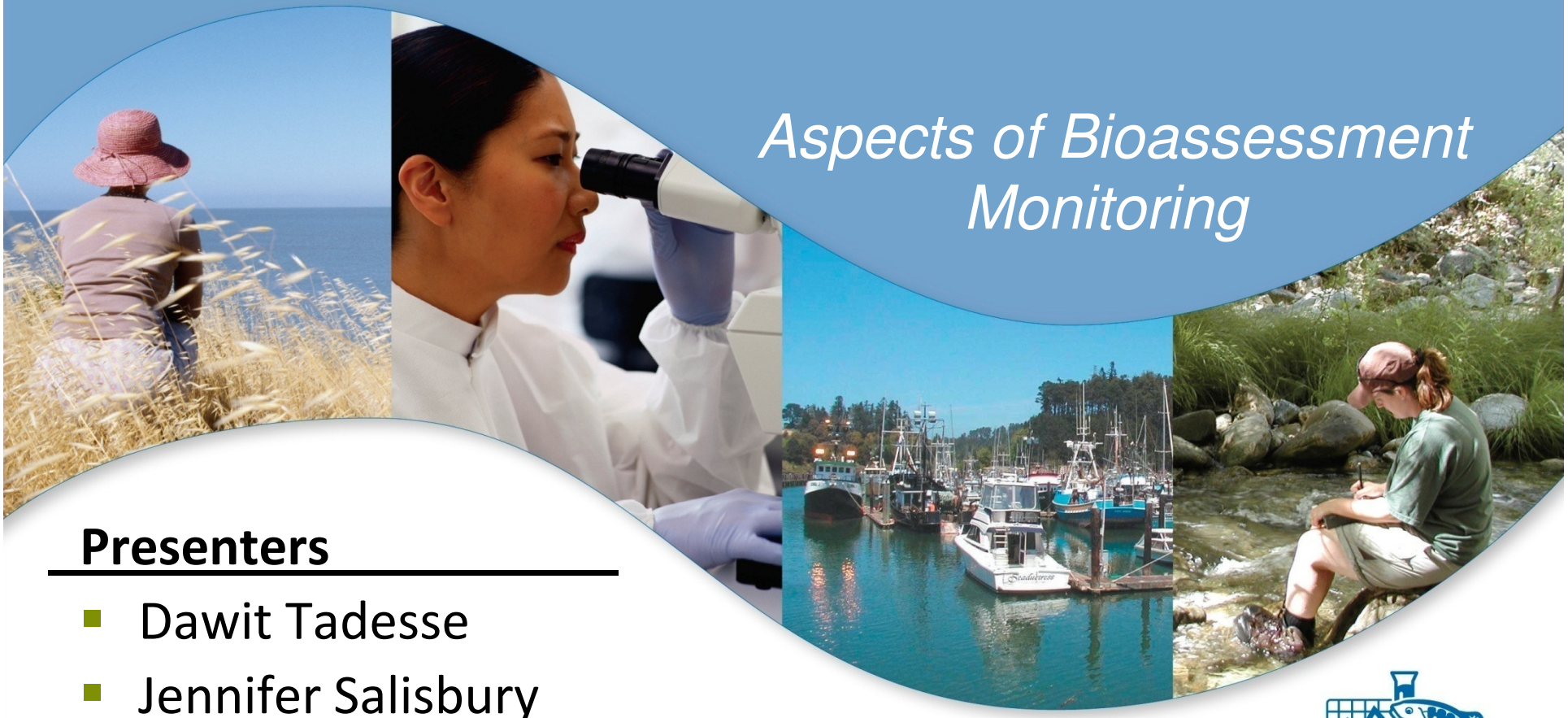
Surface Water Ambient Water Monitoring Program (SWAMP)



Aspects of Bioassessment Monitoring

Presenters

- Dawit Tadesse
- Jennifer Salisbury
- Toni Marshall
- Susan Monheit

California Water Boards

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I. Values of Probability-based Monitoring Design

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Resources are large and variable

- California is rich in water resources, it has large water body and plenty of water body types
- SWAMP is mandated to monitor and assess all State surface waters
- SWAMP monitors subsets of water resources

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Statewide Programs for Perennial Wadeable Streams

- Two interrelated Programs
  - Perennial Streams Assessment (PSA)
  - Reference Condition Management Program (RCMP)

- Use benthic macro invertebrate as indicator
- Conventional chemistry
- Habitat data

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What monitoring design to apply?

- Targeted Design:
  - To satisfy 303d listing and permit compliance.
- Probability-based Design for:
  - Making statistically valid inferences
  - Satisfy section 305b requirement
- SWAMP applies combination of these designs
- Regional programs **usually** apply targeted design
- Statewide programs **usually** apply probability-based design

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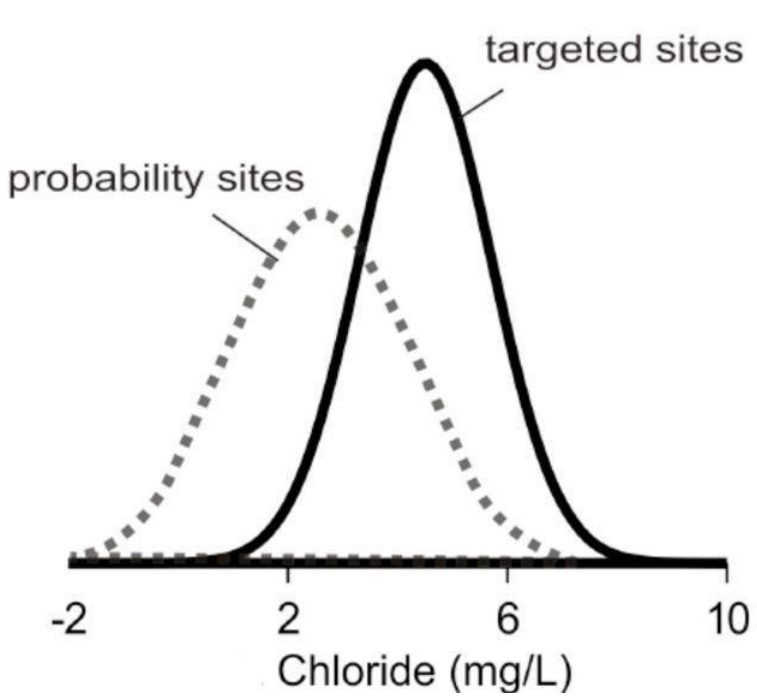
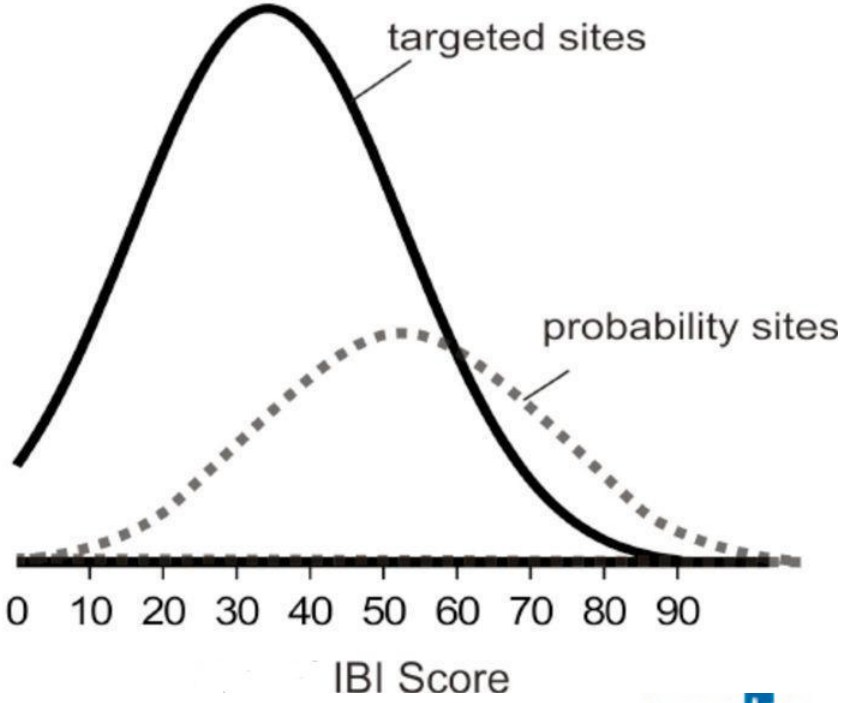
Comparison of Results





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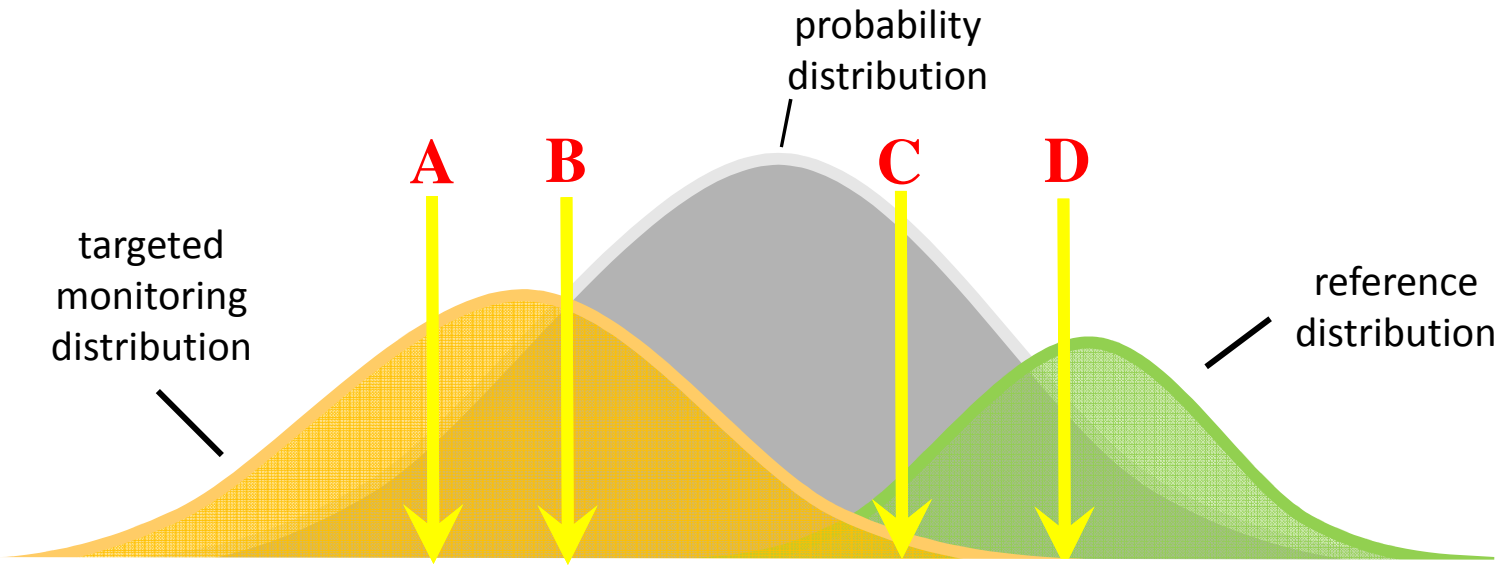
PSA and Reference Programs provide perspective



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Values of the probability-based Information

- Helps to provide context for interpretation of results from targeted design
- Helps to understand how a specific water-body compares to overall condition of watershed or State
- Is a foundation for prioritizing monitoring, remediation, and protection efforts
- Can be used to measure the success of restoration and protection programs

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II. Extent of California's Perennial and Non-Perennial Streams

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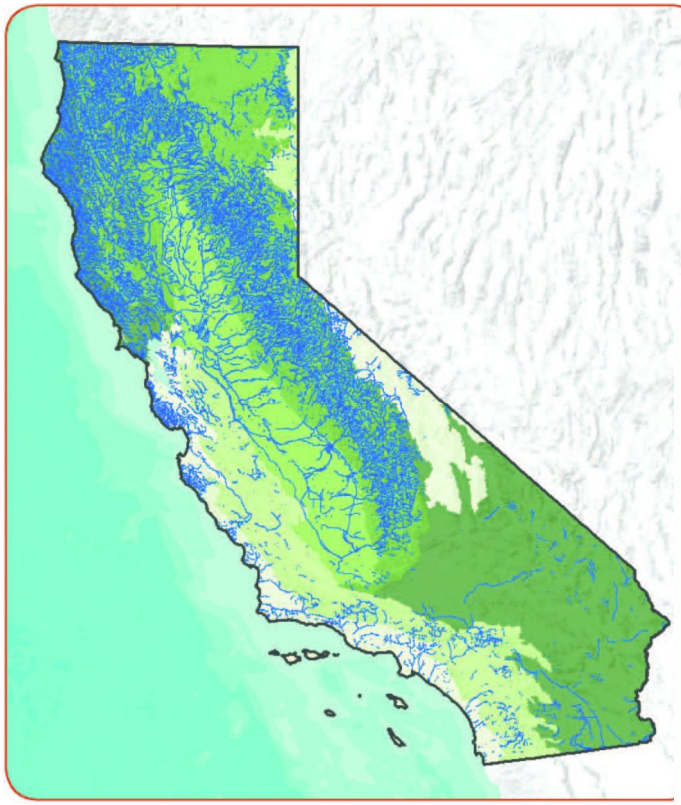
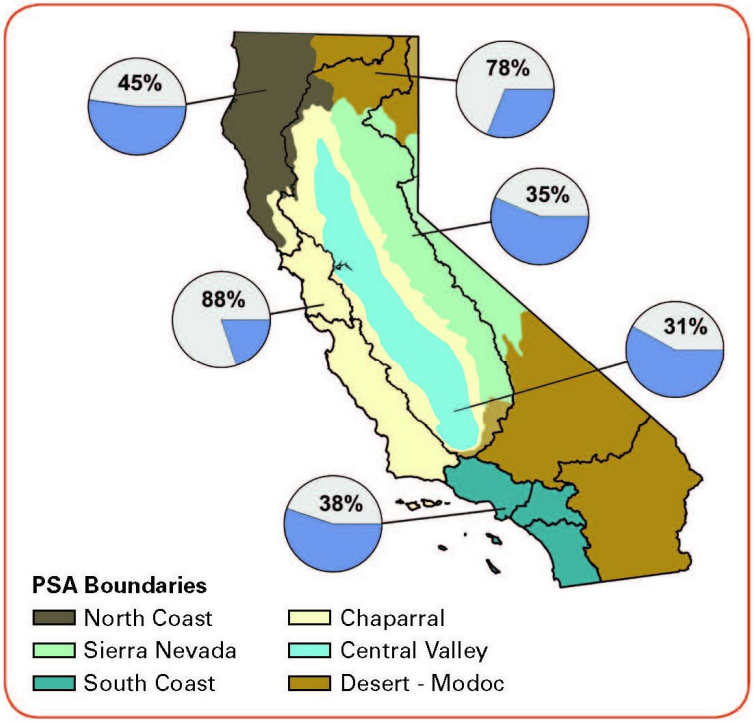
Resource Description



National Hydrography Dataset (NHD)
~ 284,000 km total stream miles
~73% non-perennial

Perennial Stream Assessment (PSA)
Percentage non-perennial streams relative to the amount of perennial streams per PSA region
(Overall ~66% non-perennial)



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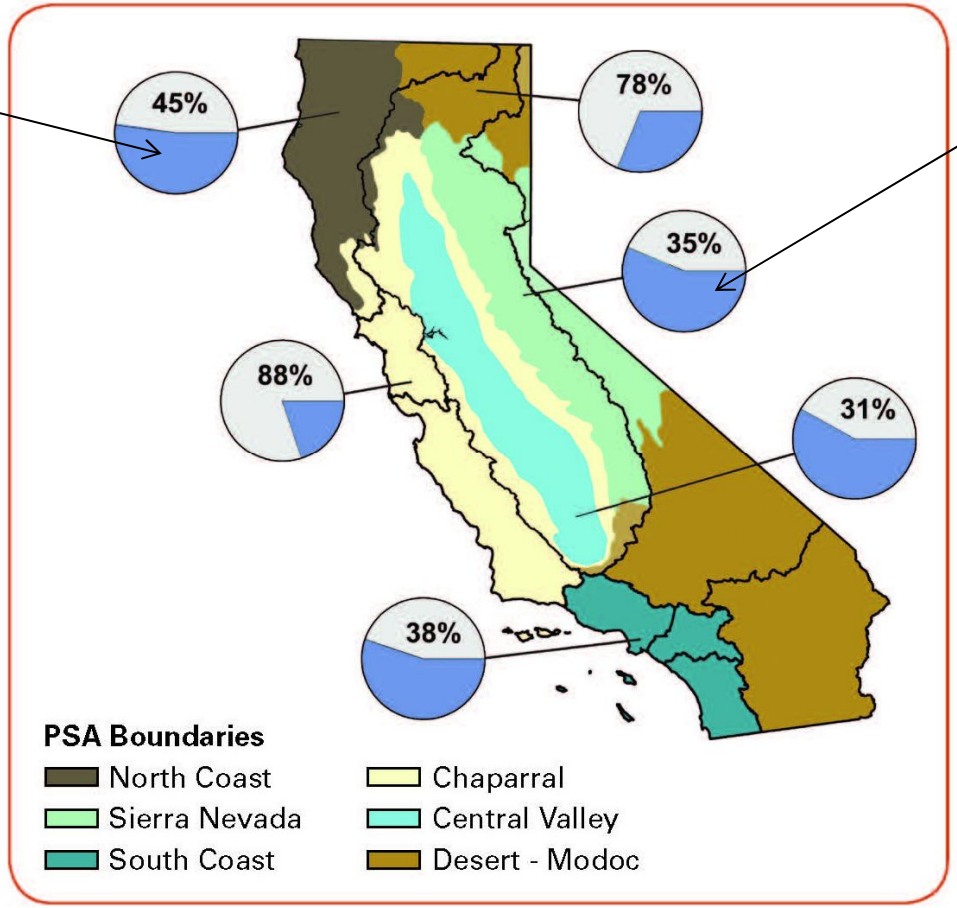
Findings

North Coast PSA Region



Sierra Nevada PSA Region

- Percentage of Non-perennial Streams (Gray) per PSA Region
- Blue indicates Perennial Streams per PSA Region

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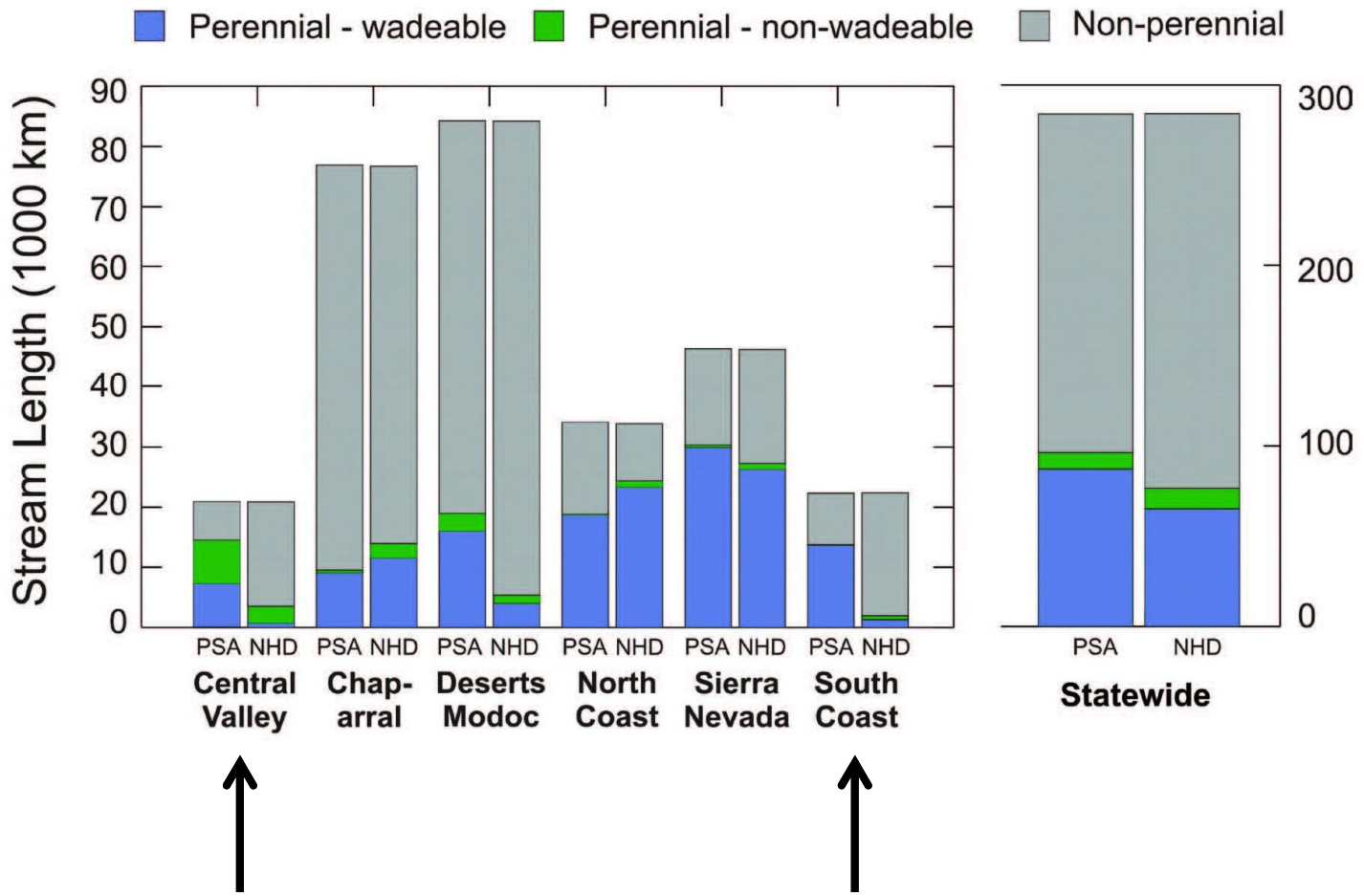
Findings



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Implications

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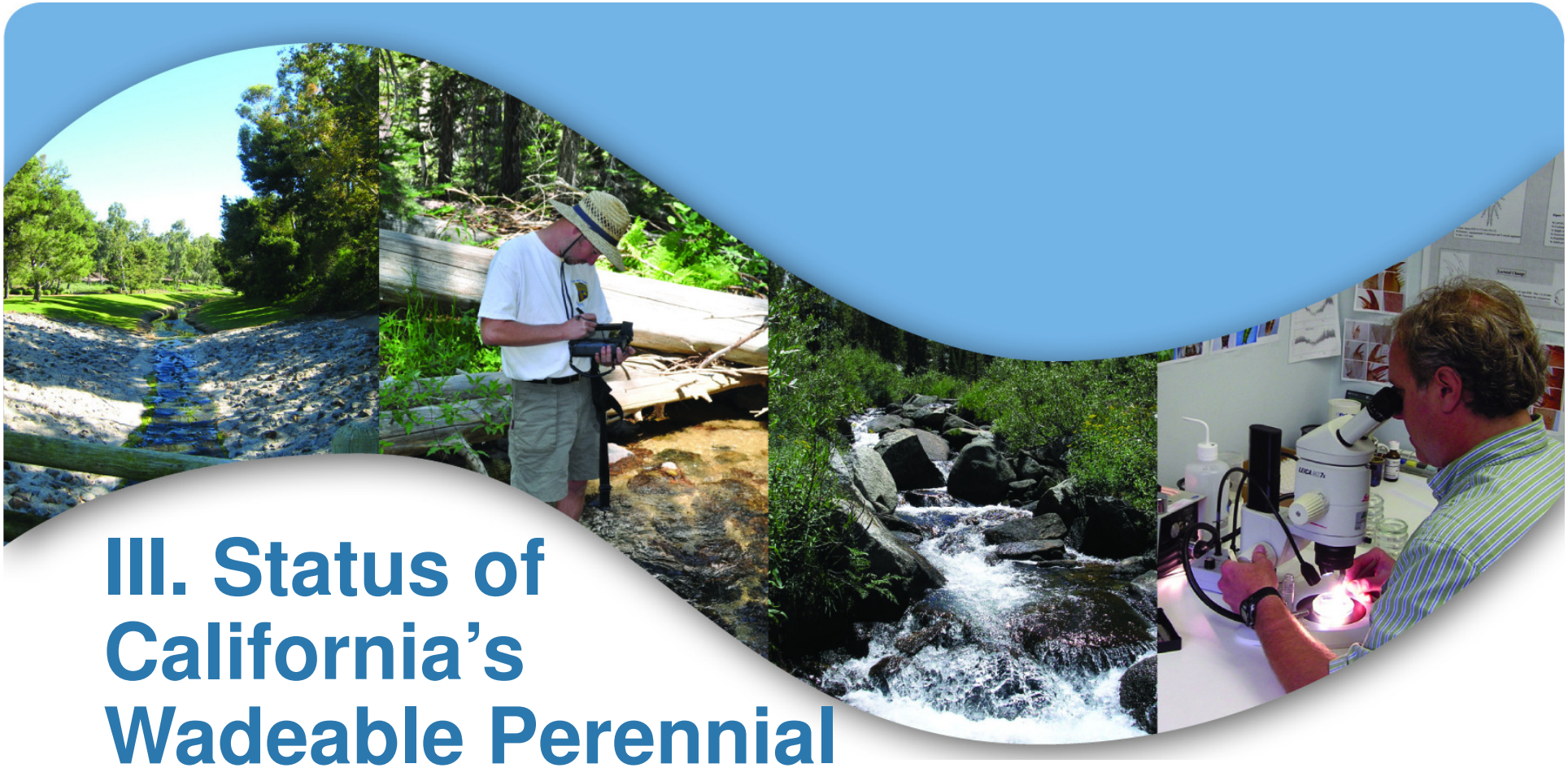

III. Status of California's Wadeable Perennial Streams (2000-2007)

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Environmental Scientist
State Water Resources Control Board

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This presentation will discuss:

- Perennial Streams Assessment (PSA) Regions
- Reference streams
- Condition of California streams in PSA Regions
- Condition of streams based on land use

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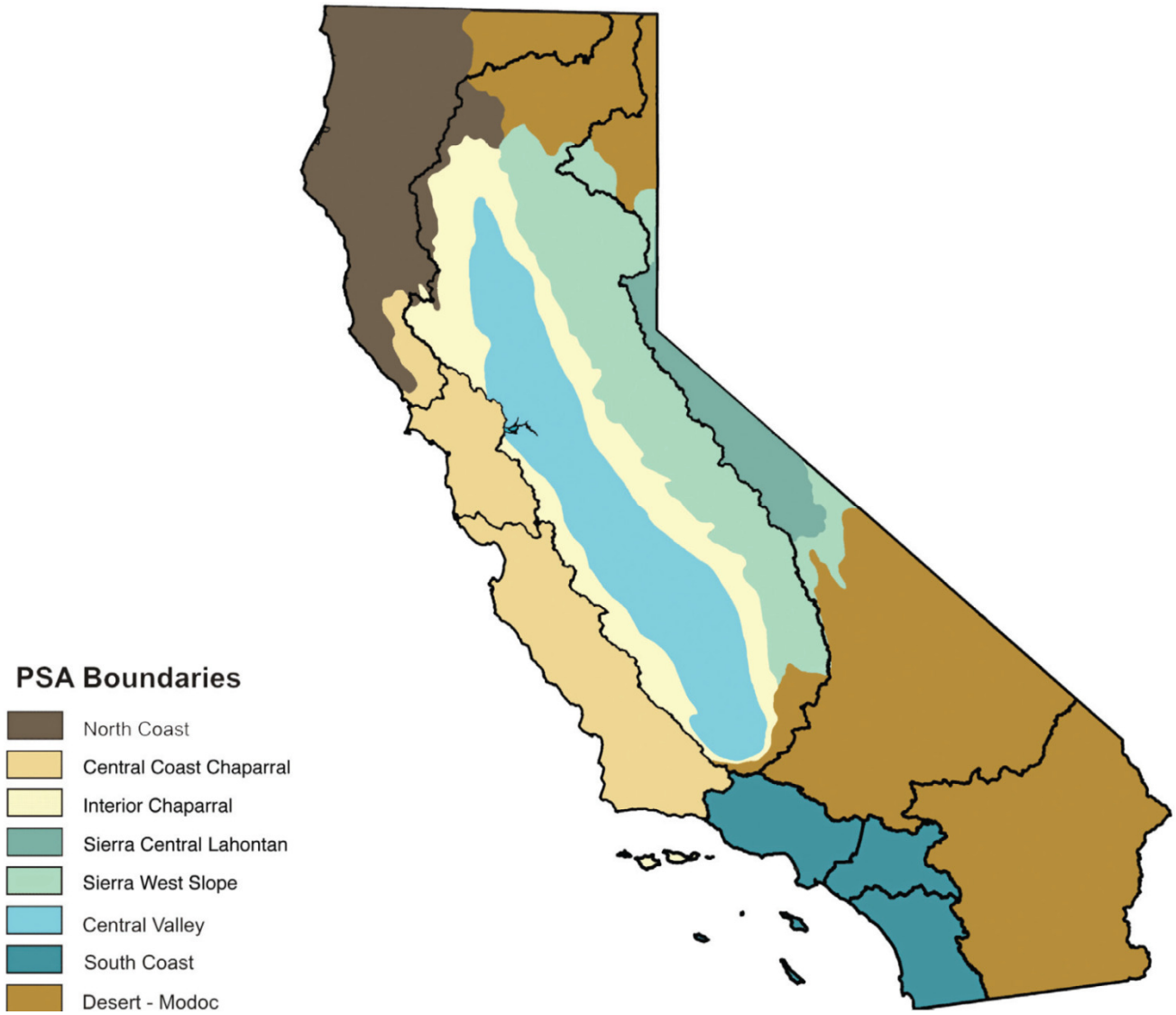
Perennial Streams Assessment Regions



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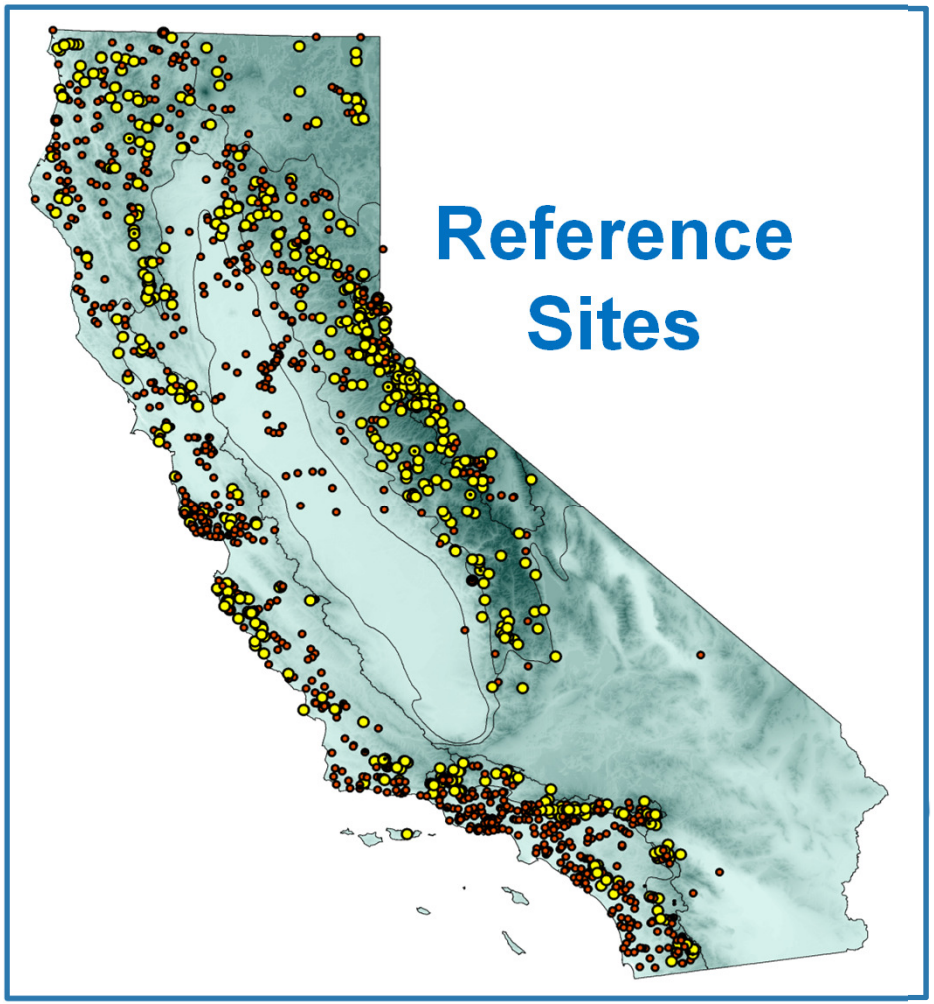
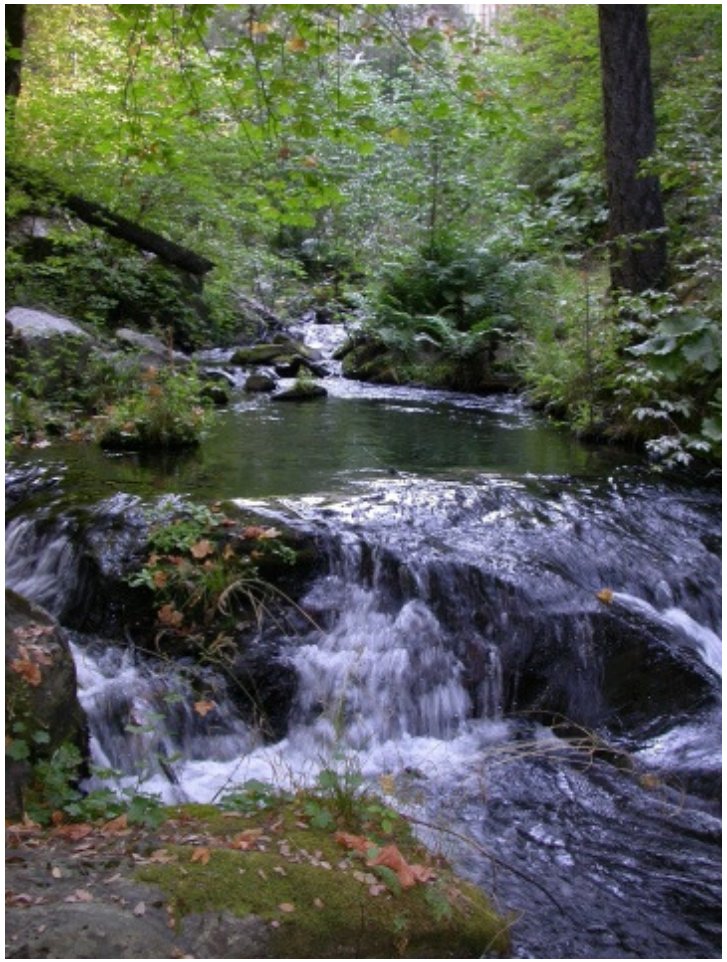
Reference Condition Management Program (RCMP)

REGION	n
North Coast	79
Central Valley	1
Coastal Chaparral	87
Interior Chaparral	30
South Coast Mountains	96
South Coast Xeric	22
Western Sierra	131
Central Lahontan	142
Deserts + Modoc	27
TOTAL	**615**



Reference Streams in California



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History of Perennial Streams Assessment (PSA)

- EPA's Environmental Monitoring and Assessment Program (EMAP) 2000-2003
- California Monitoring and Assessment Program or (CMAP) 2004-2007
- EMAP + CAMP= PSA 2008 to present

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Perennial Streams Assessment (PSA)

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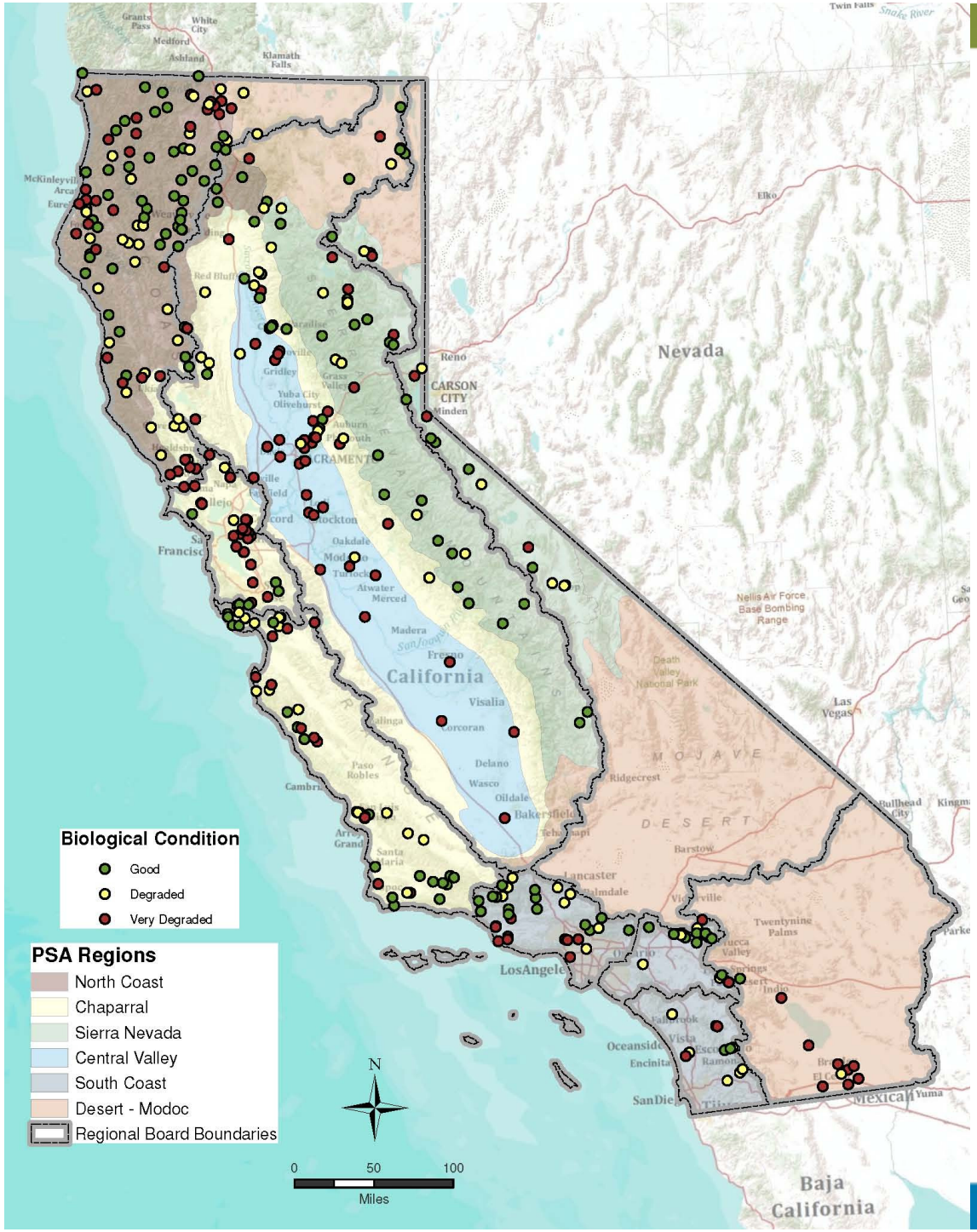
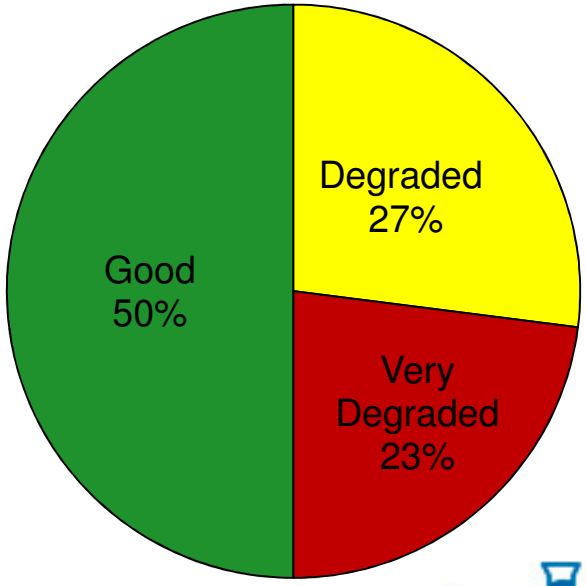


Perennial Streams Assessment



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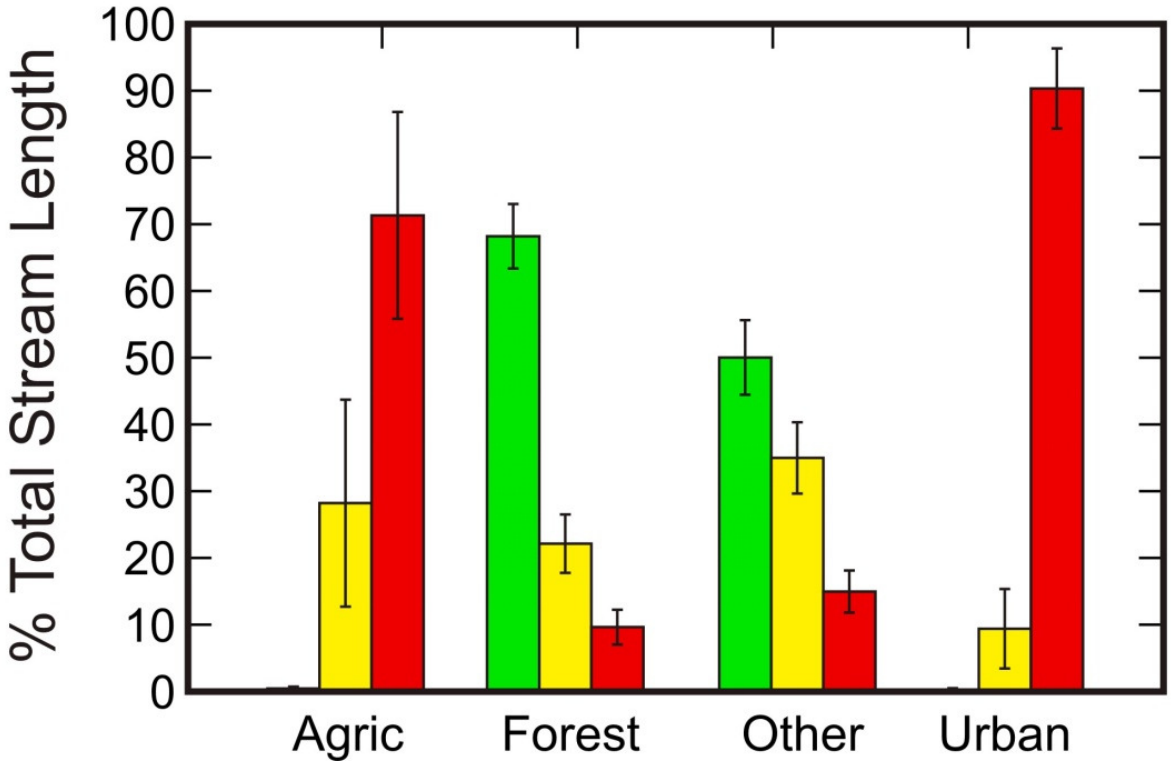
November 2011

Perennial Streams Assessment



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Components of a Perennial Streams Assessment

- Chemical parameters
- Physical parameters

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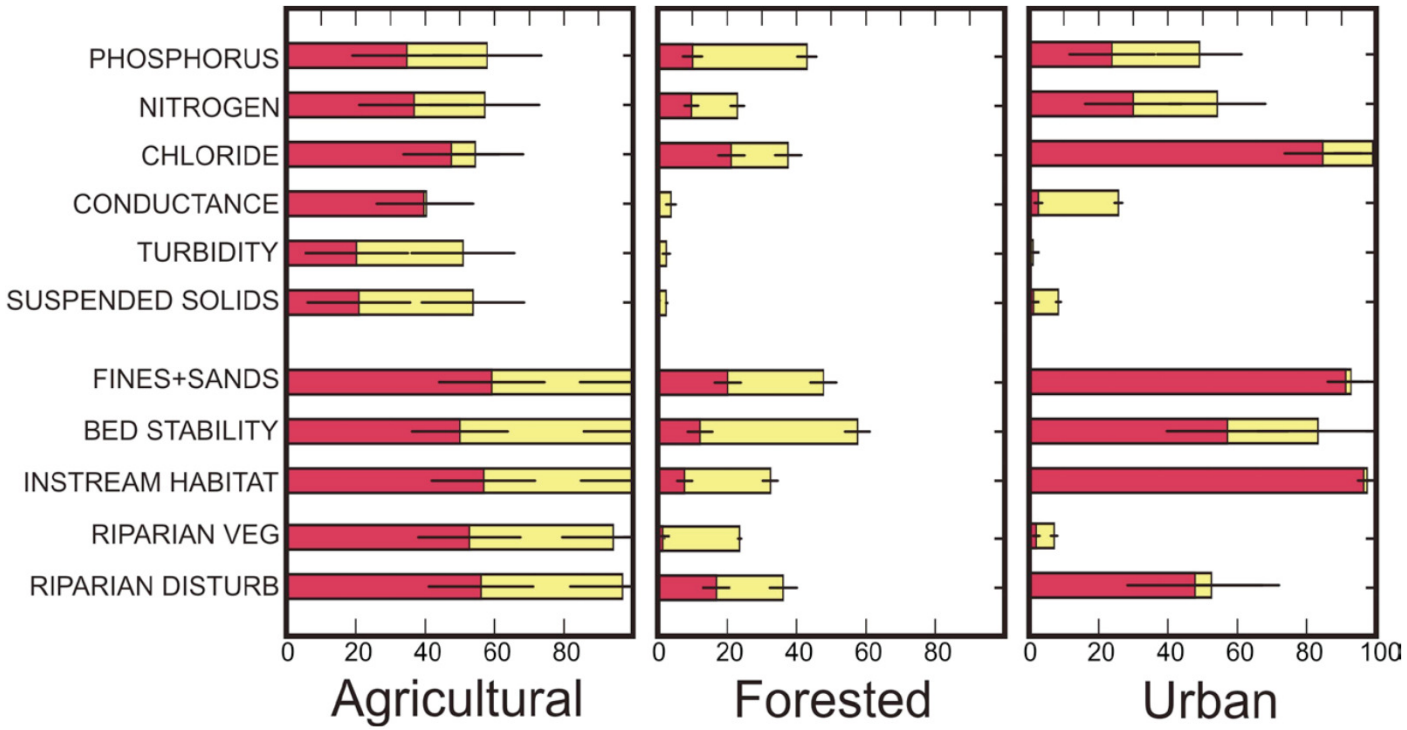
Chemical and Physical Stressors



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Letting the bugs tell us when Enough is Enough!

IV. BIOLOGY-BASED STRESSOR THRESHOLDS

Susan Monheit
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Senior Environmental Scientist
State Water Resources Control Board

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This presentation will discuss:

- What a Biology-based Stressor Threshold is;
- Potential for setting regulatory thresholds;
- Evaluation of current regulatory criteria for protecting aquatic life beneficial uses.

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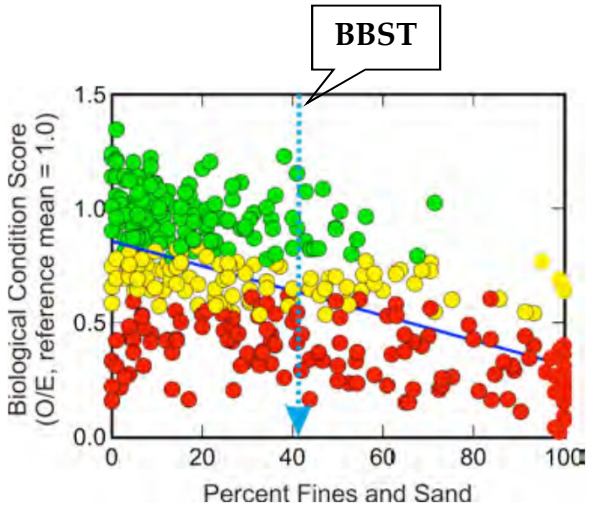
What is a Biology-based Stressor Threshold?



WARNING!

You are Leaving Paradise!

Stream health declines rapidly beyond this point..

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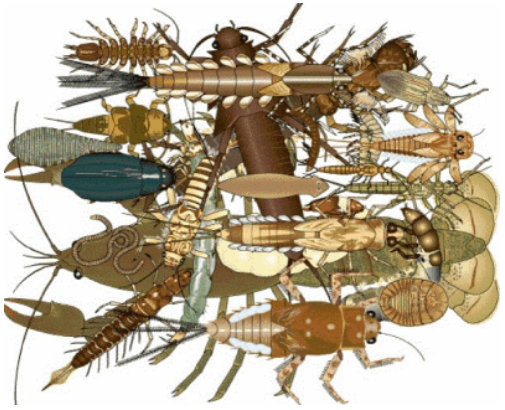
Biological Condition Score and Reference Site Conditions

- The occurrence, abundance and diversity of bugs found at a sample site are scored.
- Site scores (for bugs) are compared to bug scores of reference sites.
- Biological condition/stream health is graded.



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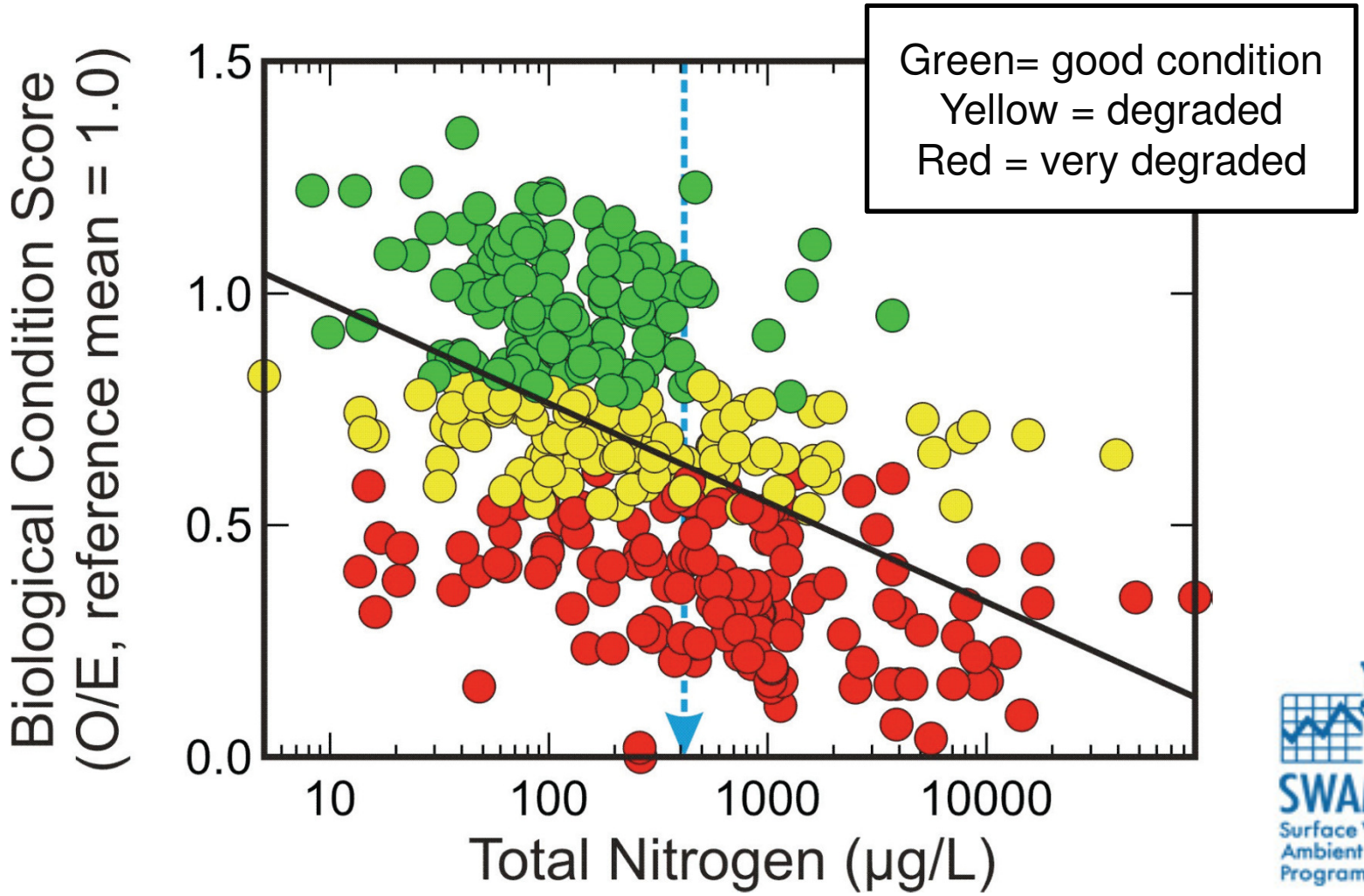
Threshold Setting Process



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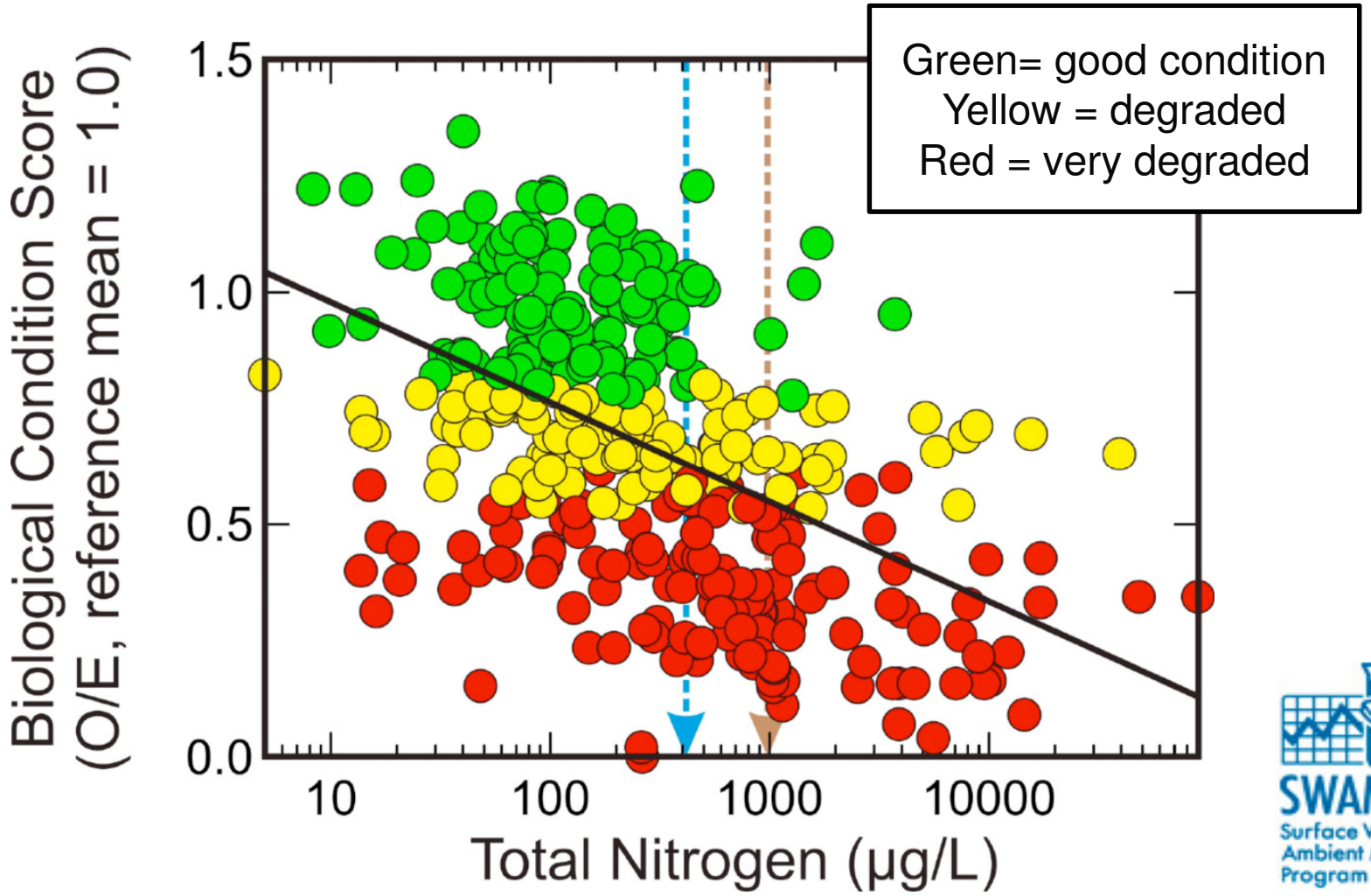
Threshold Setting Process



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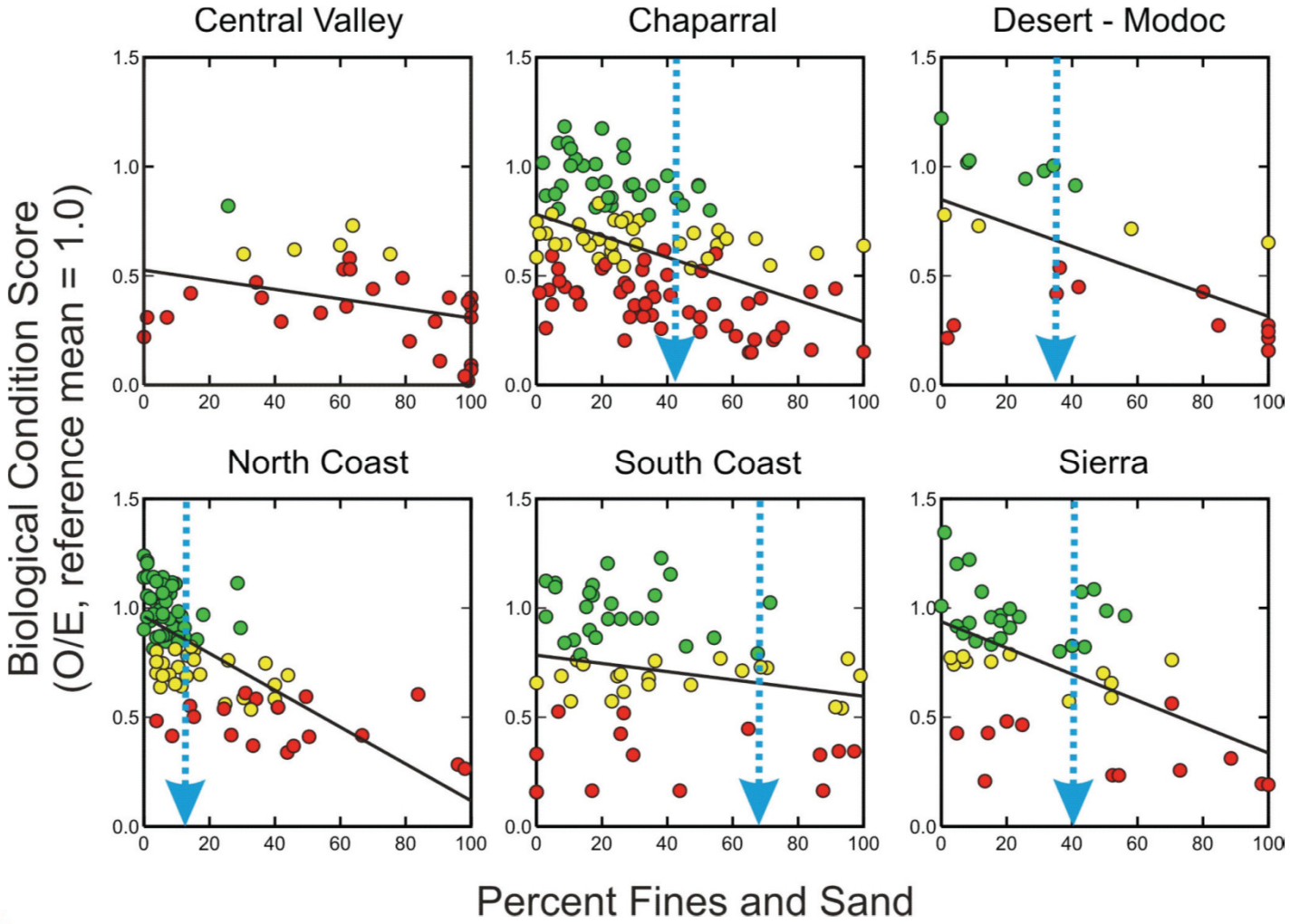
Thresholds Vary by Eco/PSA-Region



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Applications for Biology-based Stressor Thresholds

- Setting regulatory standards;
- Evaluating current regulatory criteria;
- Supporting numeric interpretation of narrative criteria;
- Utilized as performance targets.

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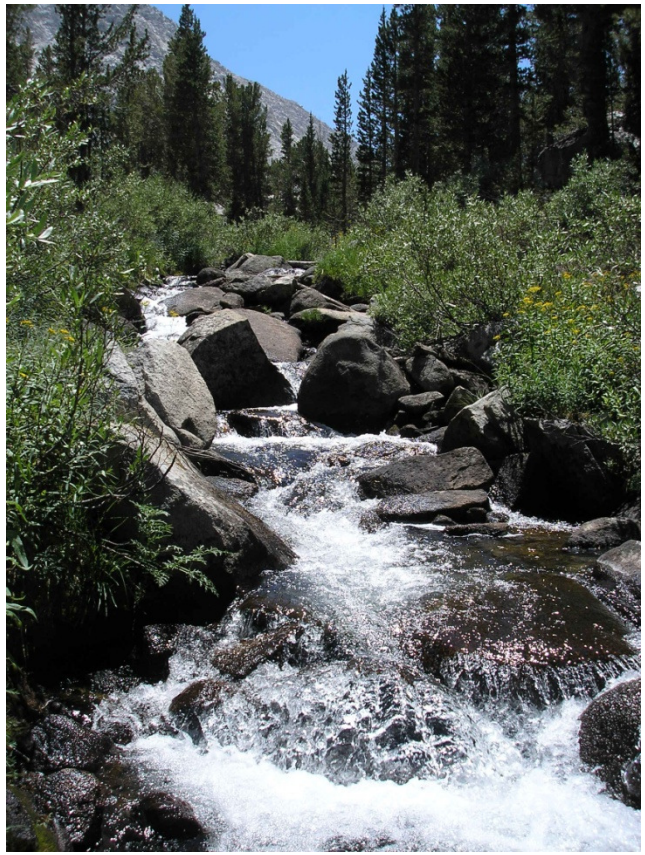
QUESTIONS for the panel?



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Link to Bioassessment Monitoring Program

- http://www.waterboards.ca.gov/water_issues/programs/swamp/reports.shtml#bmp_assess

Link to Reference Condition Management Program Report

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qamp/wadestreams_rcmpfinal.pdf

Link to Biological Objectives webpage

- http://www.waterboards.ca.gov/plans_policies/biological_objective.shtml

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Links to SPoT Documents

- Outcome Measures - http://www.waterboards.ca.gov/about_us/performance_report_1011/ecosystems/docs/spot_outcome_measure.pdf
- Monitoring Plan - http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/statewide_stream_contaminants_trend_montoring_plan.pdf
- QAPP - http://www.waterboards.ca.gov/water_issues/programs/swamp/qapp/qapp_spot_strms_pollute_final.pdf

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Link to Regional SWAMP documents

- http://www.waterboards.ca.gov/water_issues/programs/swamp/regionalreports.shtml

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Thank you…

General Info:

www.waterboards.ca.gov/water_issues/programs/swamp/

QA:

http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/quality-assurance

Data Management:

http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/database-management-systems

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