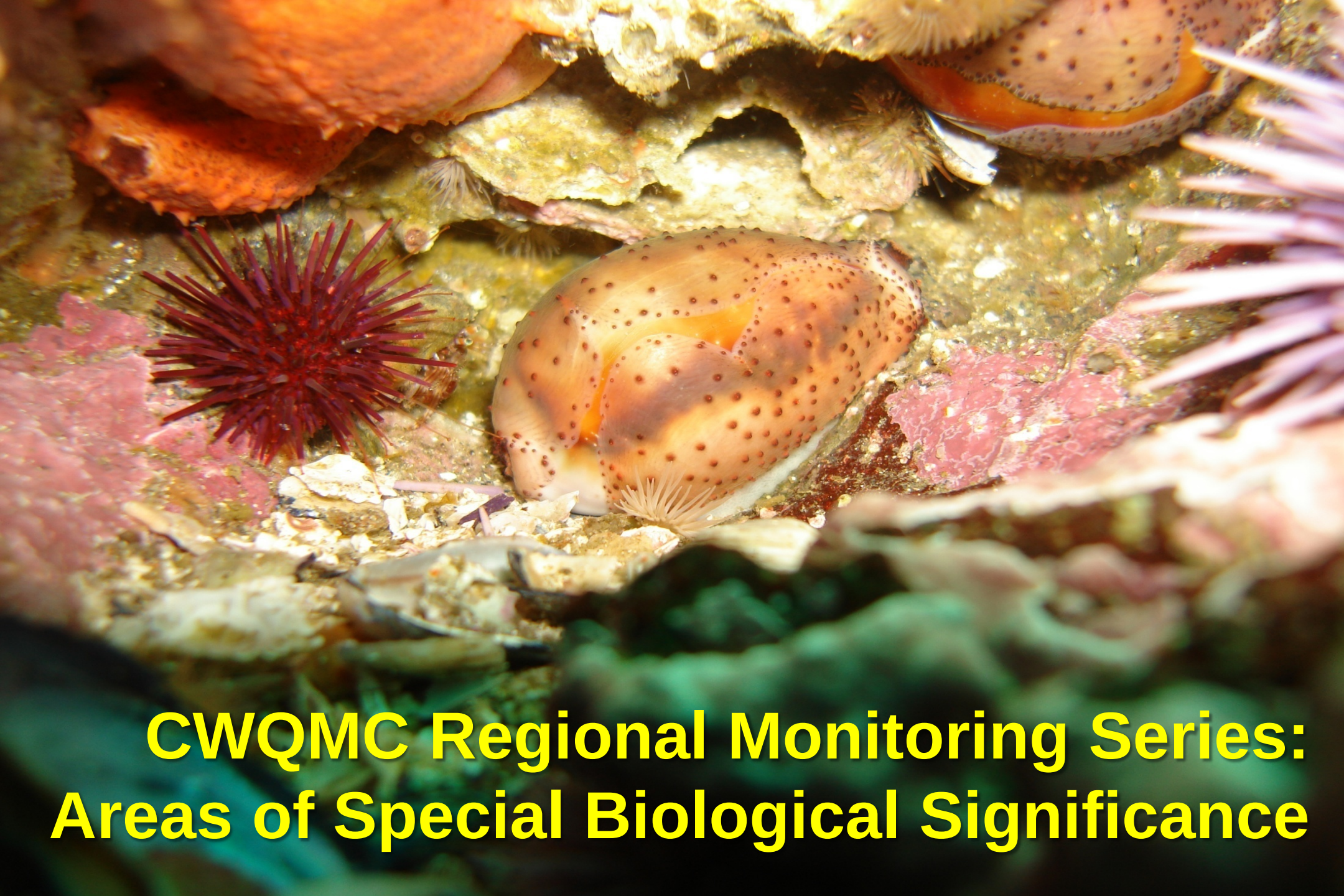


CWQMC Regional Monitoring Series: Areas of Special Biological Significance

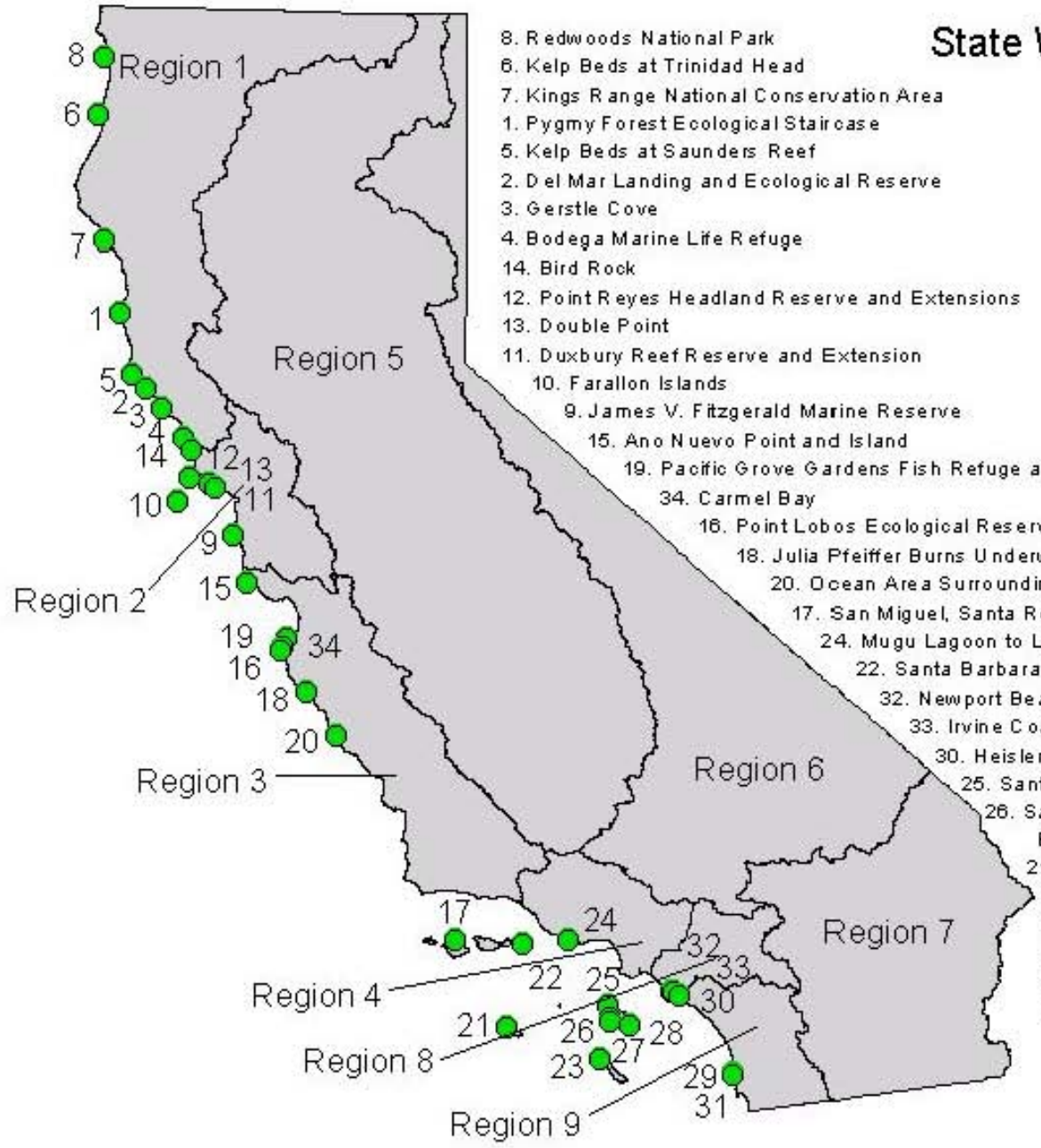
There are Different Kinds of State Marine Protected Areas (MPAs)

- Marine conservation area
- Marine reserve
- Marine park
- Marine cultural preservation area
- Marine recreational managed area
- Water quality protected area

Water Quality Protected Areas

- Called Areas of Special Biological Significance
  - 34 ASBS statewide
- Regulation different than typical NPDES permit
  - “No discharge of waste..maintenance of natural water quality”
- Most recent survey observed nearly 1,700 discharges
  - Almost all are storm drains

State Water Quality Protection Areas



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This Talk Has Three Parts

- 2008 Southern Cal Bight Regional Monitoring proof of concept
  - Bight'08
- Statewide regional monitoring expansion
- Grant monitoring consolidation

Bight'08 Regional Monitoring Collaboration

- City of Malibu
- Los Angeles County Flood Control District
- City of Newport Beach
- City of Laguna Beach
- City of San Diego
- Scripps Institute of Oceanography
- Connelly Pacific Co.
- Santa Catalina Island Co.
- University of Southern California
- US Navy
- San Diego Regional Water Quality Control Board
- Los Angeles Regional Water Quality Control Board
- State Water Resources Control Board

Bight '08 ASBS Monitoring Questions

- What is the range of natural water quality at shoreline locations?
  - Develop natural water quality "limits"
- How does the range of natural water quality compare to ASBS sites?
  - Compare specific ASBS locations to natural water quality limits

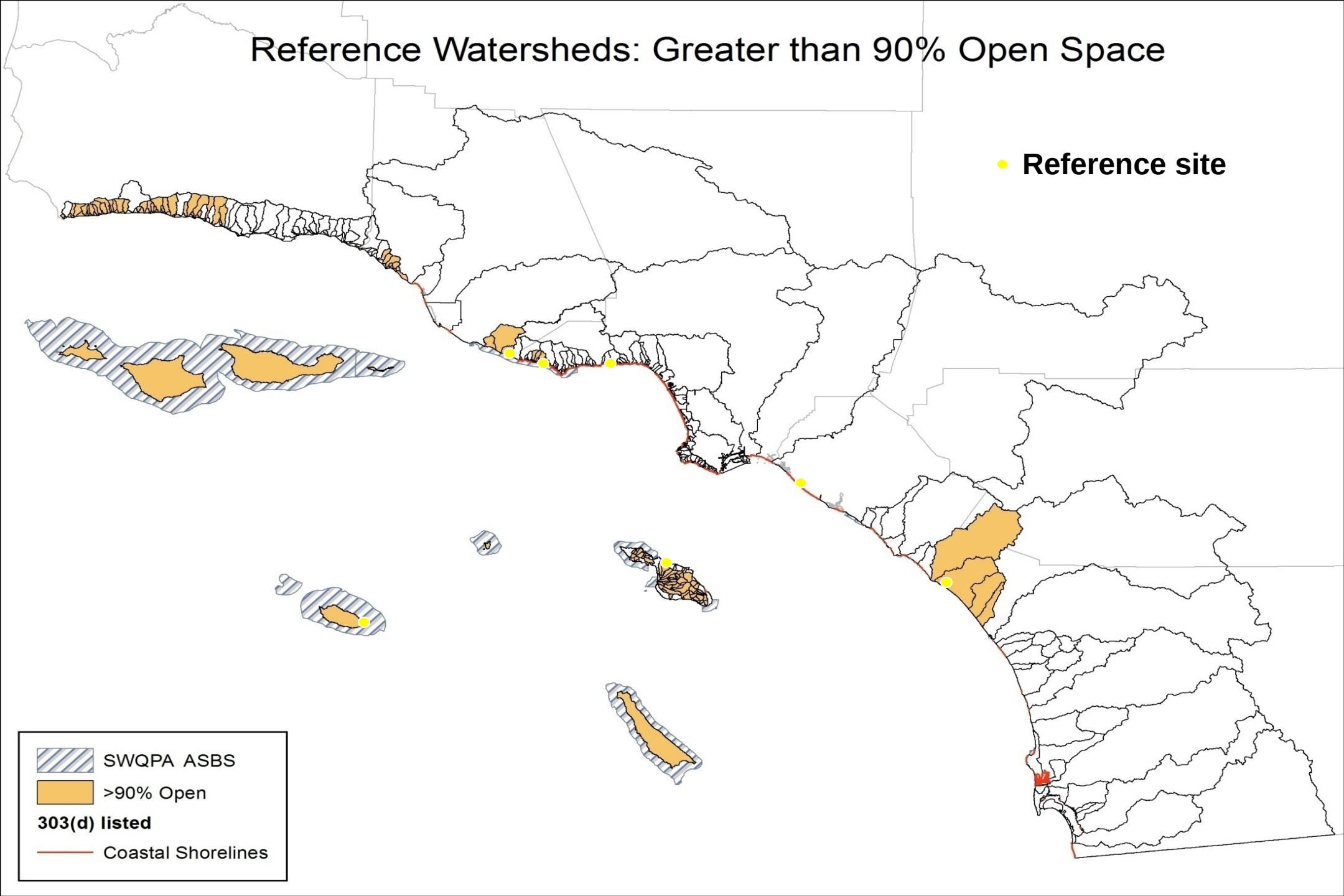
Targeted Design

- Chemistry and Toxicity was wet weather focused
  - One sample pre-storm and another post-storm
  - Three storms per site
- Biology was dry weather focused
  - Standardized biodiversity surveys
- Location specific site selection
  - Reference sites
  - Discharge sites
  - Collected from the ocean immediately in front discharge

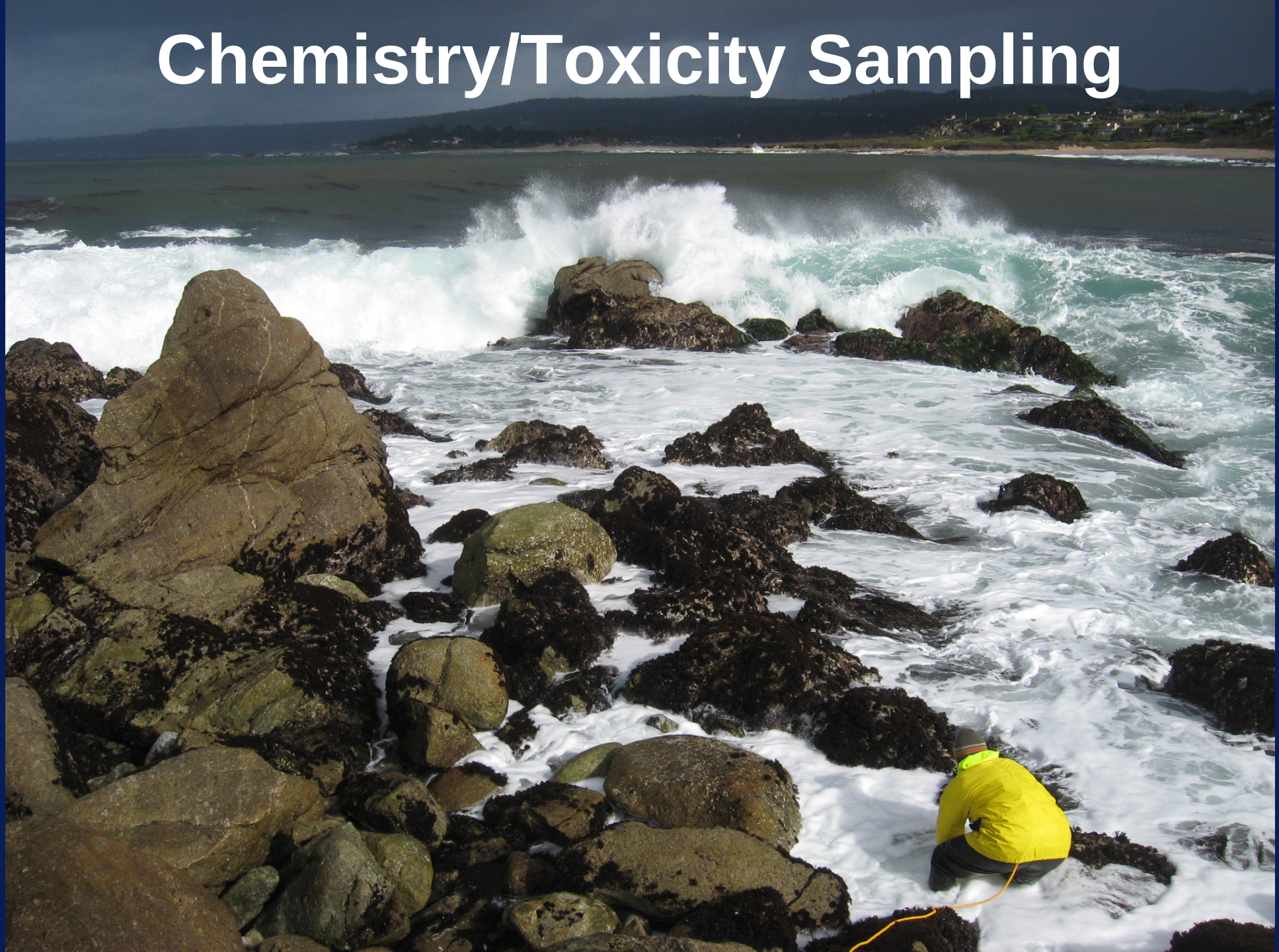
Reference Site Selection Criteria

- Must have surface discharge to the ocean
- Discharge >90% open space
- No 303d listing
- Secondary criteria
  - Beach orientation
  - Substrate

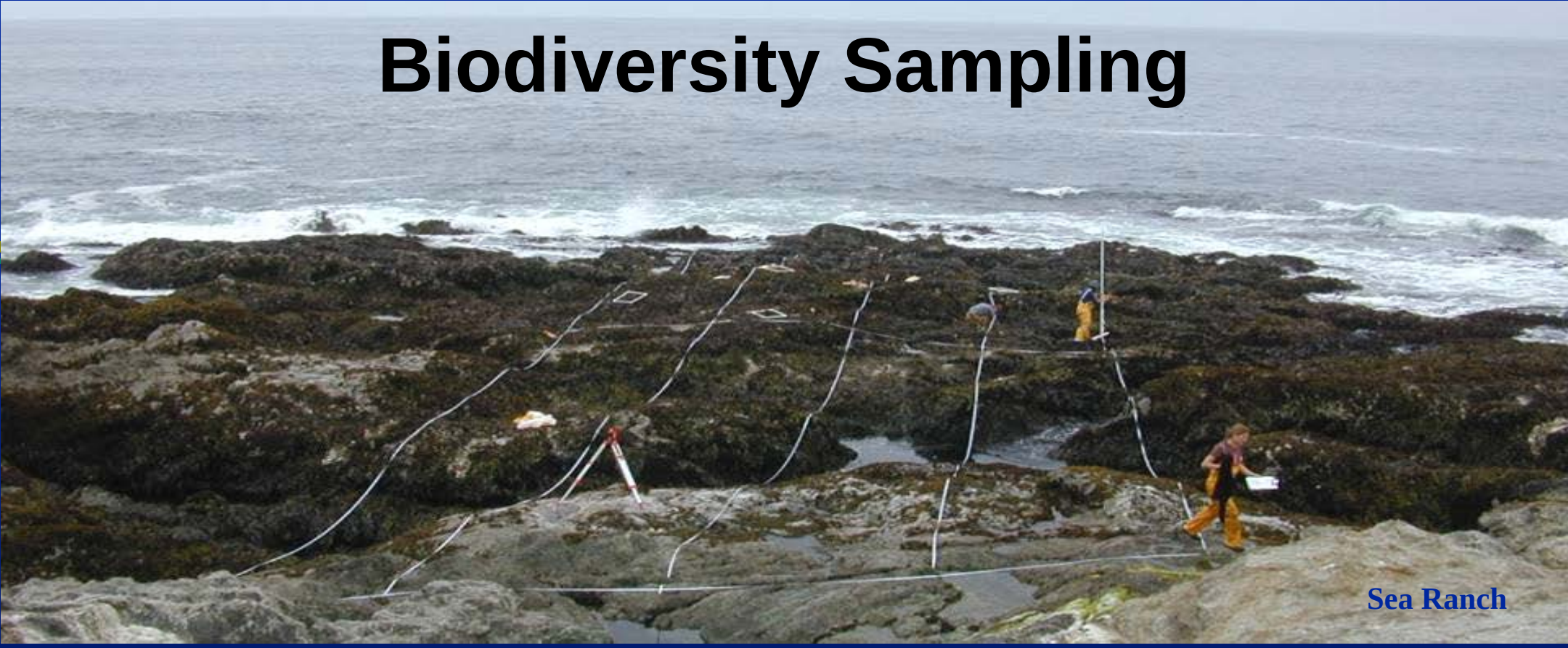
Reference Watersheds: Greater than 90% Open Space



Chemistry/Toxicity Sampling



Biodiversity Sampling



- 30m horizontal transect parallel to shore
- 11 vertical transects perpendicular to shore
- Transects capture all major zones
- Identify and count all mobile and non-mobile species

Major Findings

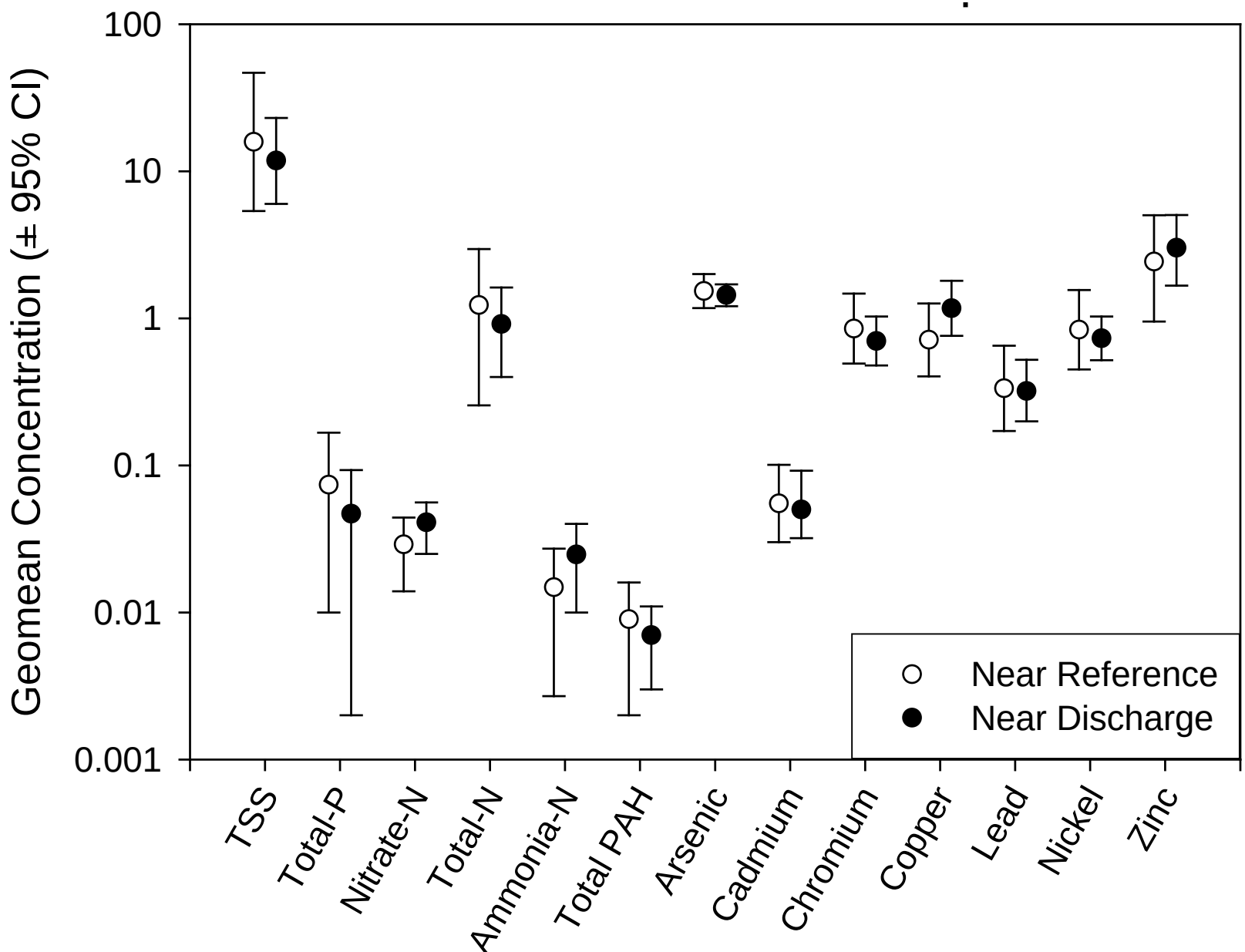
- **Developed numeric guidelines for Natural Water Quality**
  - Reference site chemistry sometimes greater than Ocean Plan
- **Water quality near discharges was similar to reference sites**
  - Some isolated exceedences of the natural water quality guideline
- **Intertidal communities at most discharge sites similar to reference sites**

Reference Site Post-Storm Concentrations

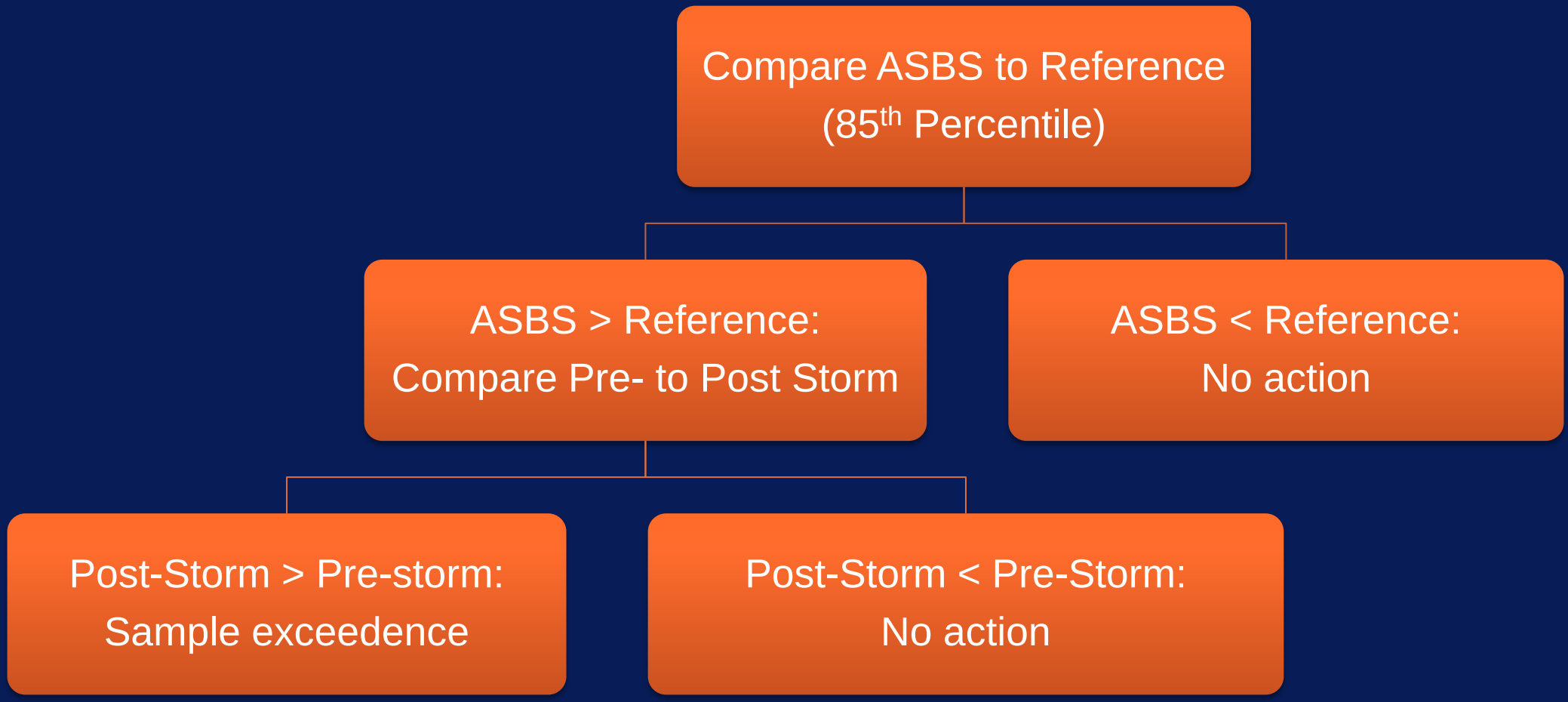
	Units	Maximum	Mean	Ocean Plan
Ammonia-N	mg/L	0.05	0.01	2.4
PAH	ng/L	318	22	8.8
Arsenic	ug/L	5.0	1.8	32
Cadmium	ug/L	4.5	1.8	4
Chromium	ug/L	17	1.9	8
Copper	ug/L	6.1	1.1	12
Lead	ug/L	9.5	2.4	8
Nickel	ug/L	19	2.0	20
Silver	ug/L	6.0	0.7	2.8
Zinc	ug/L	29	5.2	80

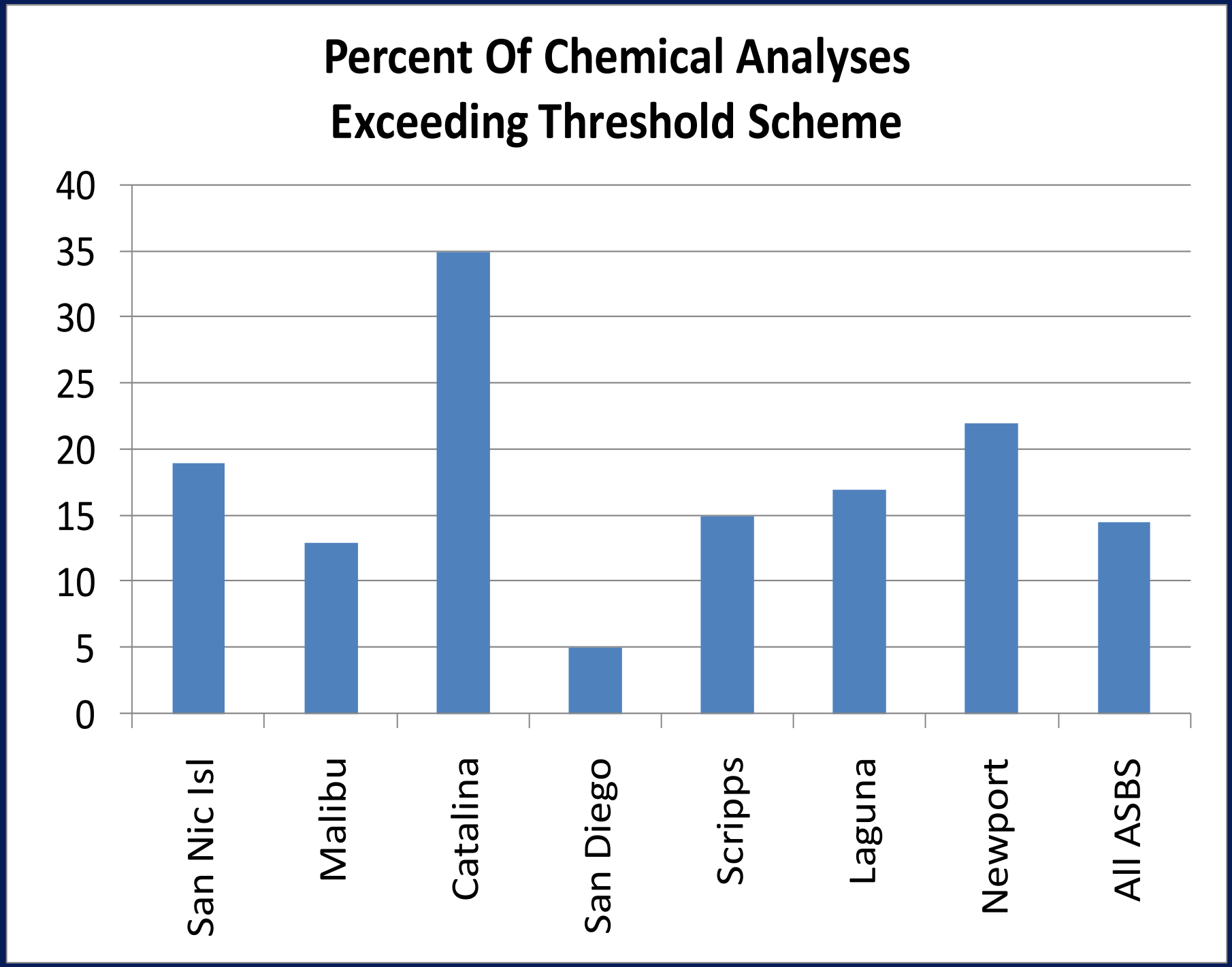
Comparison Of Post-Storm Receiving Waters

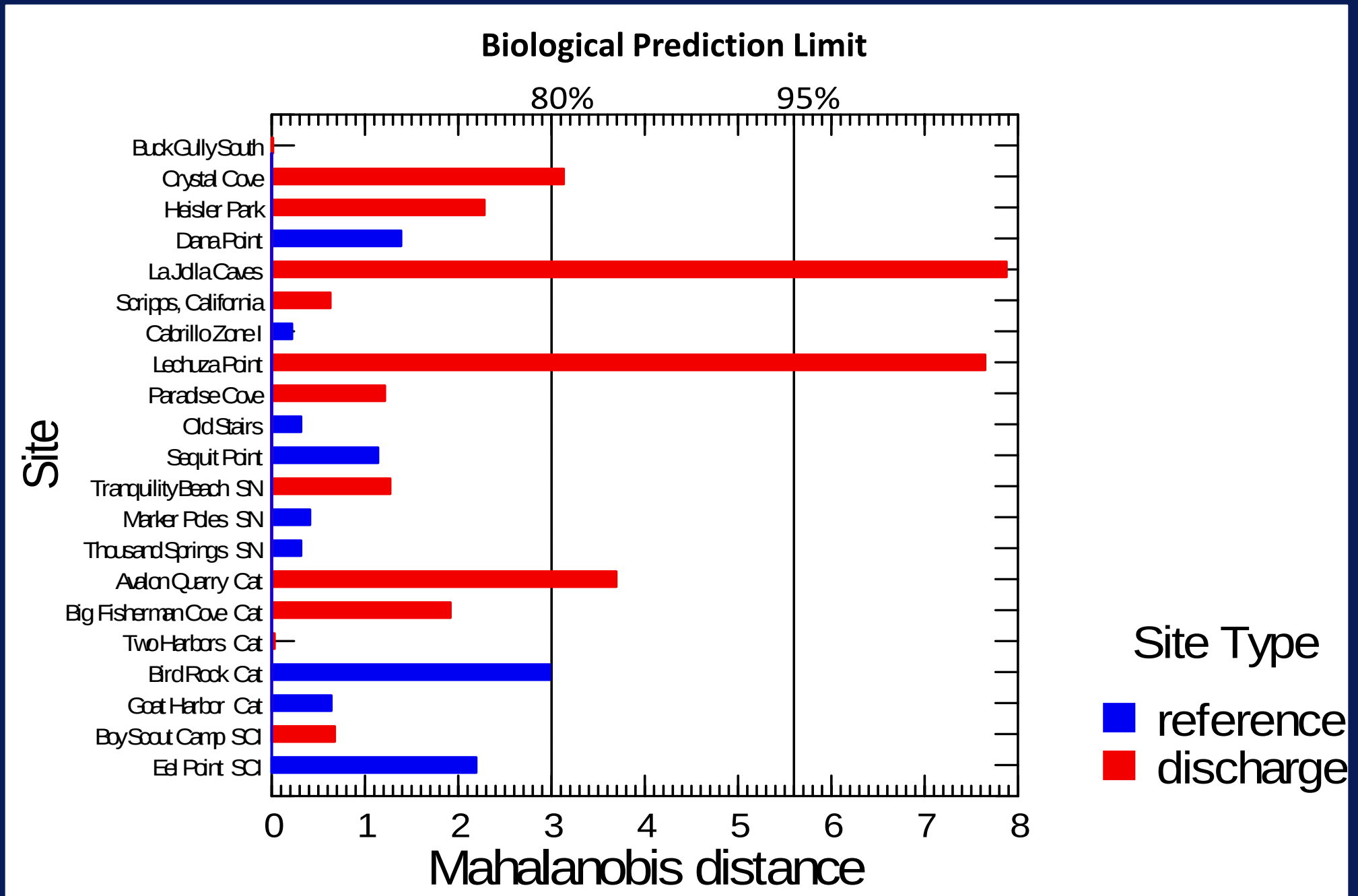
Reference vs. Discharge

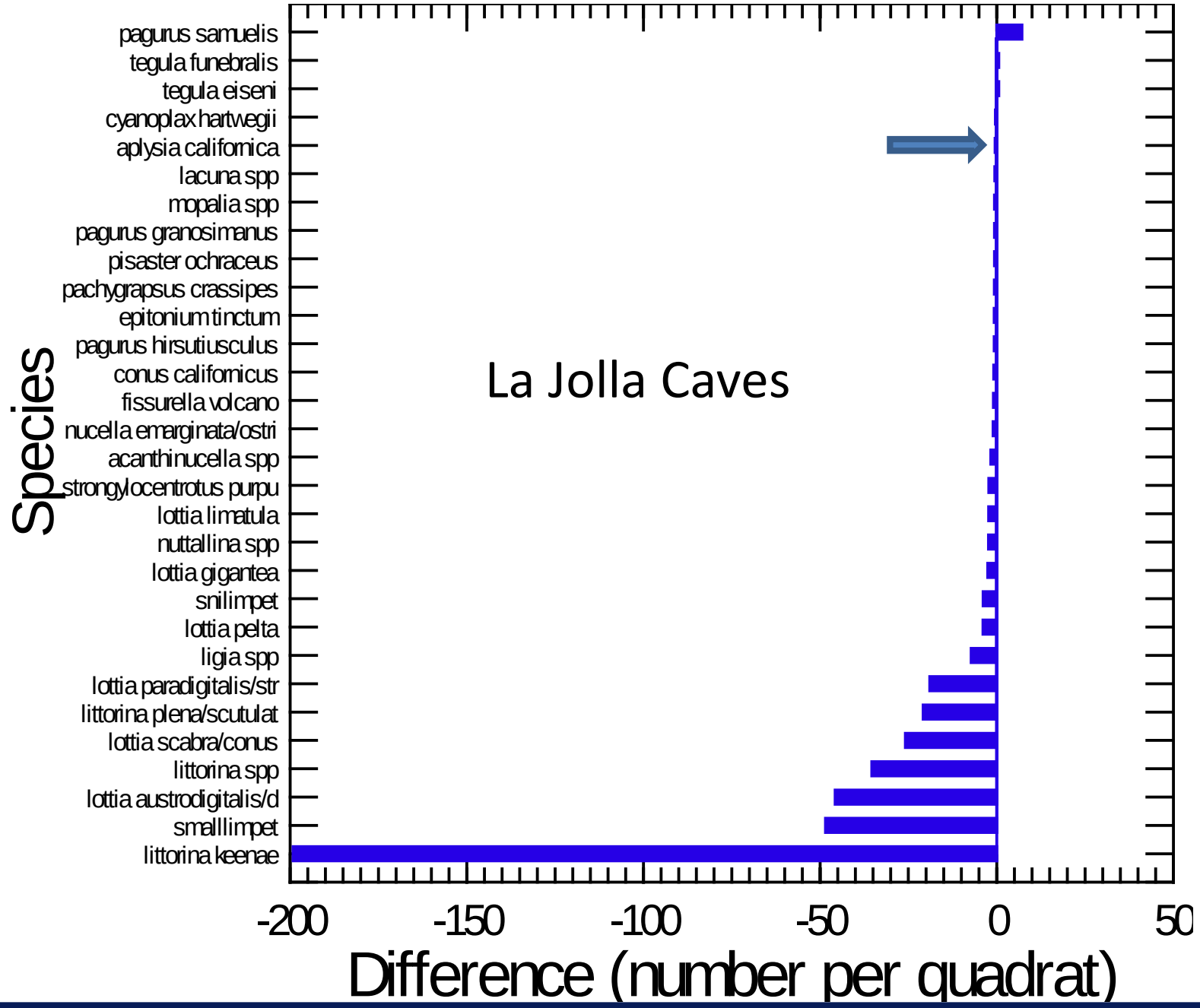


Discharge Sample Evaluation Scheme




Percent Of Chemical Analyses
Exceeding Threshold Scheme
40
35
30
25
20
15
10
5
0
San Nic Isl
Malibu
Catalina
San Diego
Scripps
Laguna
Newport
All ASBS


Biological Prediction Limit
80%
95%
Buck Gully South
Crystal Cove
Heisler Park
Dana Point
La Jolla Caves
Scripps, California
Cabrillo Zone I
Lechuza Point
Paradise Cove
Old Stairs
Sequit Point
Tranquility Beach SN
Marker Poles SN
Thousand Springs SN
Avalon Quarry Cat
Big Fisherman Cove Cat
Two Harbors Cat
Bird Rock Cat
Goat Harbor Cat
Boy Scout Camp SCI
Eel Point SCI
Site
0
1
2
3
4
5
6
7
8
Mahalanobis distance
Site Type
reference
discharge


pagurus samuelis
tegula funebralis
tegula eiseni
cyanoplax hartwegii
aplysia californica
lacuna spp
mopalia spp
pagurus granosimanus
pisaster ochraceus
pachygrapsus crassipes
epitonium tinctum
pagurus hirsutiusculus
conus californicus
fissurella volcano
nucella emarginata/ostri
acanthinucella spp
strongylocentrotus purpu
lottia limatula
nuttallina spp
lottia gigantea
snilimpet
lottia pelta
ligia spp
lottia paradigitalis/str
littorina plena/scutulat
lottia scabra/conus
littorina spp
lottia austrodigitalis/d
smalllimpet
littorina keenae
Species
La Jolla Caves
-200
-150
-100
-50
0
50
Difference (number per quadrat)

Recommendations from Bight'08

- Additional storm sampling
  - Need a better characterization of reference
- Examining fate and transport
  - Linkage tool for effects
- Bioaccumulation
  - Mussel watch

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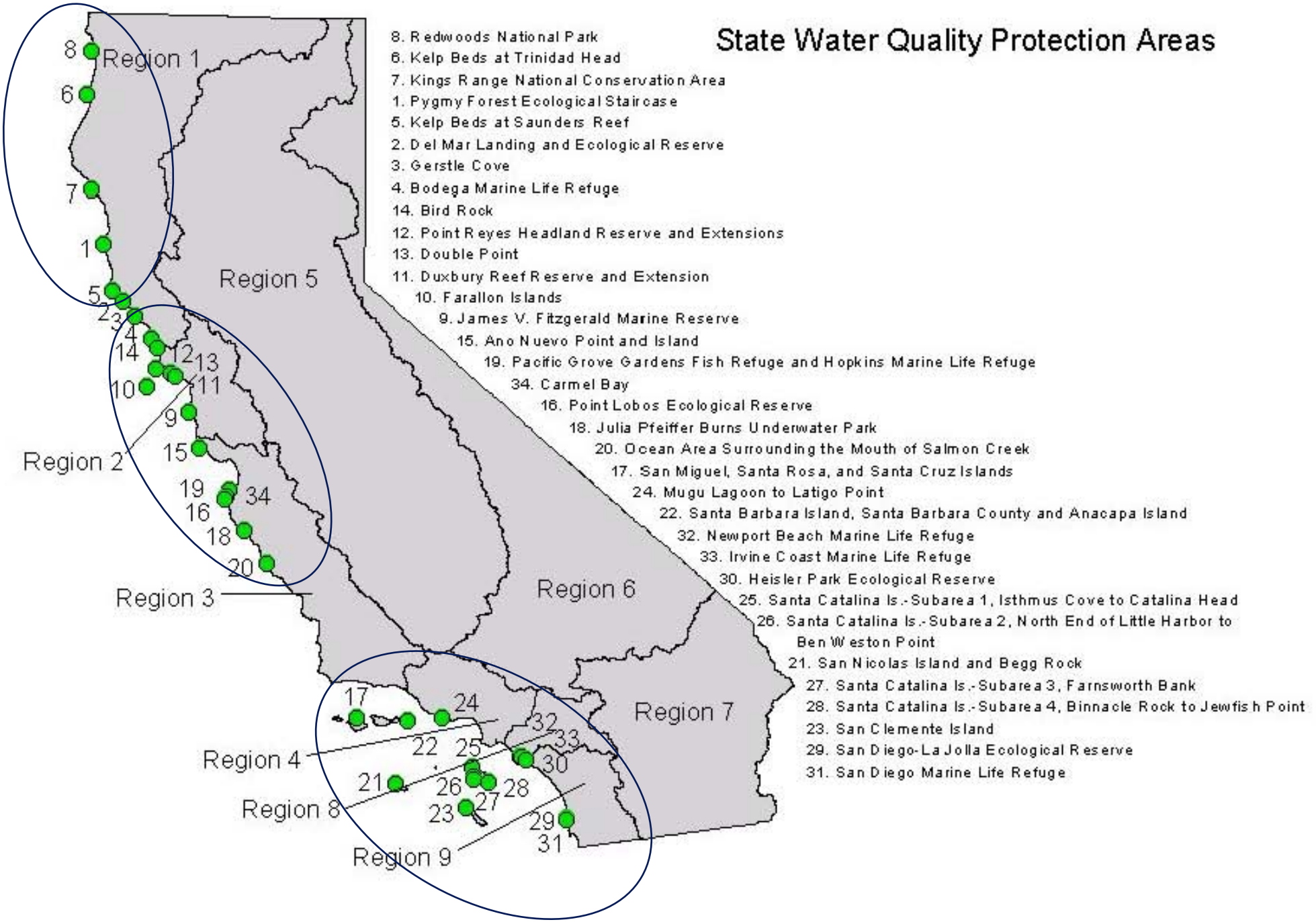
Statewide Expansion

- The SWRCB issued a Special Exception for all unpermitted ASBS dischargers
- They offered two options for implementing monitoring
  - Individual monitoring
  - Regional monitoring
- All but one discharger selected the Regional Monitoring option

State Water Quality Protection Areas



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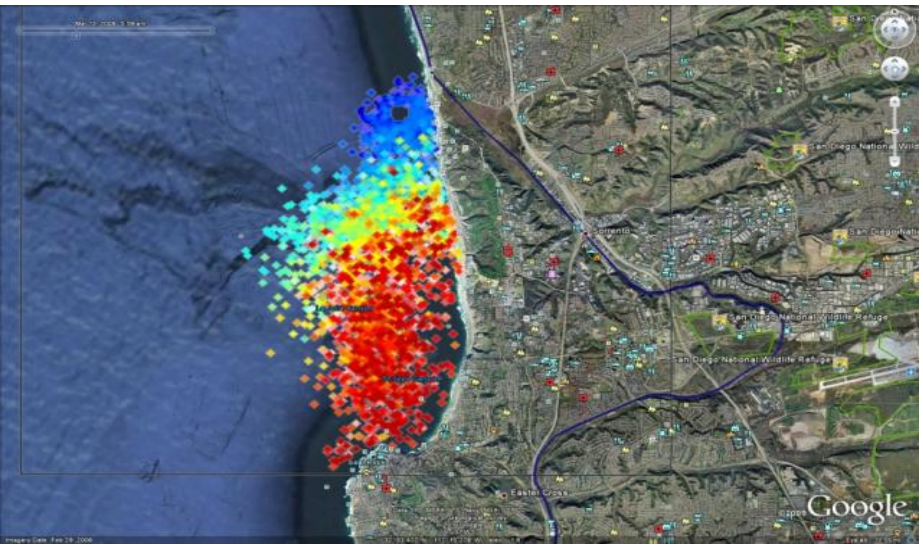
Strategy For Implementation

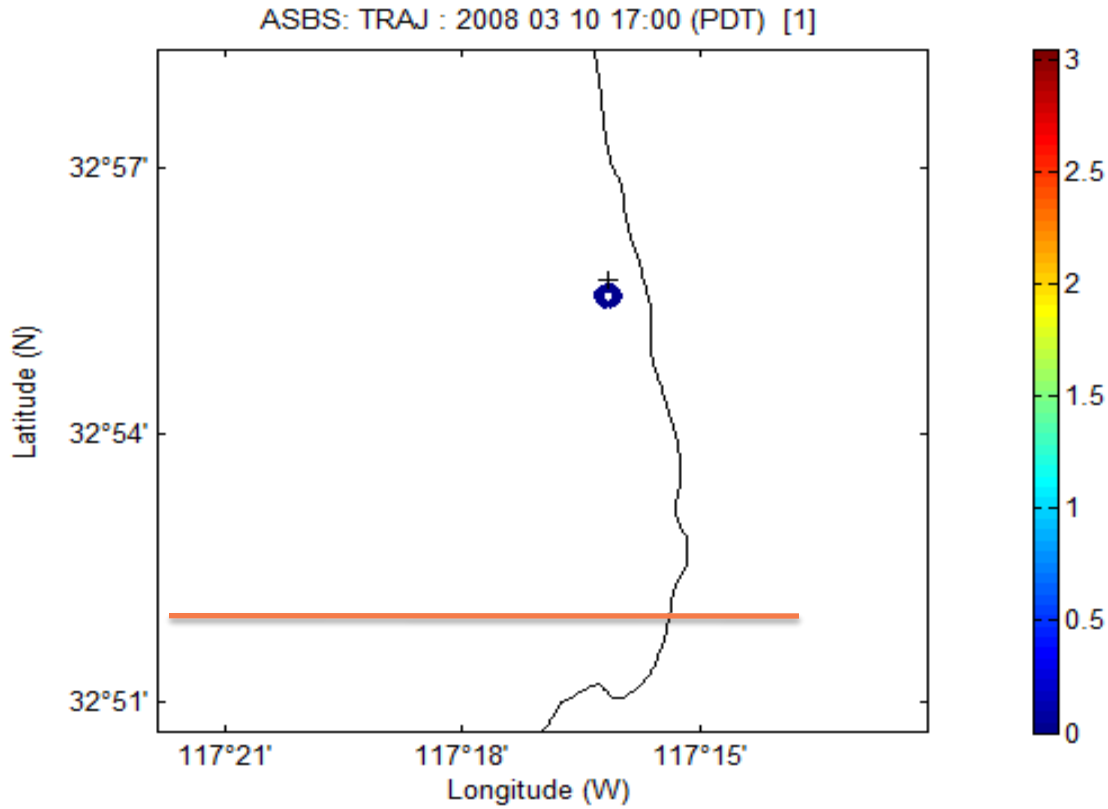
- Start with the So Cal design
  - Regional reference condition
  - Individual ASBS discharge sites
- Add discharge monitoring per special protections
- Share monitoring workplans and QA plans

How Does North and Central Cal Differ from So Cal?

- Relationships among collaborators
  - Wide spectrum of previous interactions
- Administrative functions
- Experience matters
  - Capability to move to the next level

Using SCCOOS to help illuminate impacts from non-ASBS discharges





SCCWRP's Role in Statewide Monitoring

- SWRCB allocated $1M to assist with regional monitoring implementation
- SCCWRP serves as the statewide facilitator
- SCCWRP subcontracts reference site monitoring

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$32M in Prop 84 ASBS Grants

- **Goal of grant is to improve water quality and reduce or eliminate discharges into ASBS**

- **14 grantees statewide**
  - Wide variety of BMPs
  - All grantees are required to conduct monitoring

- **SWRCB set aside $1M for coordinating and consolidating grant monitoring**
  - What is pollutant load reduction due to grant funded BMPs?

SCCWRP's Role

- **Review monitoring workplans and QAPPs**
  - Study design, SWAMP comparability, audits
- **Compile and analyze monitoring data**
  - Assist in CEDEN submittal
- **Report for the legislature on success of the grant program**
  - BMP recommendations for stakeholders


HEISLER
PARK

Summarizing ASBS Monitoring

- **Successful Regional ASBS Monitoring in So Cal**
  - Translate narrative objectives to numerical guidelines
- **The lessons learned in So Cal have been expanded statewide**
  - Local adaptations
  - Interaction with other SWRCB policies
- **Monitoring oversight will dramatically improve ability to assess success of SWRCB grant programs**