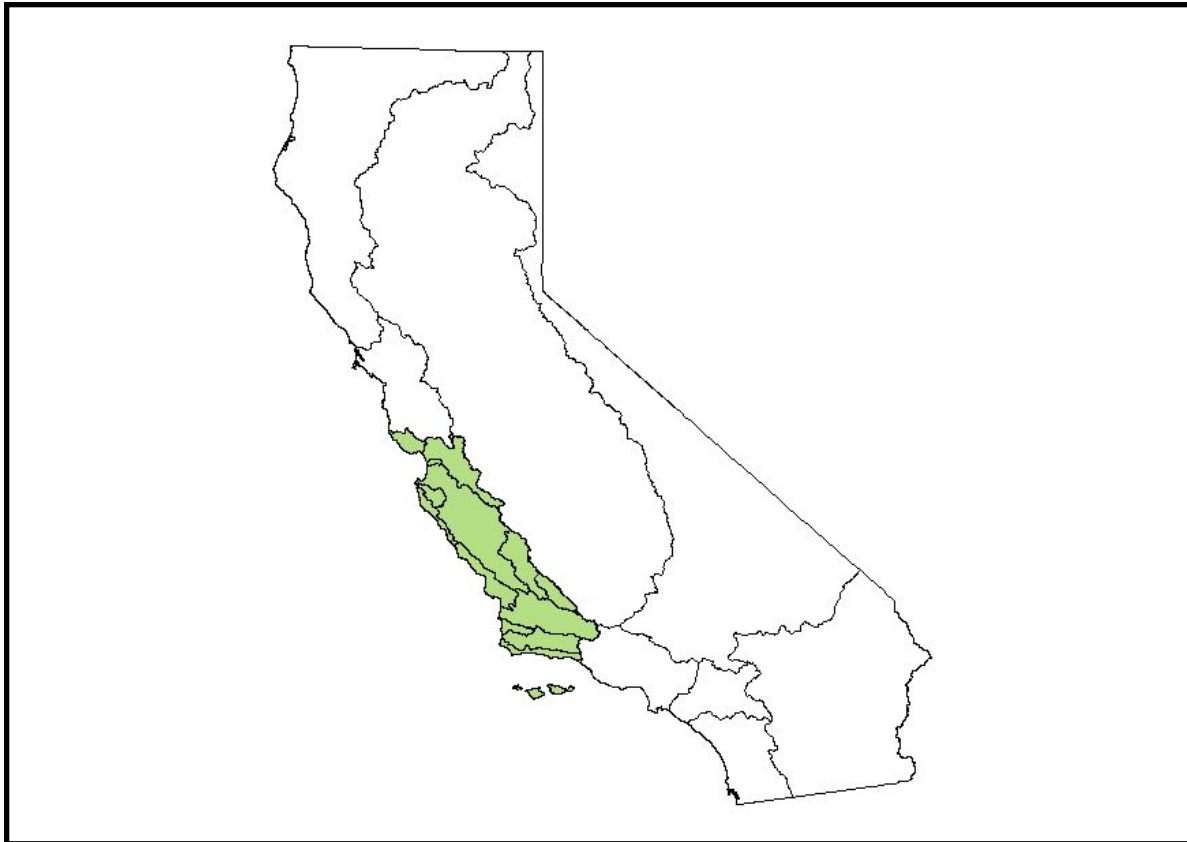


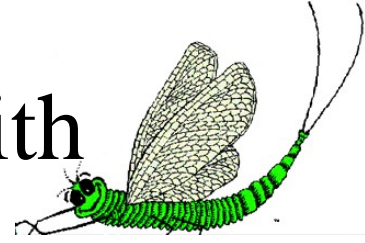
Central Coast Regional Water Quality Control Board



Central Coast Ambient Monitoring Program

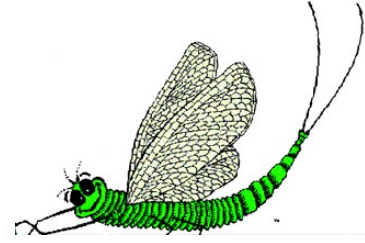
CCAMP

BMI Monitoring in Coordination with the CCRWQCB



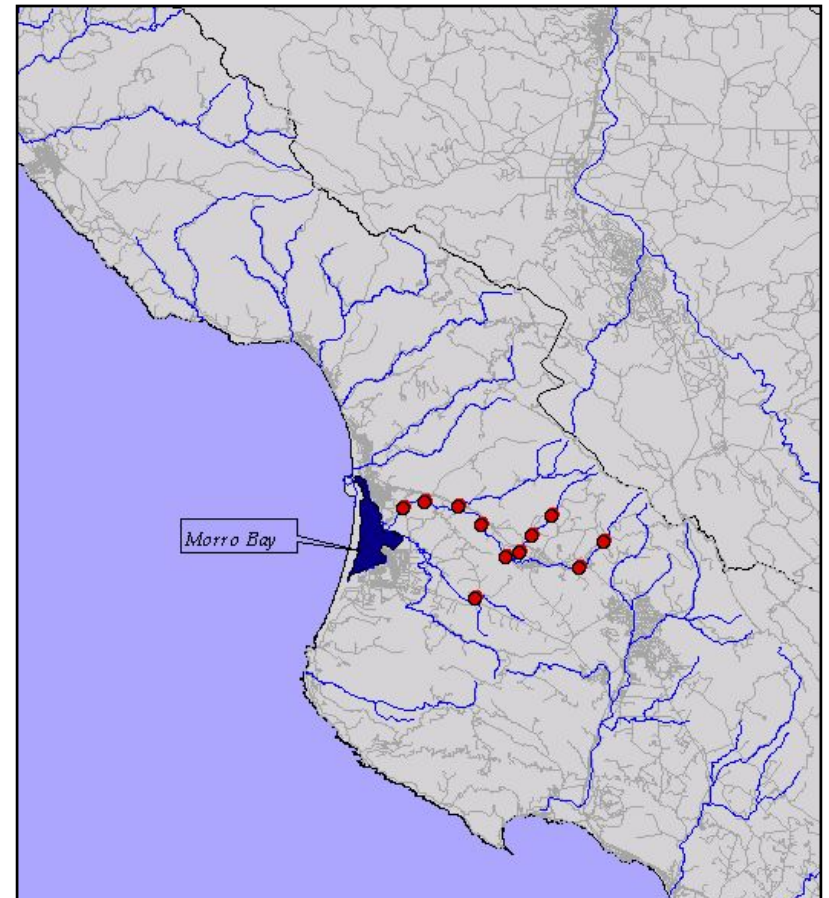
- 1994 – Present
Morro Bay Watershed
 - National Monitoring Program
 - Morro Bay Volunteer Monitoring Program
- 1998 – Present
CCAMP Region 3 Monitoring
 - Watershed Rotation Area Sites
 - Coastal Confluence Sites
- Region 3 Special Studies
 - 1999 Coastal lagoons
 - 2001 UC Davis pesticide use study
 - 2003 Harbors
- Ag Waiver Monitoring

Morro Bay Watershed

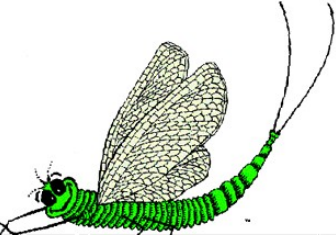


Using CSBP since 1994
(252 samples)

- National Monitoring Program
- ~11 sites sampled annually 1994-1999
- Volunteer Monitoring Program
- 4-8 sites sampled annually 2001-present



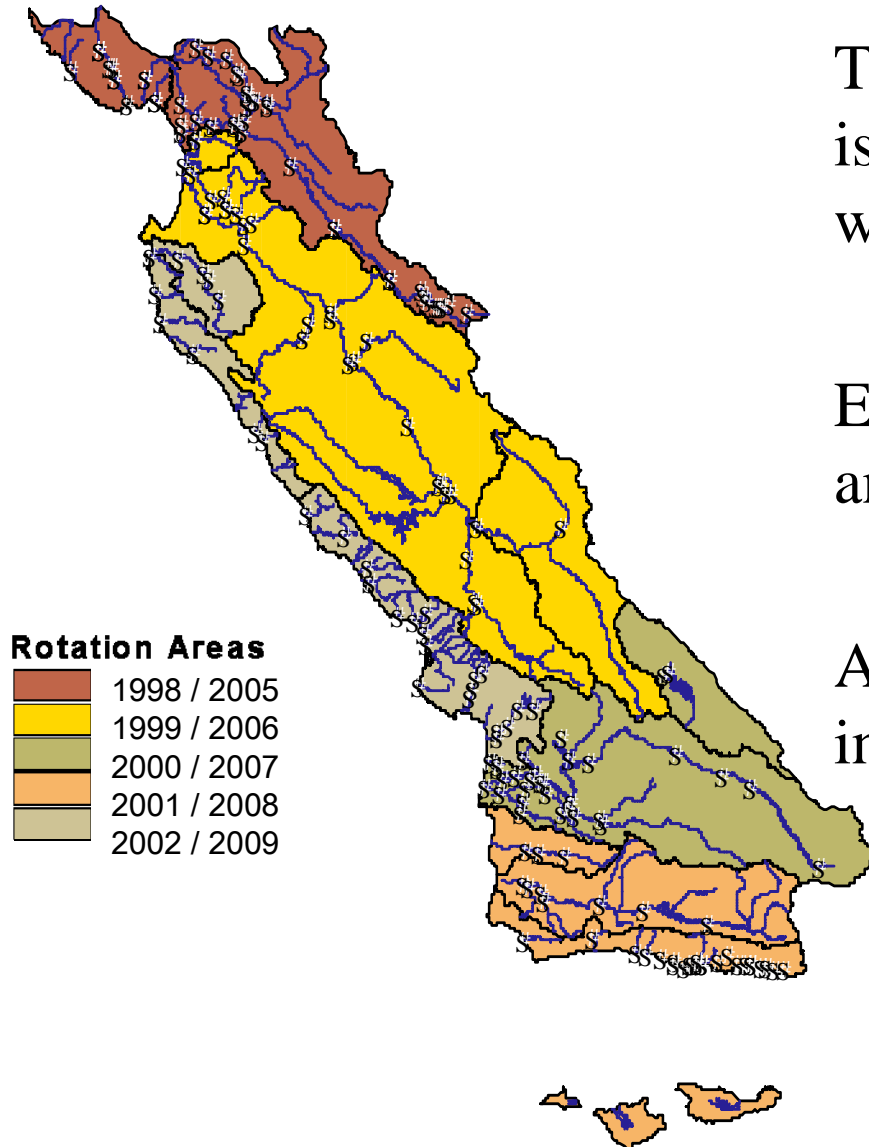
Watershed Rotation Monitoring



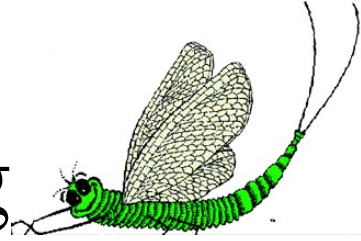
The Central Coast Region
is divided into five
watershed rotation areas

Each watershed area is monitored
and evaluated every 5 years

Approximately 30 monitoring sites
in each rotation area



Coastal Confluences Monitoring



- Region wide monitoring of coastal streams and rivers
- Monitoring is ongoing so data is continuous in all watershed areas
- CCAMP monitors 33 coastal confluence sites

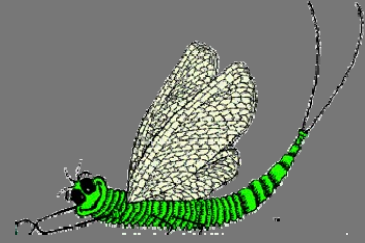


Watershed Rotation and Coastal Confluence Monitoring Data

- Conventional Water Quality (monthly)
- Benthic Macroinvertebrates (annually in spring)
- Tissue Bioaccumulation (annually)
- Sediment Chemistry (annually in spring)
- Water and Sediment Toxicity (annually in spring)

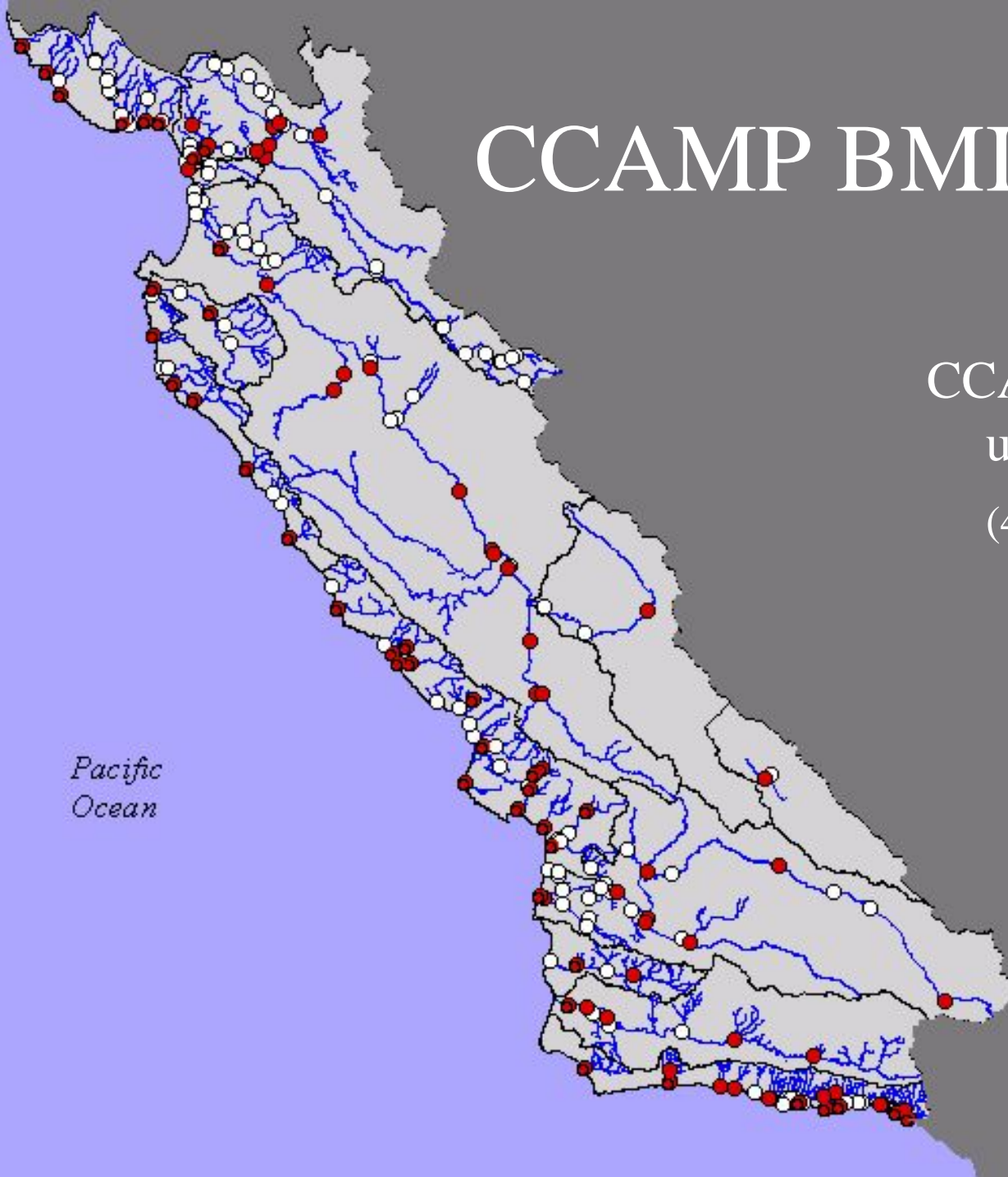


CCAMP BMI Sites

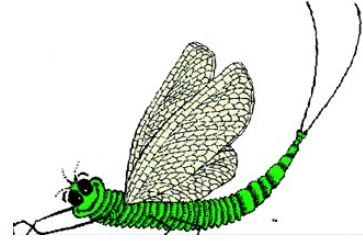


CCAMP BMI monitoring
using CSBP
(483 composite samples)

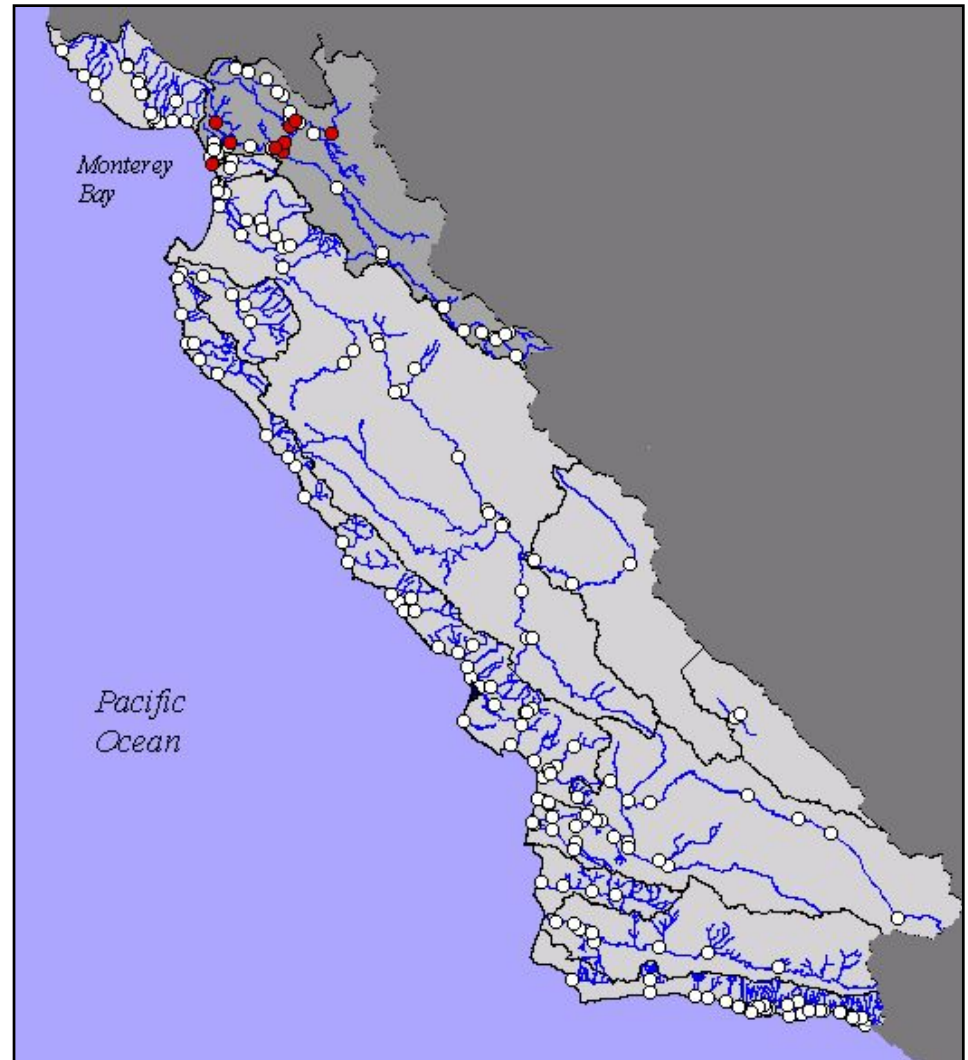
*Pacific
Ocean*



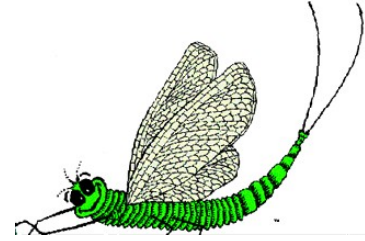
CCAMP BMI Monitoring 1998



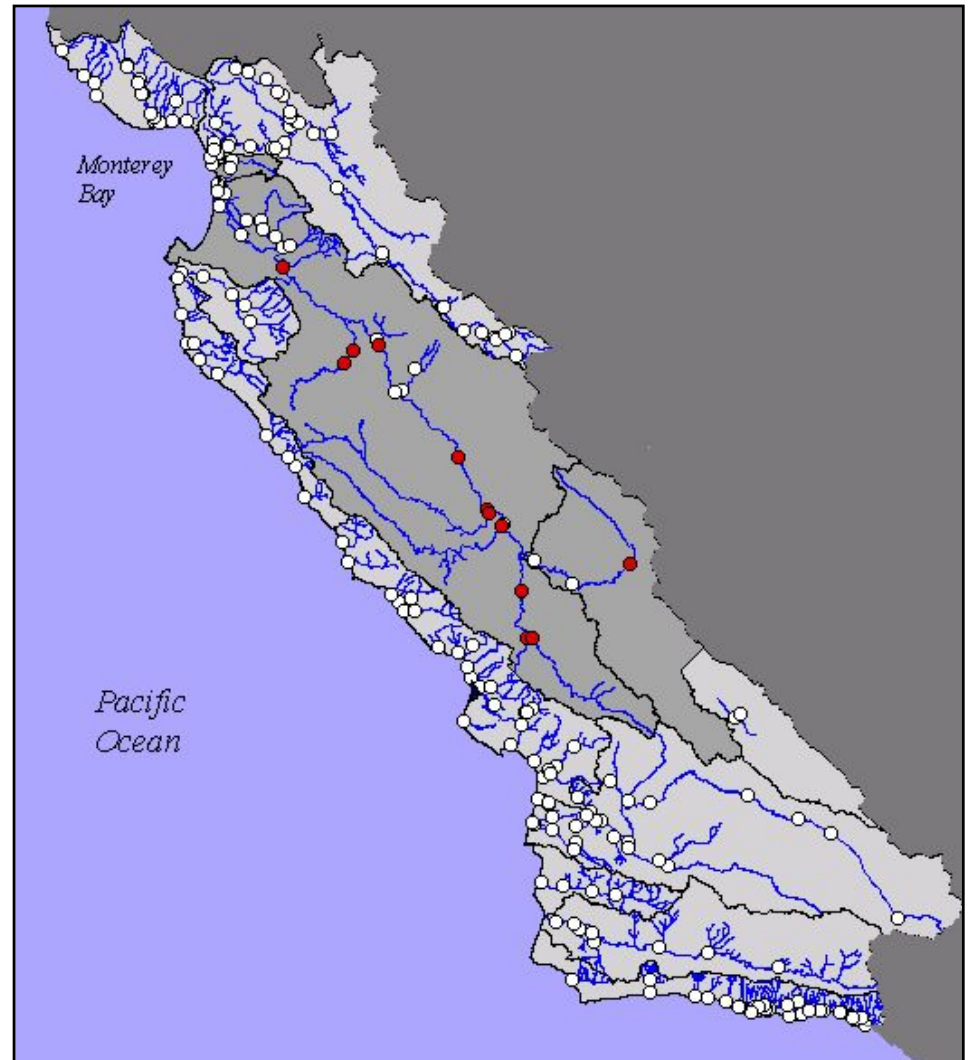
- Pajaro Rotation Area
 - 9 sites



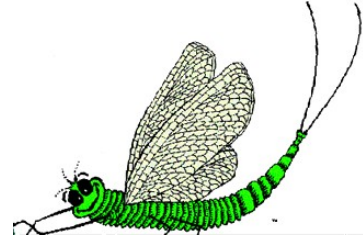
CCAMP BMI Monitoring 1999



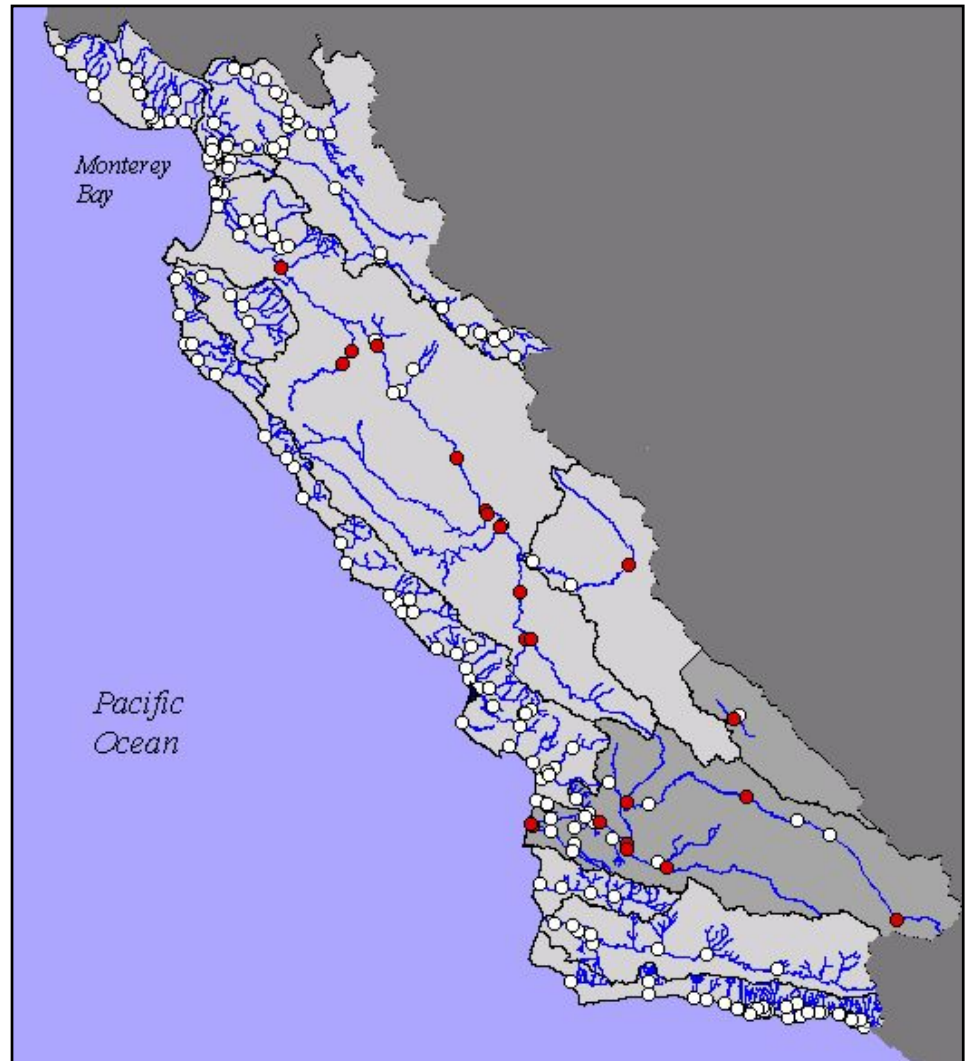
- Salinas Rotation Area
 - 12 sites



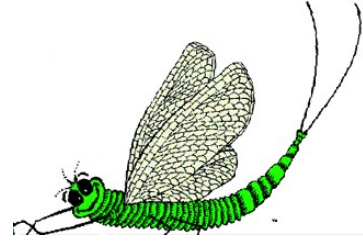
CCAMP BMI Monitoring 2000



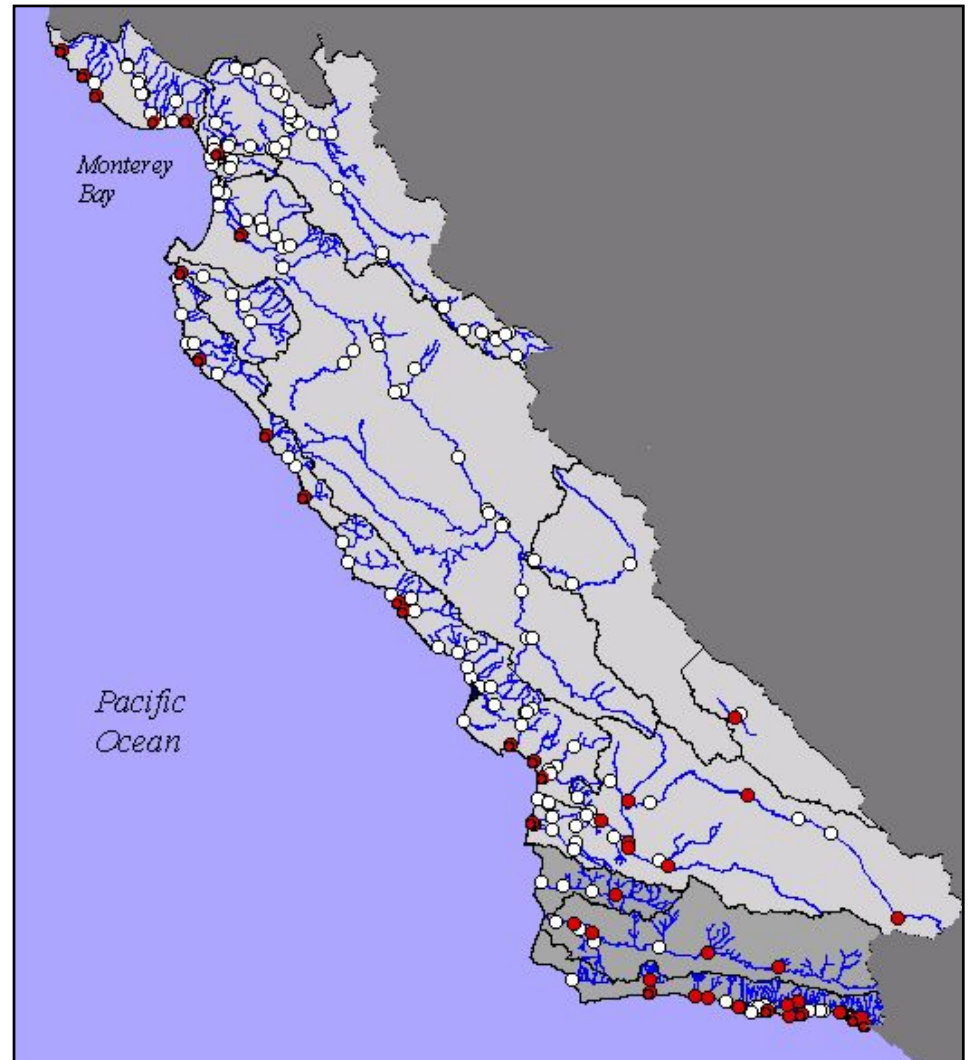
- Santa Maria Rotation Area
 - 10 sites
- Second round of samples in Salinas Rotation Area
 - 12 sites



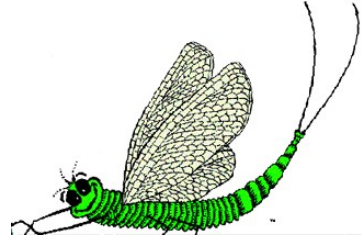
CCAMP BMI Monitoring 2001



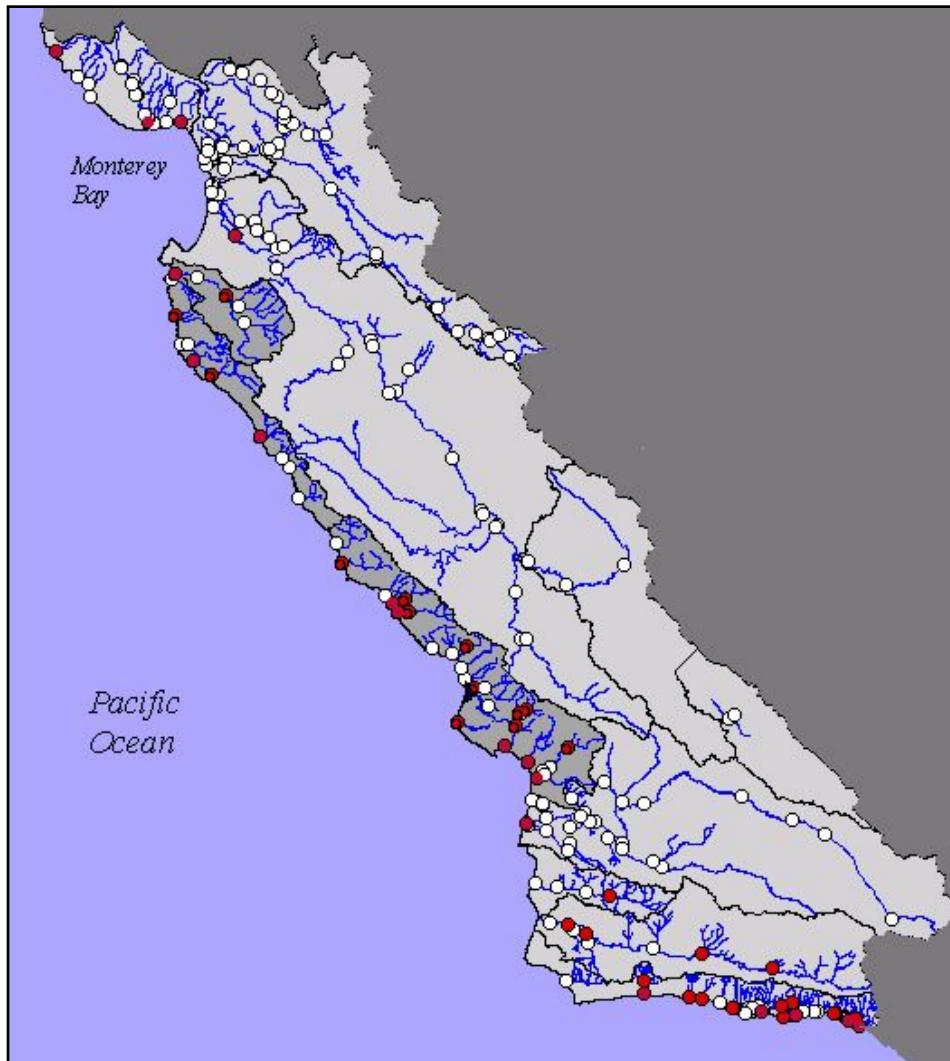
- Santa Barbara Rotation Area
 - 17 sites
- Coastal Confluences
 - 18 sites
- Second round of sampling in Santa Maria Rotation Area
 - 10 sites



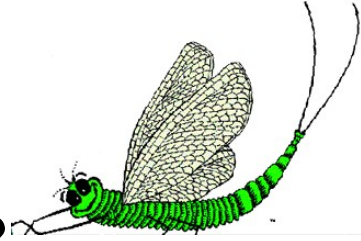
CCAMP BMI Monitoring 2002



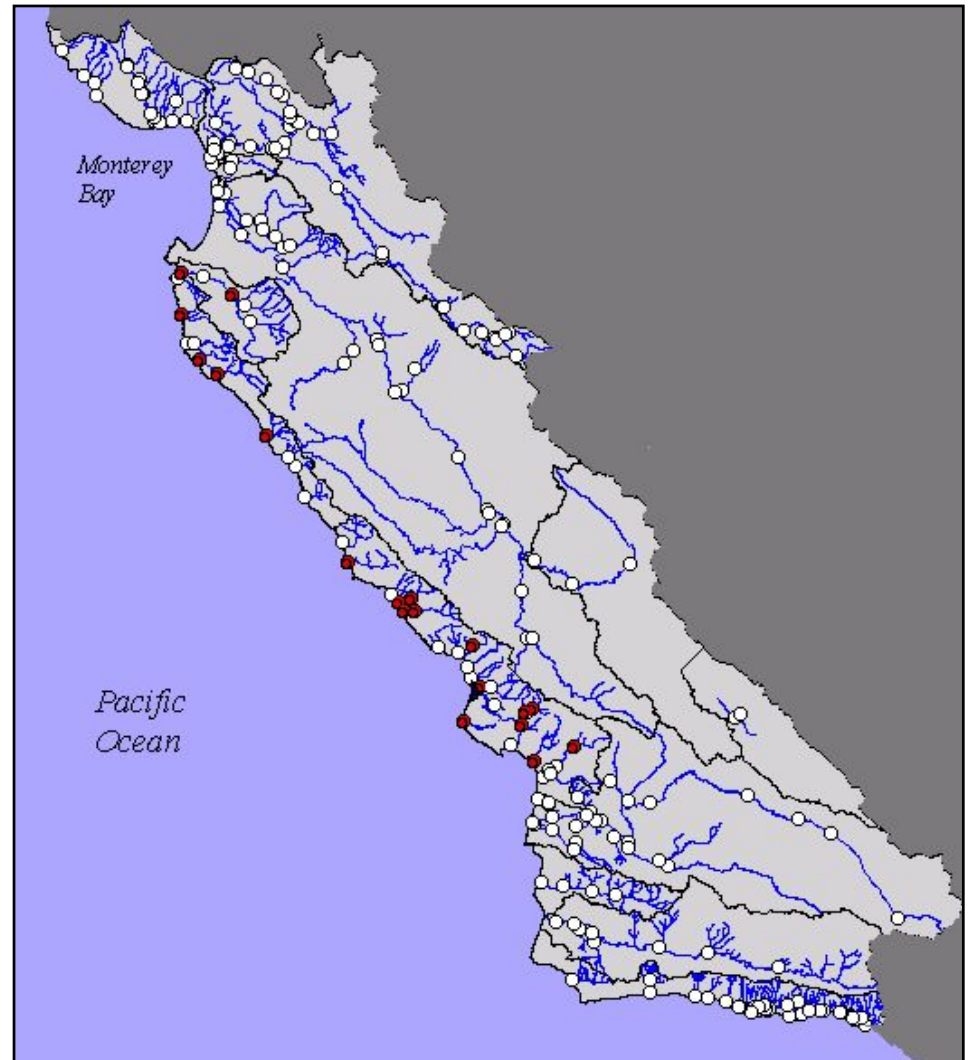
- Santa Lucia Rotation Area
 - 19 sites
- Coastal Confluences
 - 18 sites
- Second round of sampling in Santa Barbara Area
 - 17 sites



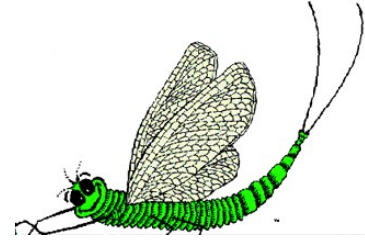
CCAMP BMI Monitoring 2003



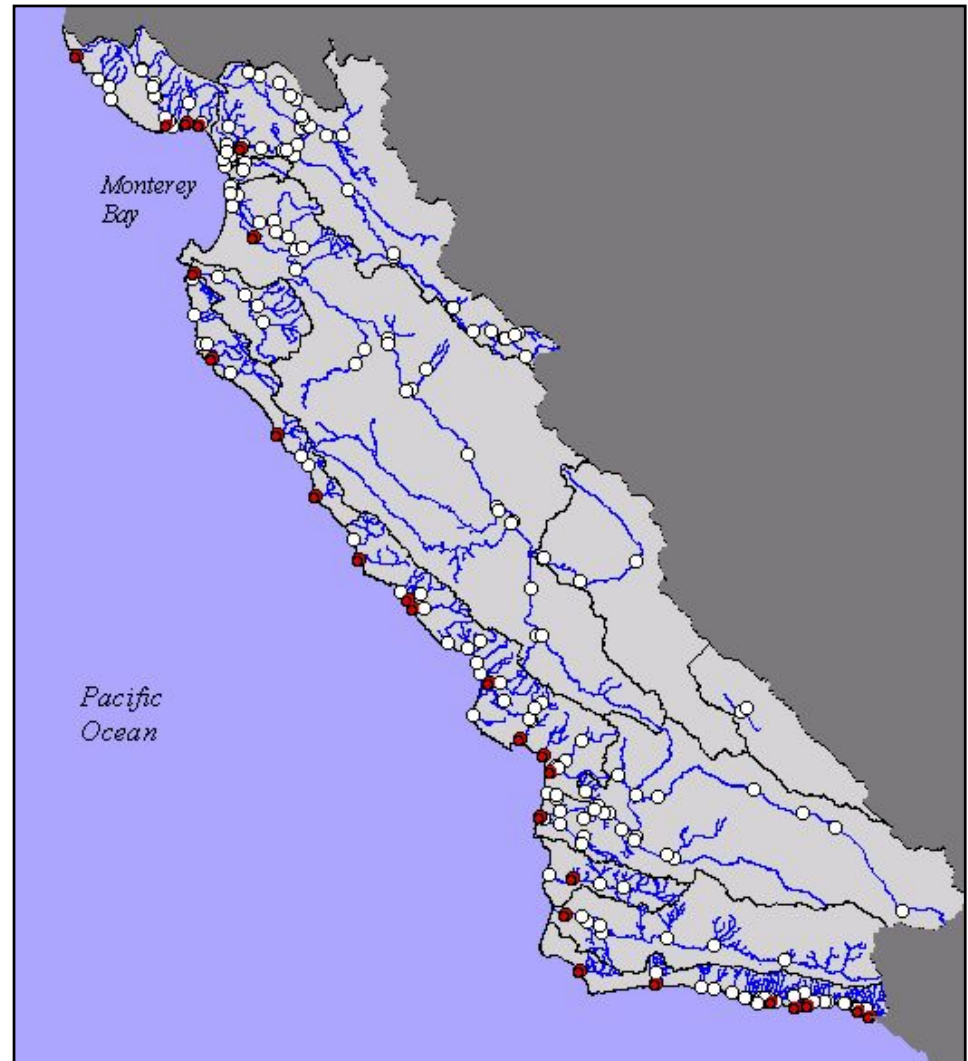
- Second round of sampling in Santa Lucia Rotation Area
 - 19 sites



CCAMP BMI Monitoring 2004



- Coastal Confluences
 - 27 coastal creeks



Coastal Lagoon Study



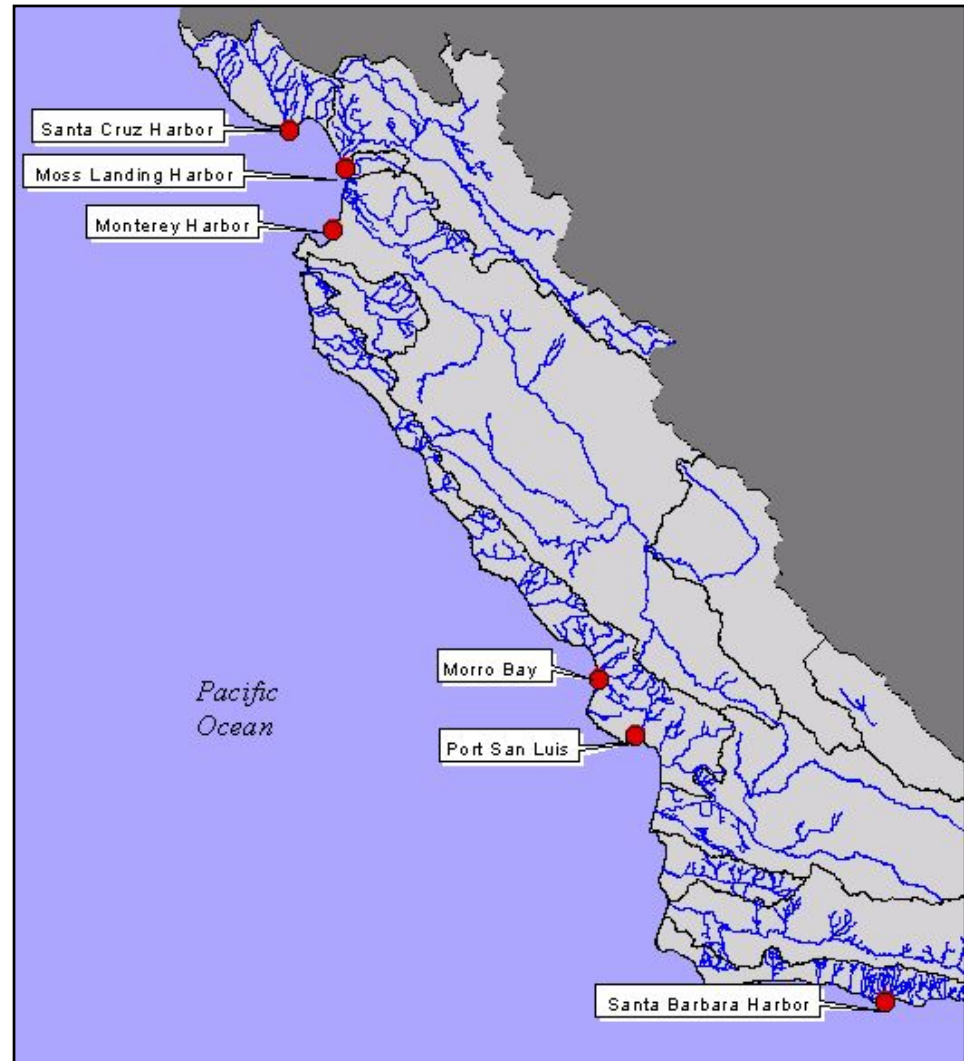
- September 1999
- 14 sites Region wide
- CSBP and MLML methods
- Collected by CABL and MLML



Harbors Study



- EMAP Approach
 - Sediment Chemistry
 - Sediment Toxicity
 - Benthic infauna
 - Water column chemistry
 - Fish and Mussel tissue chemistry
- Morro Bay (2002)
 - 30 samples (EMAP)
- Five Other Harbors (2003)
 - 6 samples (SWAMP)





CCAMP IBI

Scores range from 0-10

Metrics

- Taxonomic diversity
- Percent dominant taxon
- Number of Trichoptera taxa
- Number of Plecoptera taxa
- Number of Ephemeroptera taxa
- Percentage of intolerant individuals (tolerance scores of 0, 1, or 2) *
- Percentage of tolerant individuals (tolerance scores of 8, 9 or 10)*
- Percent predators *

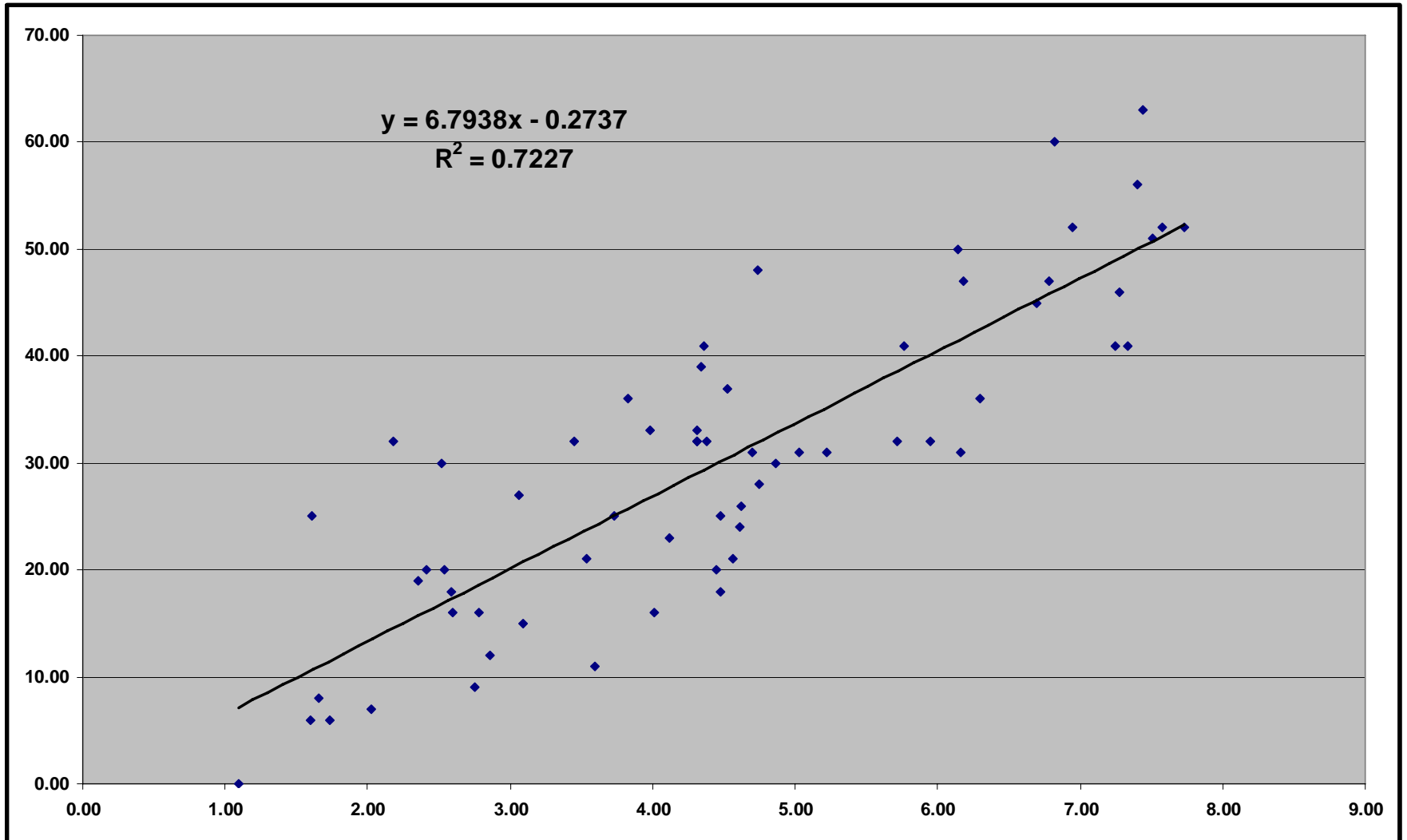
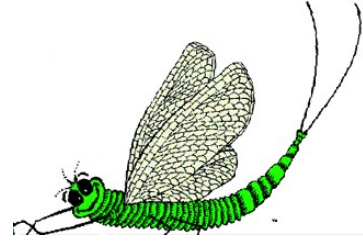


SoCAL IBI

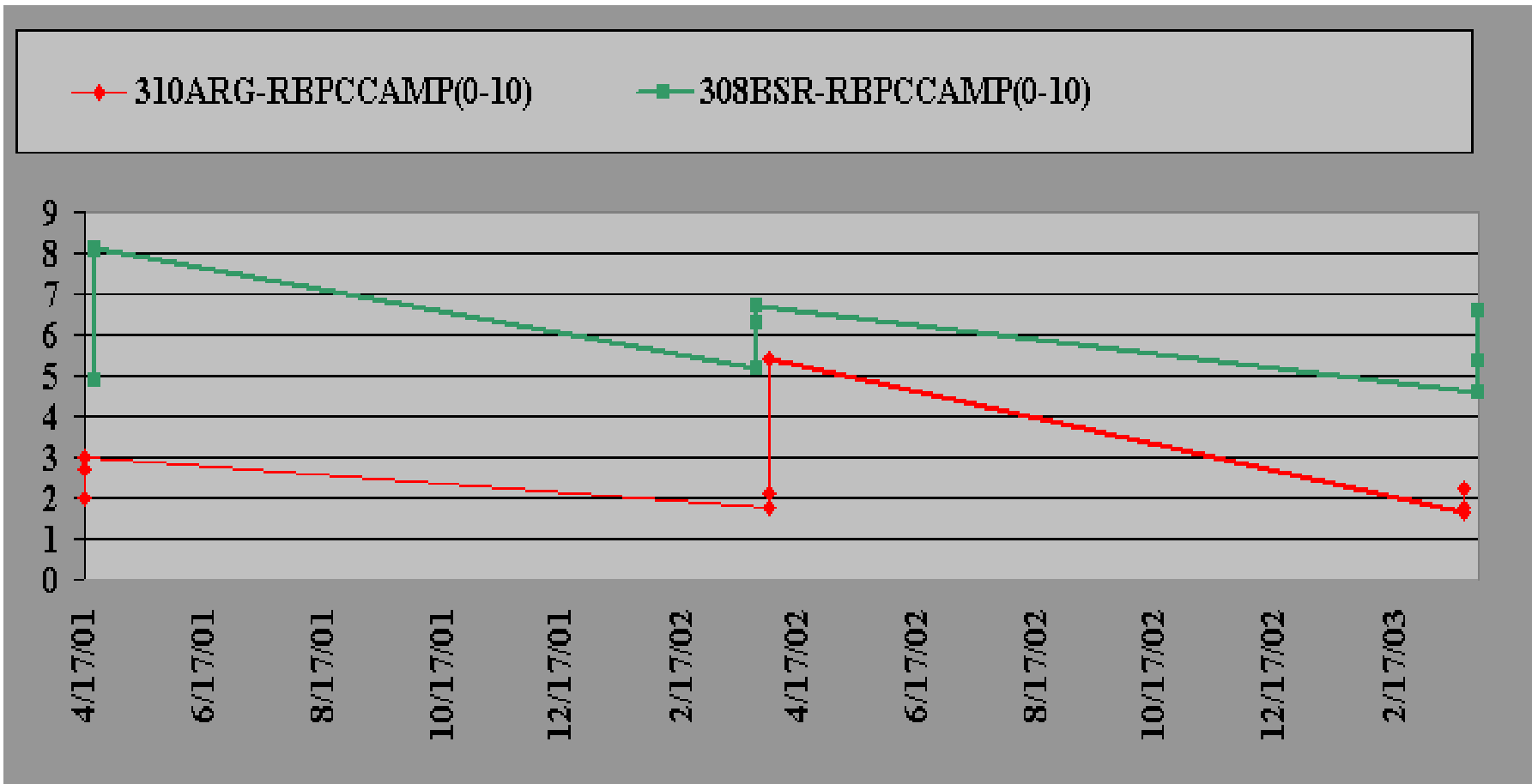
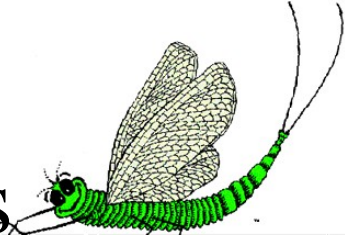
Metrics

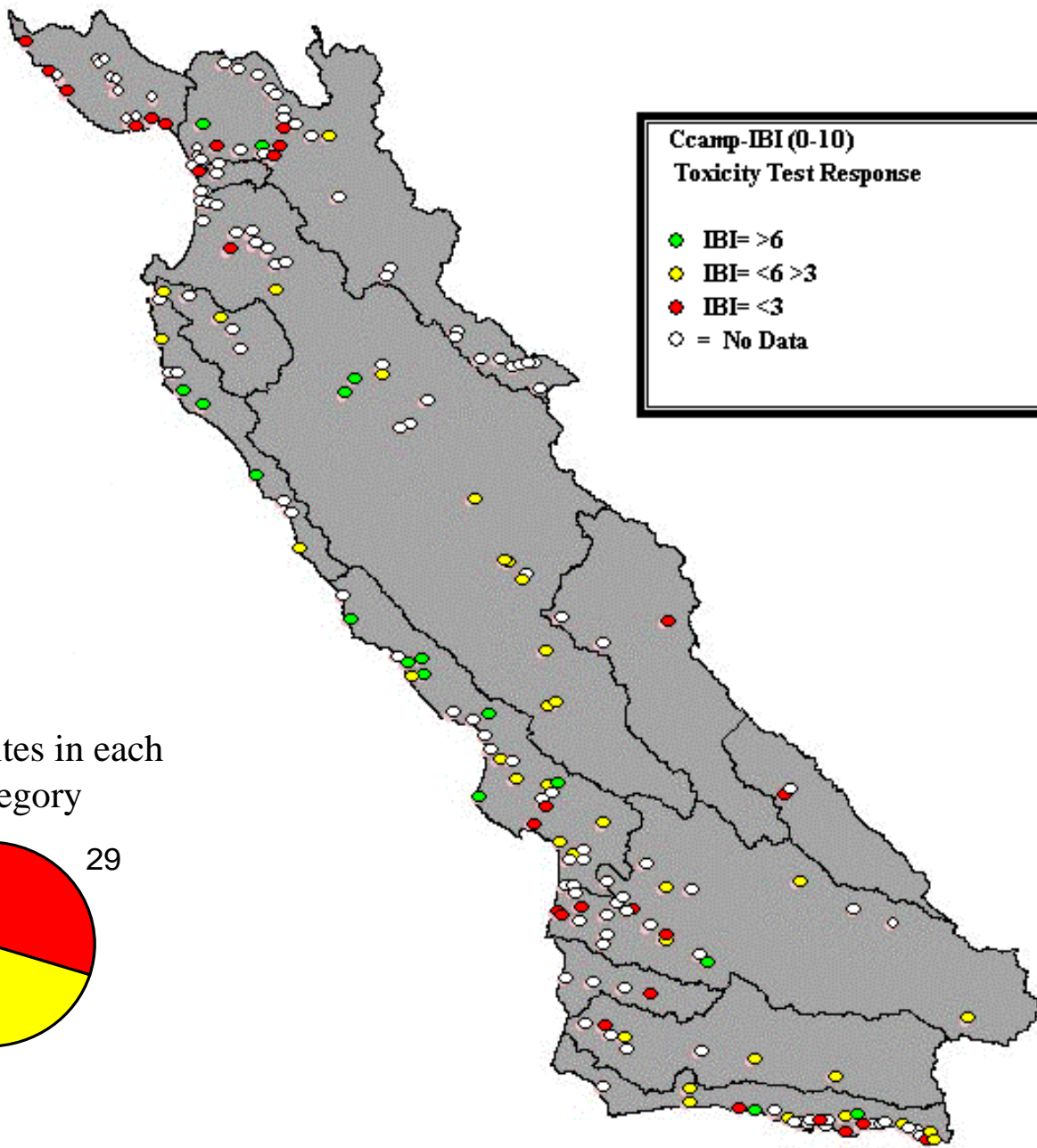
- Number EPT taxa
- Number coleoptera taxa
- Number predator taxa
- Percent collector-filterer + collector-gatherer individuals
- Percent intolerant individuals
- Percent tolerant taxa
- Percent non-insect taxa

SoCal IBI vs CCAMP IBI

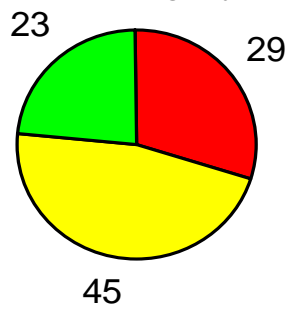


Range and Mean CCAMP IBI Scores

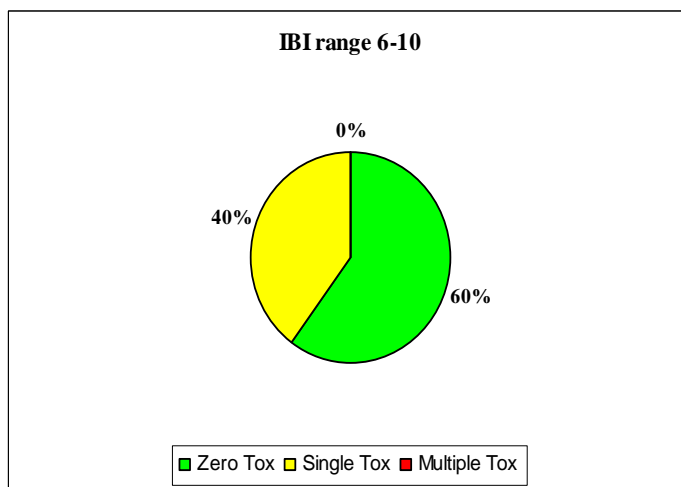
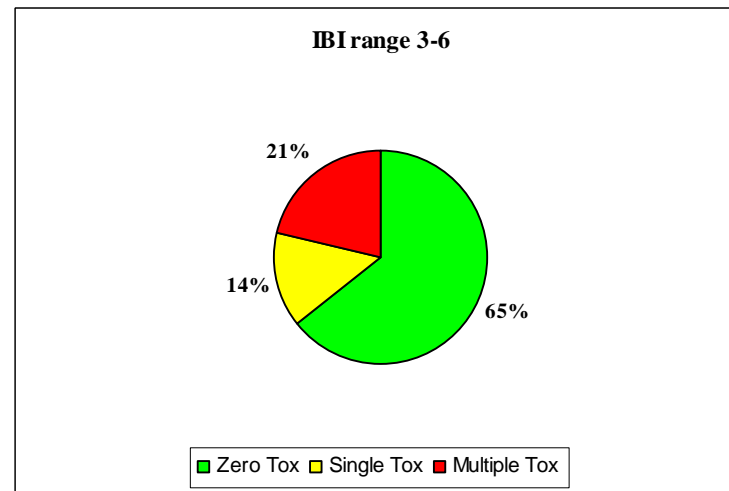
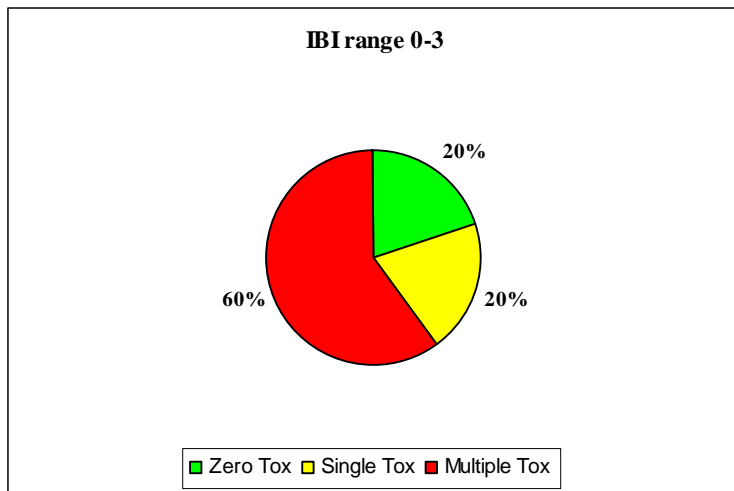
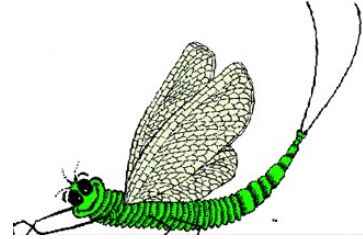




Number of sites in each
IBI Category

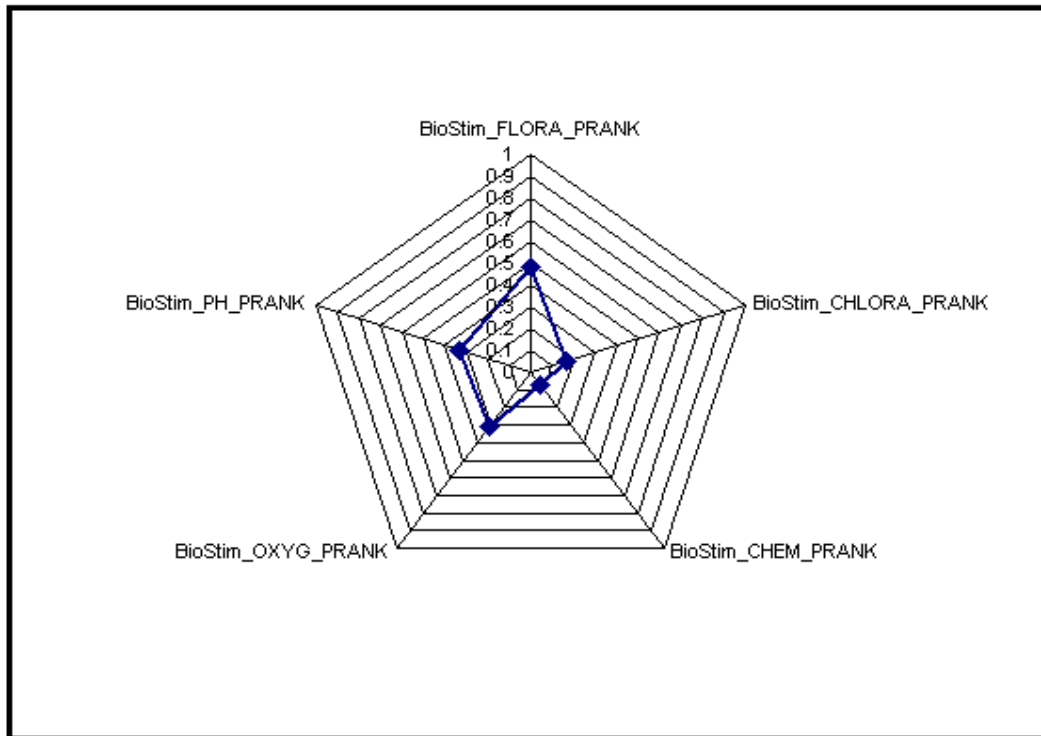


CCAMP IBI and Toxicity data



Biostimulatory Risk Index

Big Sur River @ Pfeiffer, Weyland camp (308BSU)



Percentile Ranks:	Value	Units
Chemical rank=	7.1%	percentile
Oxygen rank=	31.0%	percentile
pH rank=	33.6%	percentile
Chlorophyll a rank=	16.8%	percentile
Flora rank=	48.3%	percentile

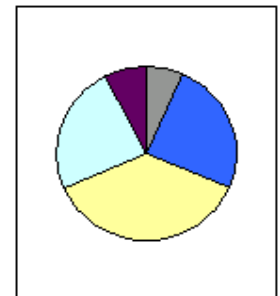
Biostimulatory Index Rank=
Biostimulatory Index %Rank= 1.60%

Chemical Weighting = 6 *	0.07	= 0.43
Oxygen Weighting = 5 *	0.31	= 1.55
pH Weighting = 7 *	0.34	= 2.35
Chlorophyll Weighting = 9 *	0.17	= 1.51
Flora Weighting = 1 *	0.48	= 0.48



Weighted Percentile Sum = 6.33

Cumulative Model Ranks:
Worst Case %Rank=
Best Case %Rank=
Mean Average %Rank= 79.37%



Sort by Site Name

Sort by Risk(Low)

Sort by Risk(High)

Sort by Cum. %Rank

View Site Details

Mixer

View Data

Previous Site

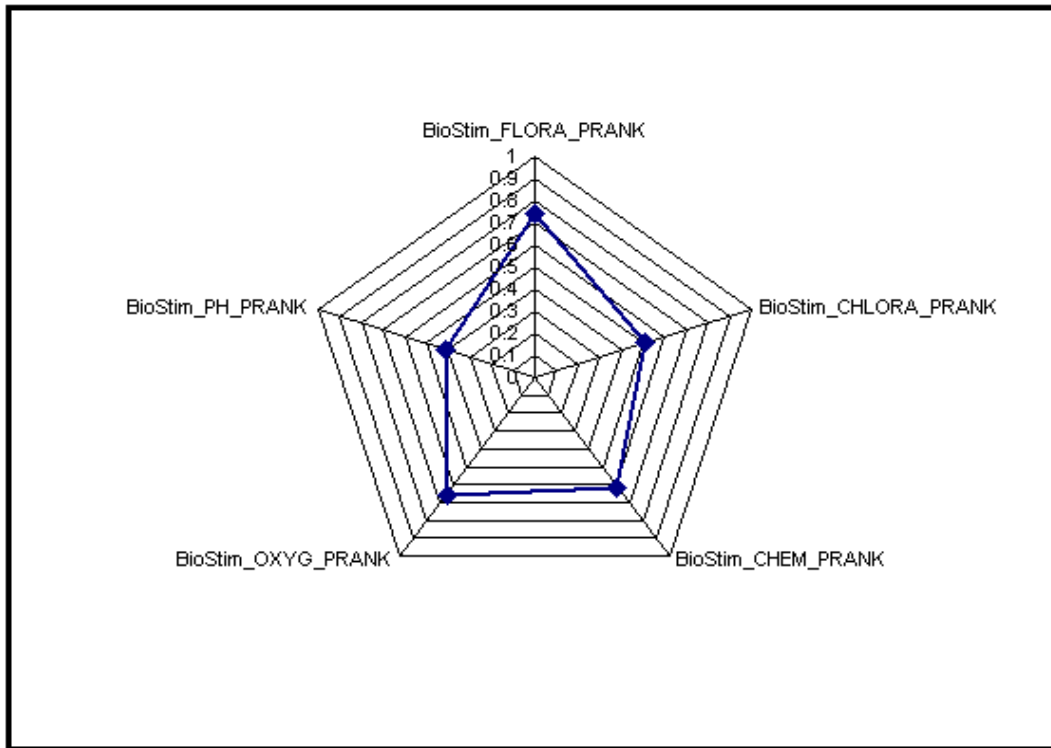
Next Site

308BSU

Note Risk Index Value Display suppressed via color

Biostimulatory Risk Index

Arroyo Grande Creek @ 22nd Street (310ARG)



Percentile Ranks:	Value	Units
Chemical rank=	61.7%	percentile
Oxygen rank=	65.7%	percentile
pH rank=	40.9%	percentile
Chlorophyll a rank=	51.1%	percentile
Flora rank=	74.2%	percentile

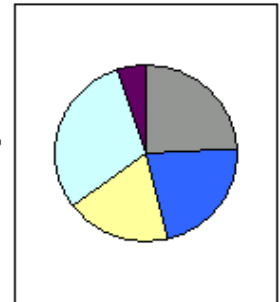
Biostimulatory Index Rank=
Biostimulatory Index %Rank= 15.20%

Chemical Weighting = 6 *	0.62	= 3.70
Oxygen Weighting = 5 *	0.66	= 3.29
pH Weighting = 7 *	0.41	= 2.86
Chlorophyll Weighting = 9 *	0.51	= 4.60
Flora Weighting = 1 *	0.74	= 0.74



Weighted Percentile Sum = 15.19

Cumulative Model Ranks:
Worst Case %Rank=
Best Case %Rank=
Mean Average %Rank= 126.96%



Sort by Site Name

Sort by Risk(Low)

Sort by Risk(High)

Sort by Cum. %Rank

View Site Details

Mixer

View Data

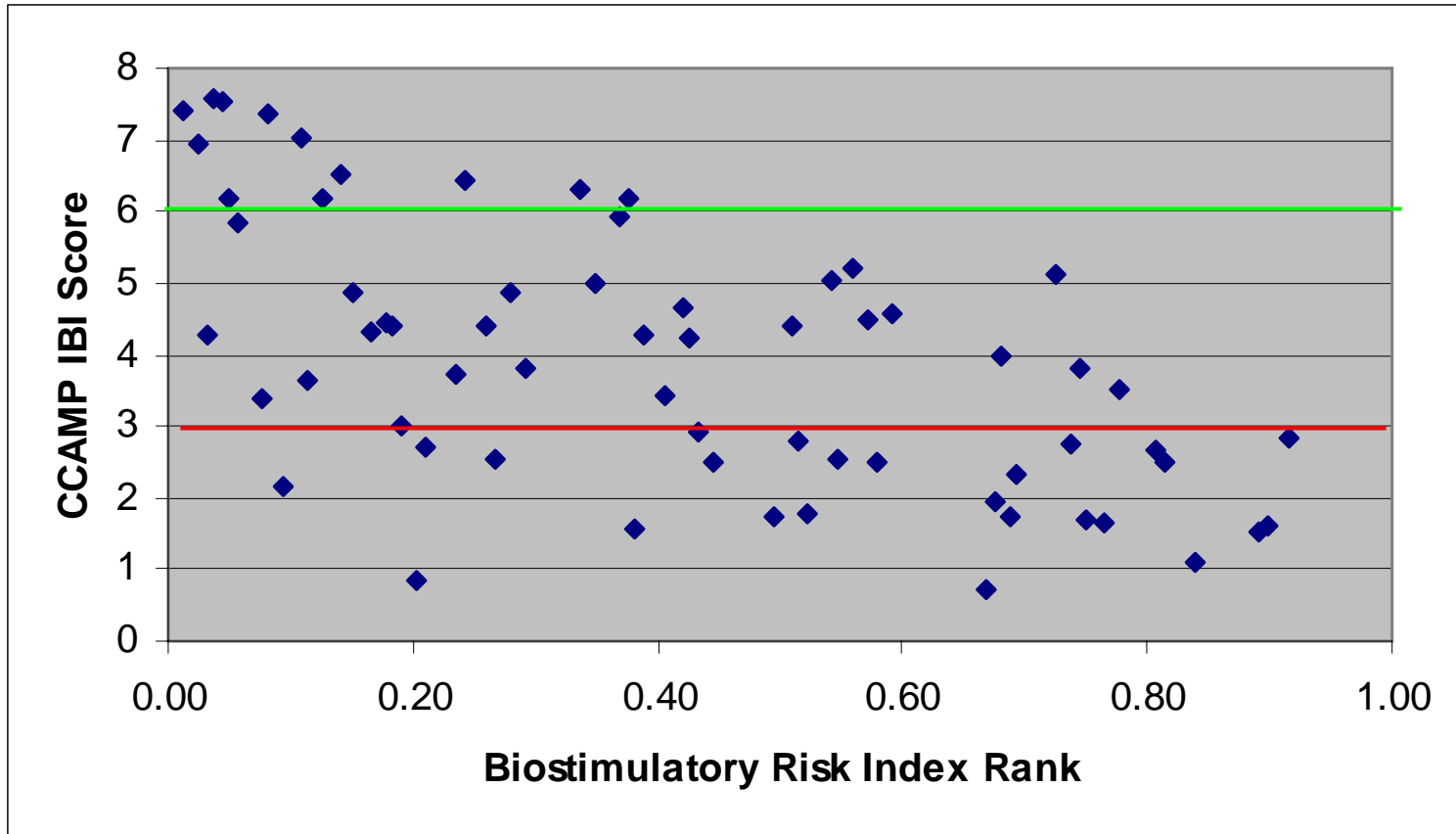
Previous Site

Next Site

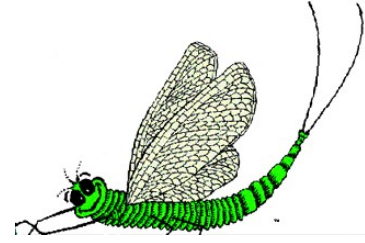
310ARG

Note Risk Index Value Display suppressed via color

CCAMP IBI vs Biostim Risk Index

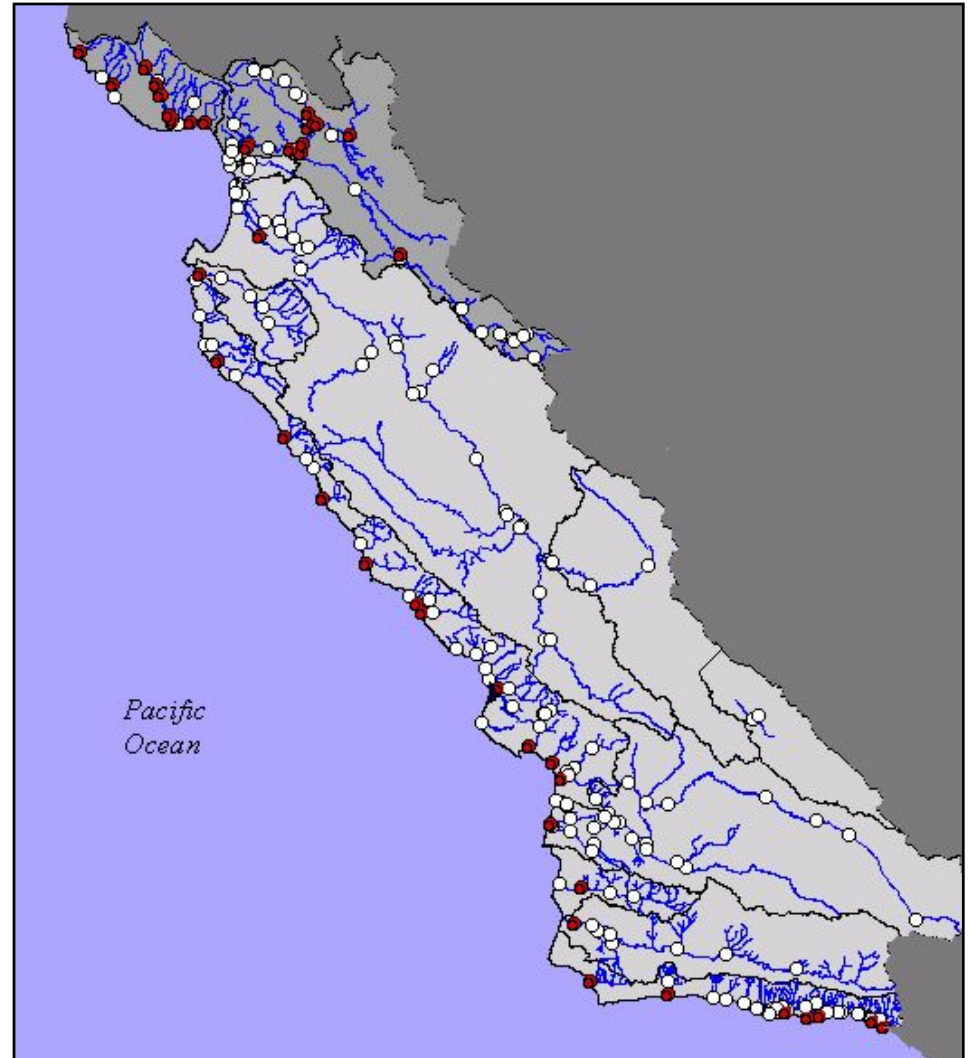


Future CCAMP Monitoring

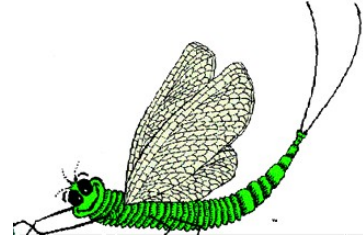


2005 Watershed Rotation Area and Coastal Confluence sites

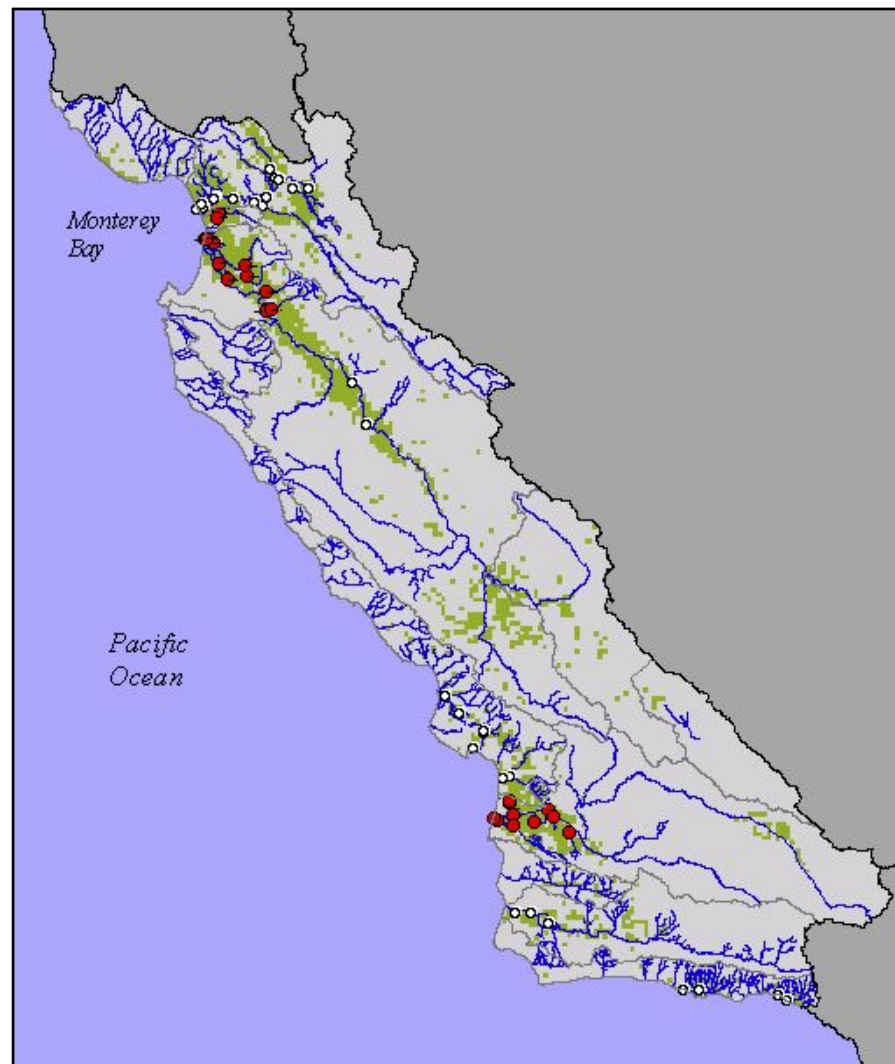
- Region 3's 04-05 task order includes BMI monitoring at 43 sites
- At present, continuing to use CSBP



Proposed Ag Waiver Monitoring



- Beginning in 2005
 - 25 proposed sites for first year
 - Includes annual BMI monitoring at all sites using CSBP
 - 25 additional sites will be added in 2006



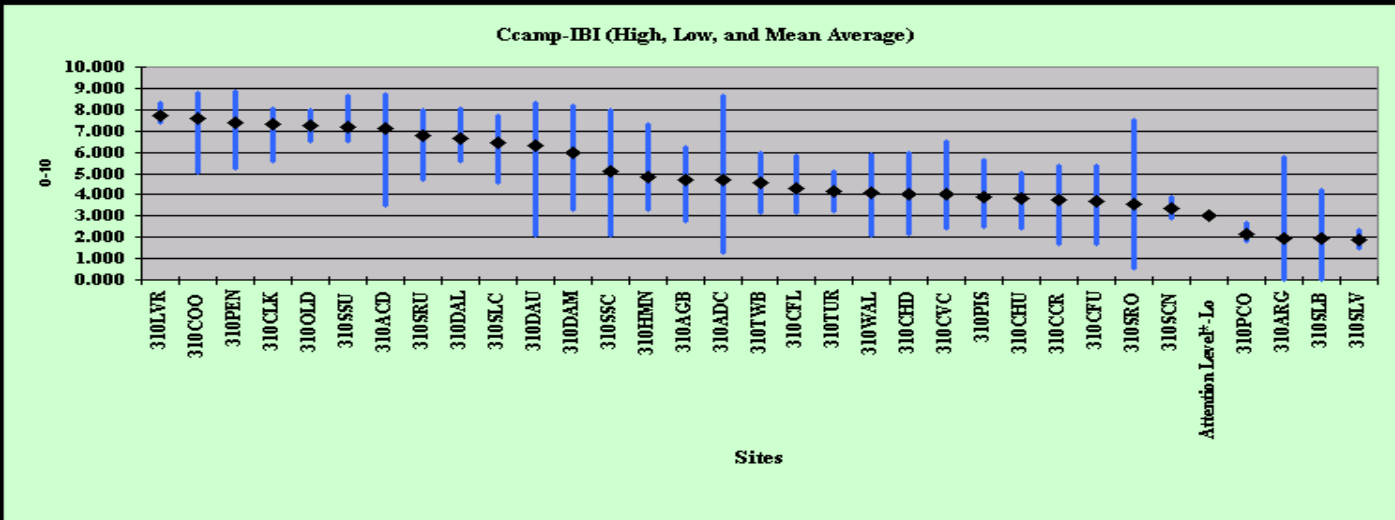
www.CCAMP.org

http://www.ccamp.org/ca/3/310/Rbp/RBPCCAMP_RBP.htm - Microsoft Internet Explorer

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Address http://www.ccamp.org/ca/3/310/Rbp/RBPCCAMP_RBP.htm



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[Waterbody Chart](#)

[Site Chart](#)

[Site List](#)

[Maps](#)

Ccamp-IBI	Max	Min	Mean	GeoMean	Samples	First	Last	Hits	Crit.	Ref.
Arroyo de la Cruz Creek	8.65	1.29	4.69	3.78	15	09/99	03/03	6	<3	CCAMP screening
310ADC-Arroyo de la Cruz @ Highway 1	8.65	1.29	4.69	3.78	15	09/99	03/03	6	<3	CCAMP screening
Arroyo Grande Creek(below res.)	6.22	0.00	2.74	1.57	21	09/99	03/03	14	<3	CCAMP screening
310AGB-Arroyo Grande Creek @ Biddle Park	6.22	2.78	4.69	4.54	6	04/02	03/03	1	<3	CCAMP screening
310ARG-Arroyo Grande Creek @ 22nd Street	5.79	0.00	1.96	1.03	15	09/99	03/03	13	<3	CCAMP screening

Done

Internet

Start CAB... Mas... Site... Arc... CAB... RBA... htt... 2:20 PM