and management ecosystem available.



www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml
www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.shtml
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