

CONCEPTUAL APPROACH ROAD MAP

- **Our guiding philosophies**
- **Outline of tasks**
- **For each task**
 - **Why is it important?**
 - **What do we hope to achieve?**
 - **What are some of our biggest challenges?**

SWRCB's Bio-Objective Development Philosophy

- **All waterbodies should have biological objectives**
 - Start with perennial wadeable streams
- **Desire multiple indicators**
 - Start with benthic macroinvertebrates
- **Biological objectives need numeric endpoints**
 - Perhaps several
- **Requires statewide consistency with regional flexibility**

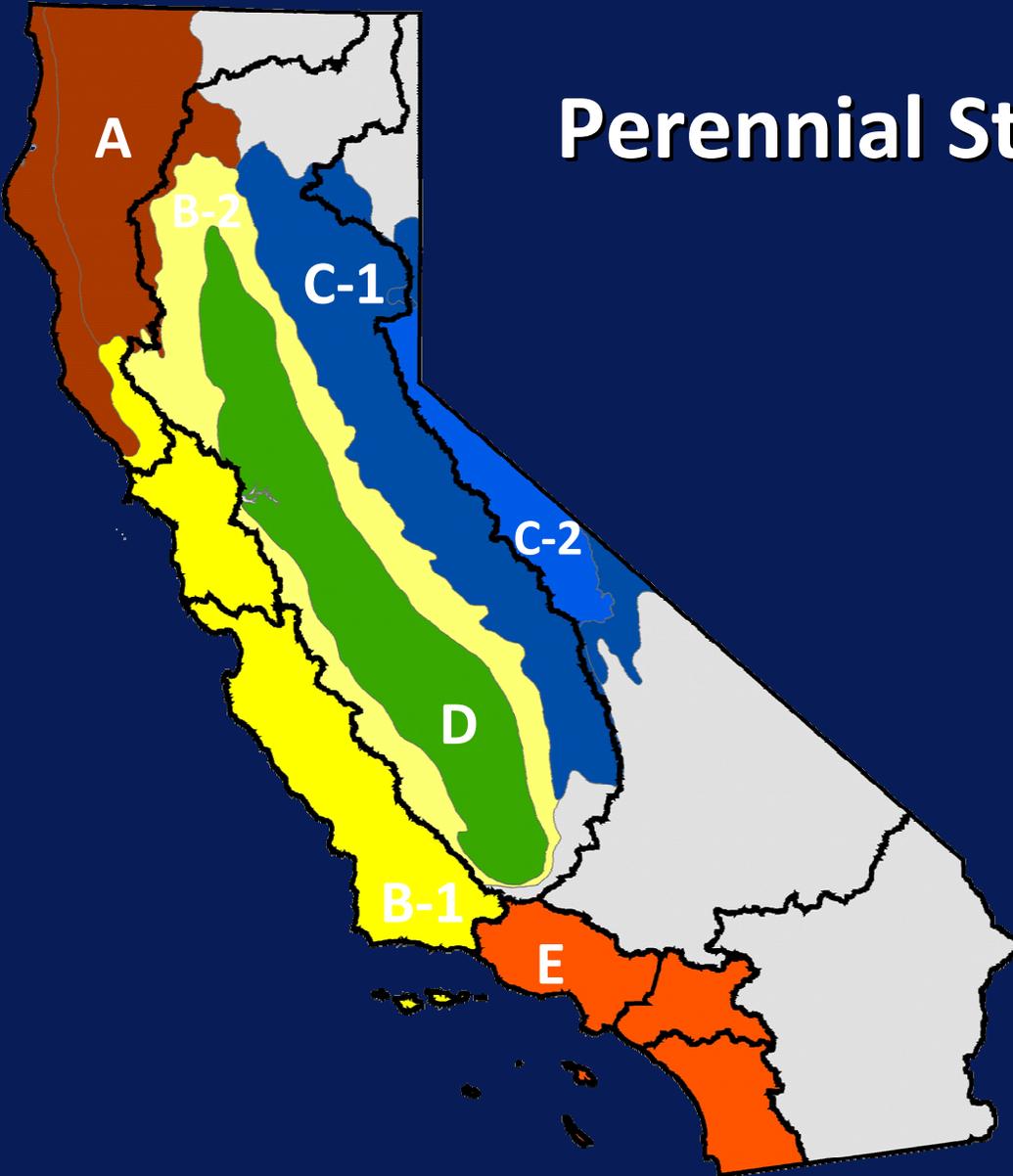
9-Step Development Process

- Reference condition
 - Stressor response models
 - Waterbody classification and scoring
 - Stressor identification
 - Information management
 - Implementation Plan Development
 - Rulemaking
 - Outreach
 - Training and standardization
- 
- Technical Elements**

WHY REFERENCE CONDITION?

- **Biology will naturally vary with physical factors**
 - Rainfall, elevation, temperature, slope, etc.
- **We don't expect biology to look the same in different parts of the state**
- **Goal is to set biological expectations for reference sites**
 - Identify how many biogeographic regions exist

Perennial Stream Assessment Regions



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)

Other:

- Modoc Plateau

- Deserts

OUR CHALLENGES

- **How many biogeographic regions are there?**
 - How many can we realistically accommodate?
- **What are the important natural gradients within biogeographic regions?**
- **How do we account for biogeographic regions without many (any) reference sites?**

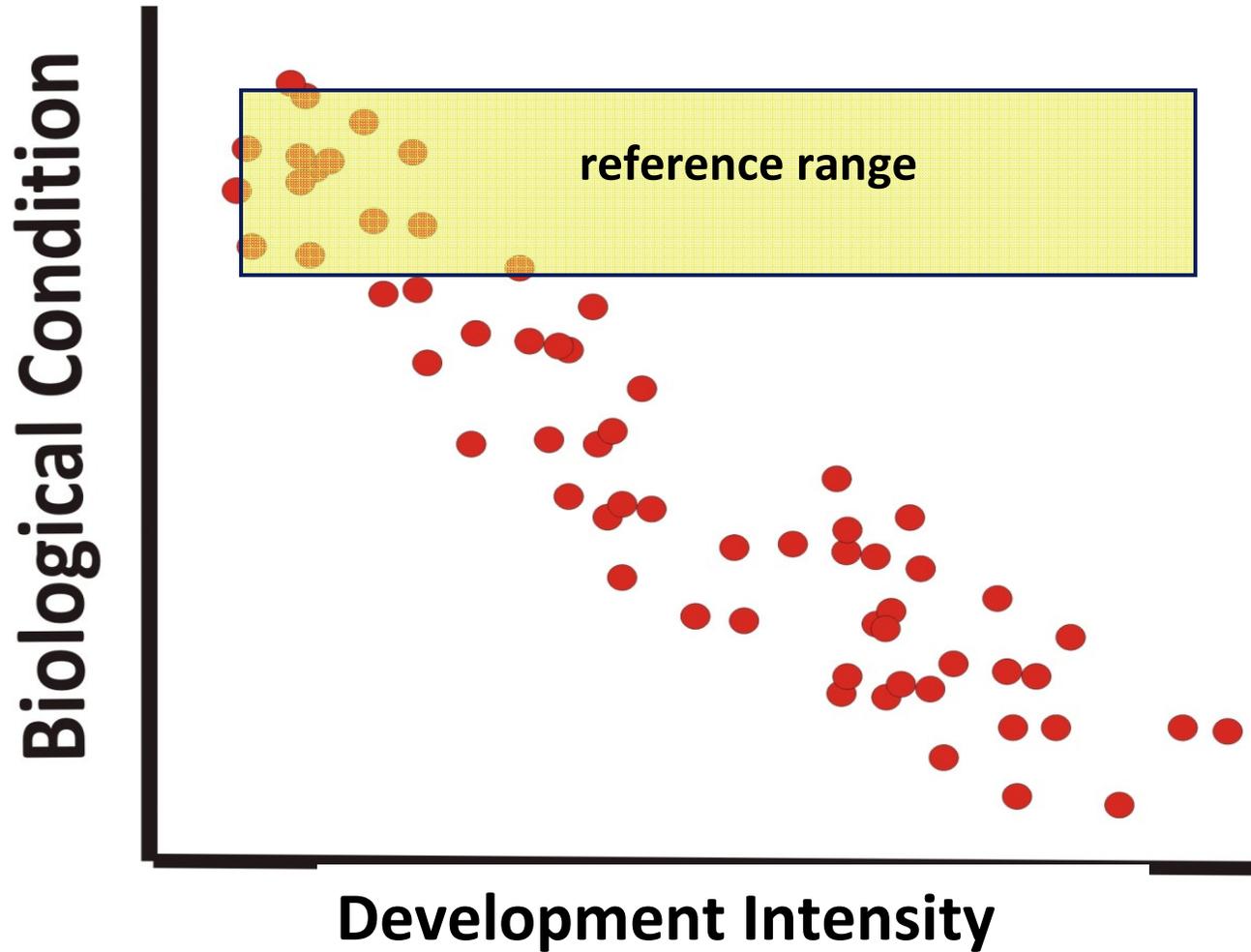
9-Step Development Process

- Reference condition
 - Stressor response models
 - Waterbody classification and scoring
 - Stressor identification
 - Information management
 - Implementation Plan Development
 - Rulemaking
 - Outreach
 - Training and standardization
- 
- Technical Elements**

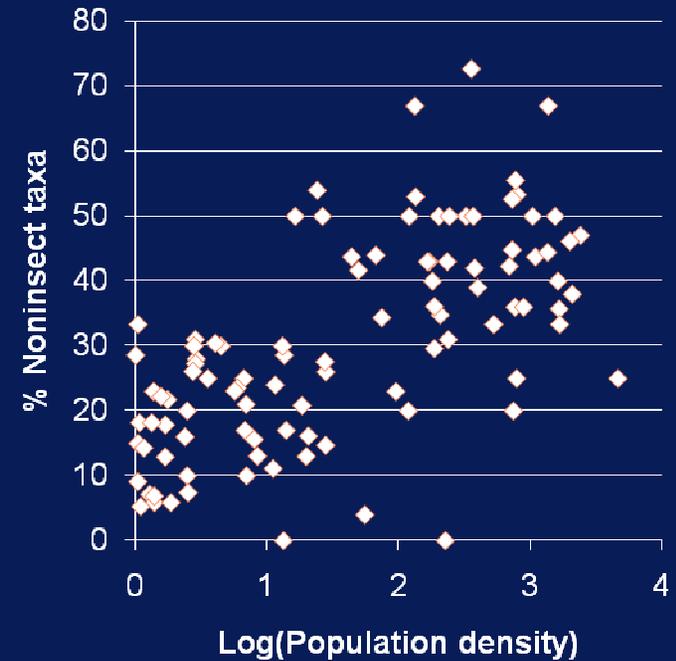
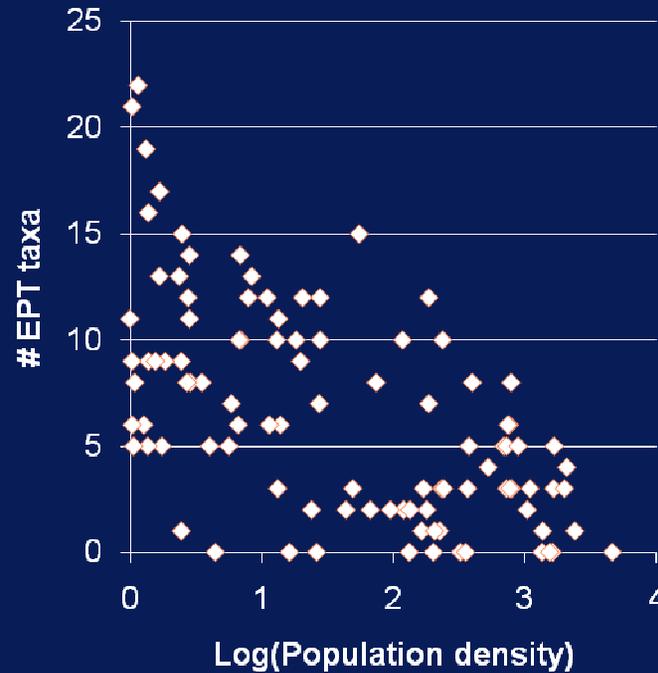
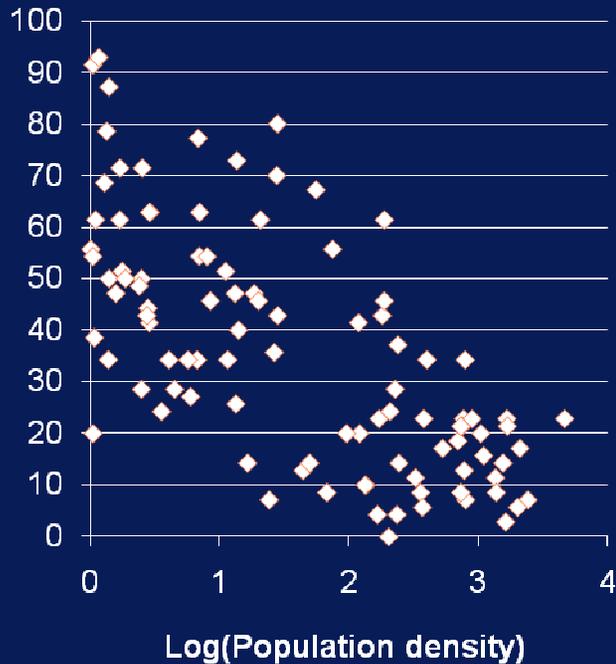
WHY STRESSOR RESPONSE MODELS?

- **Reference condition isn't a fair standard for all sites**
 - Some sites will never be stressor free
- **There are quantifiable changes in biological condition with increasing stressors**
 - Natural vs. anthropogenic stressors
- **Goal is to identify the most accurate model(s)**
 - A tool to set biological expectations for nonreference sites

Fake Data To Illustrate Stressor Response



Example Stressor-Response Model from Southern California



OUR CHALLENGES

- **Which is the best modeling approach?**
- **Which biological assessment tool, or combination of tools, provides adequate response sensitivity?**
 - **How do we intercalibrate these tools across the state?**
- **Which stressor variables are the best predictor(s) of response?**
 - **At what scale?**

9-Step Development Process

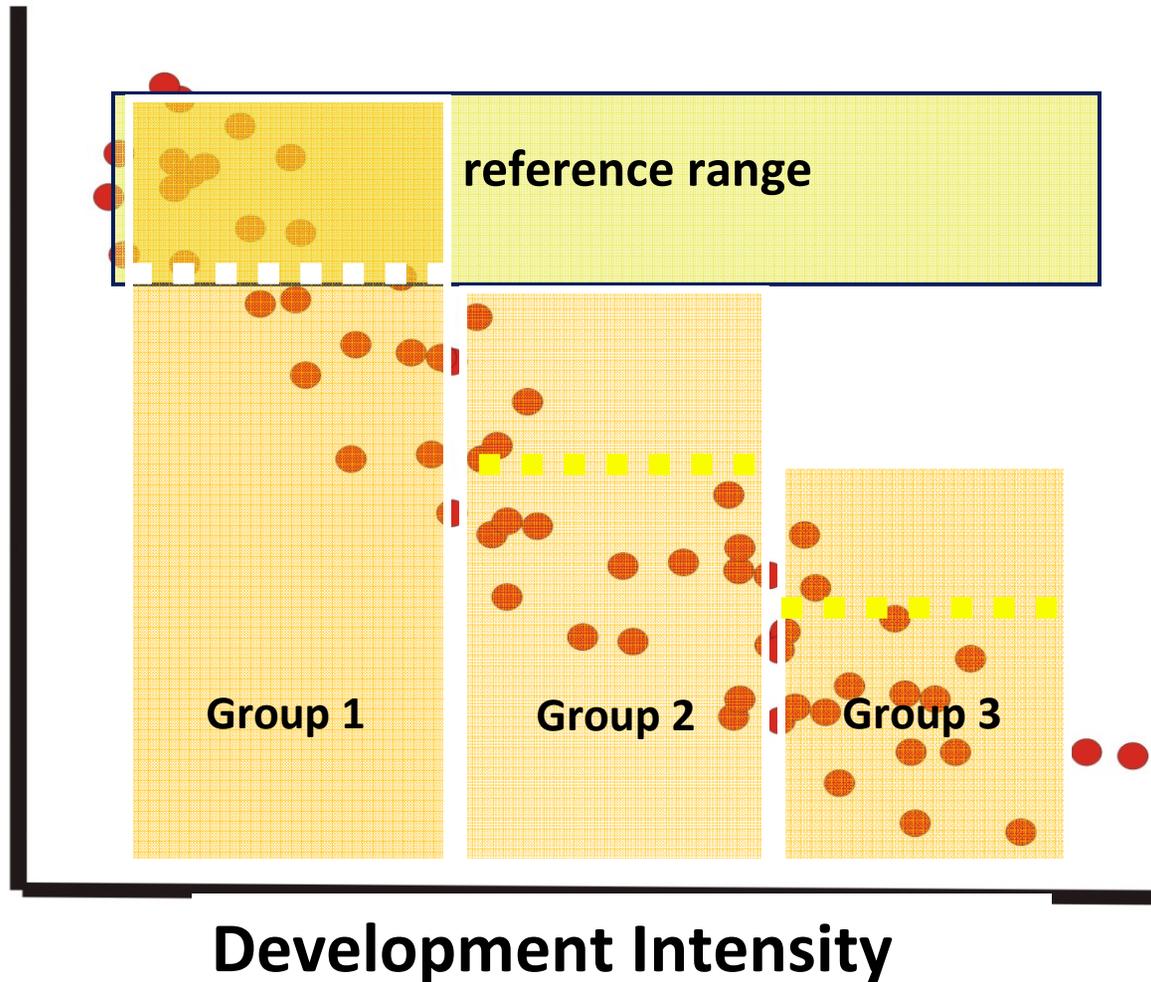
- Reference condition
 - Stressor response models
 - Waterbody classification and scoring
 - Stressor identification
 - Information management
 - Implementation Plan Development
 - Rulemaking
 - Outreach
 - Training and standardization
- 
- Technical Elements**

WHY WATERBODY CLASSIFICATION?

- **Goal is to assign biological expectation to every waterbody**
- **Accomplished by extrapolating the stressor response model**
- **Will require both modeling and field verification**

Stressor Response Models Can be Used for Establishing Tiered Biological Objectives

Biological Condition



OUR CHALLENGES

- **How good the GIS coverages depict your stream reach**
 - **Model uncertainty versus GIS uncertainty**
- **If the model will work for every biogeographic region**
 - **This might result in missing portions of the State**
- **What resolution best ascribes classification**
 - **Reach buffer, upstream buffer, catchment, entire watershed**

9-Step Development Process

- Reference condition
 - Stressor response models
 - Waterbody classification and scoring
 - Stressor identification
 - Information management
 - Implementation Plan Development
 - Rulemaking
 - Outreach
 - Training and standardization
- 
- Technical Elements**

WHY STRESSOR IDENTIFICATION?

- **Need to determine site-specific causes when bio-objectives are not achieved**
 - Regional stressor response modeling can give insight
- **Multiple approaches exist, but have not been well-vetted in California**
 - correlative, relative risk, tolerance values, mechanistic, etc.
- **Goal is to provide recommendations for future use**

DEMONSTRATION STUDIES

- **Inherently site specific**
 - Regional stressor response modeling can give insight
- **US EPA has invested in this topic for nearly 10 years**
 - www.epa.gov/CADDIS
- **We are looking to conduct three test case studies as the basis for our recommendations**
 - Different stressors
 - Different locations

OUR CHALLENGES

- **Which approach will succeed/fail?**
- **Where we will conduct the test case studies?**
 - **Which types of stressors?**
- **Continued need for support post-adoption**

9-Step Development Process

- Reference condition
 - Stressor response models
 - Waterbody classification and scoring
 - Stressor identification
 - Information management
 - Implementation Plan Development
 - Rulemaking
 - Outreach
 - Training and standardization
- 
- Technical Elements**

INFORMATION MANAGEMENT

- **The State has invested over \$2M into information management for ambient data thus far**
 - Another \$0.5M this year alone
- **Developed a standardized data structure based on CA Environmental Data Exchange Network (CEDEN)**
- **Goal is to have a transparent and standardized way to submit, store, access, and analyze bioassessment data**

OUR CHALLENGES

- **Turning data into information**
 - Useable for both regulated and regulatory agencies
- **Non-technical hurdles to success are equally as important as technical issues**
- **Linkage to electronic reporting requirements for NPDES permits and certifications**

Workplan Summary

TASK	GOAL
Reference Condition	Identify biogeographic regions, set biological expectations for reference sites
Stressor-Response Model	Set biological expectations for non-reference sites
Waterbody Classification	Assign biological expectations to every waterbody
Stressor Identification	Provide guidance for when bio-objectives are not achieved
Information Management	Transparent and standardized way to submit, store, access, and analyze bioassessment data

SCHEDULE

- **The Science Team needs to produce all the Technical Support documents to SWRCB by Dec 2012**
- **Goal is to produce the best available technical information to support evaluation of bio-objective alternatives**
- **Provide for interaction and review by Science and Stakeholder Advisory Committees**

<u>Date</u>	<u>Task</u>
Mar 2010	Form Stakeholder and Regulatory Review Groups <ul style="list-style-type: none">• Workplan Review
Jun 2010	Form Scientific Advisory Group <ul style="list-style-type: none">• Technical Work Element Review and Approval
Mar 2011	RCMP, Method Standardization, IM
Sep 2011	Stressor Response models
Mar 2012	Waterbody Classification, Stressor identification pilots
Jun 2012	Science Group Final Review on written Technical Reports
Sep 2012	Final draft Technical Documents to Stakeholder Group
Dec 2012	Final Technical Documents to SWRCB

CHALLENGE FOR TODAY

- **Review the workplan**
- **Did we use a sound technical approach?**
- **Are the technical activities appropriate to achieve the stated goals?**
- **Are there additional tasks we need to consider?**

