mpa MONITORING ENTERPRISE

Ecological classification schemes in a management context – MPA monitoring

Dr. Liz Whiteman

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Outline

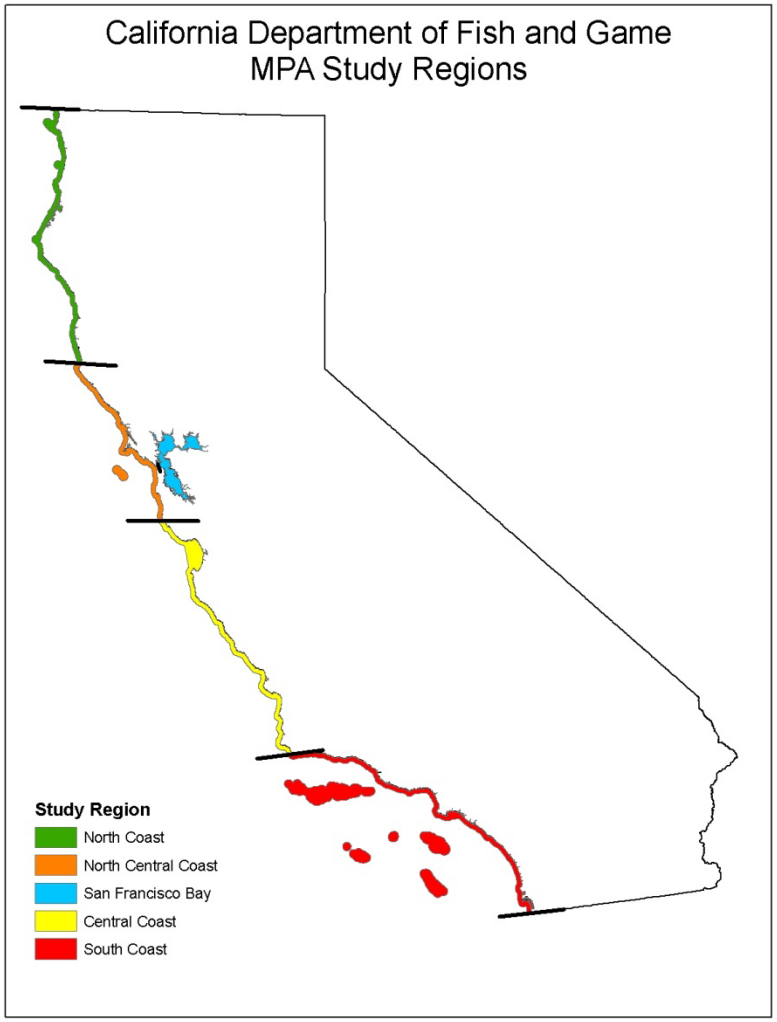
1. Focusing MPA monitoring
   - Ensuring management relevance
2. Evaluating progress towards goals
   - Assessing ecosystem condition
3. Informing adaptive management
   - Evaluating MPA design & management decisions

Focusing MPA monitoring
- ensuring management relevance

New statewide MPA network

1999 Marine Life Protection Act

- Evaluate MPA network performance
- Facilitate adaptive management
- Improve understanding of marine systems



With broad goals

‘protect the natural abundance & diversity of marine life’

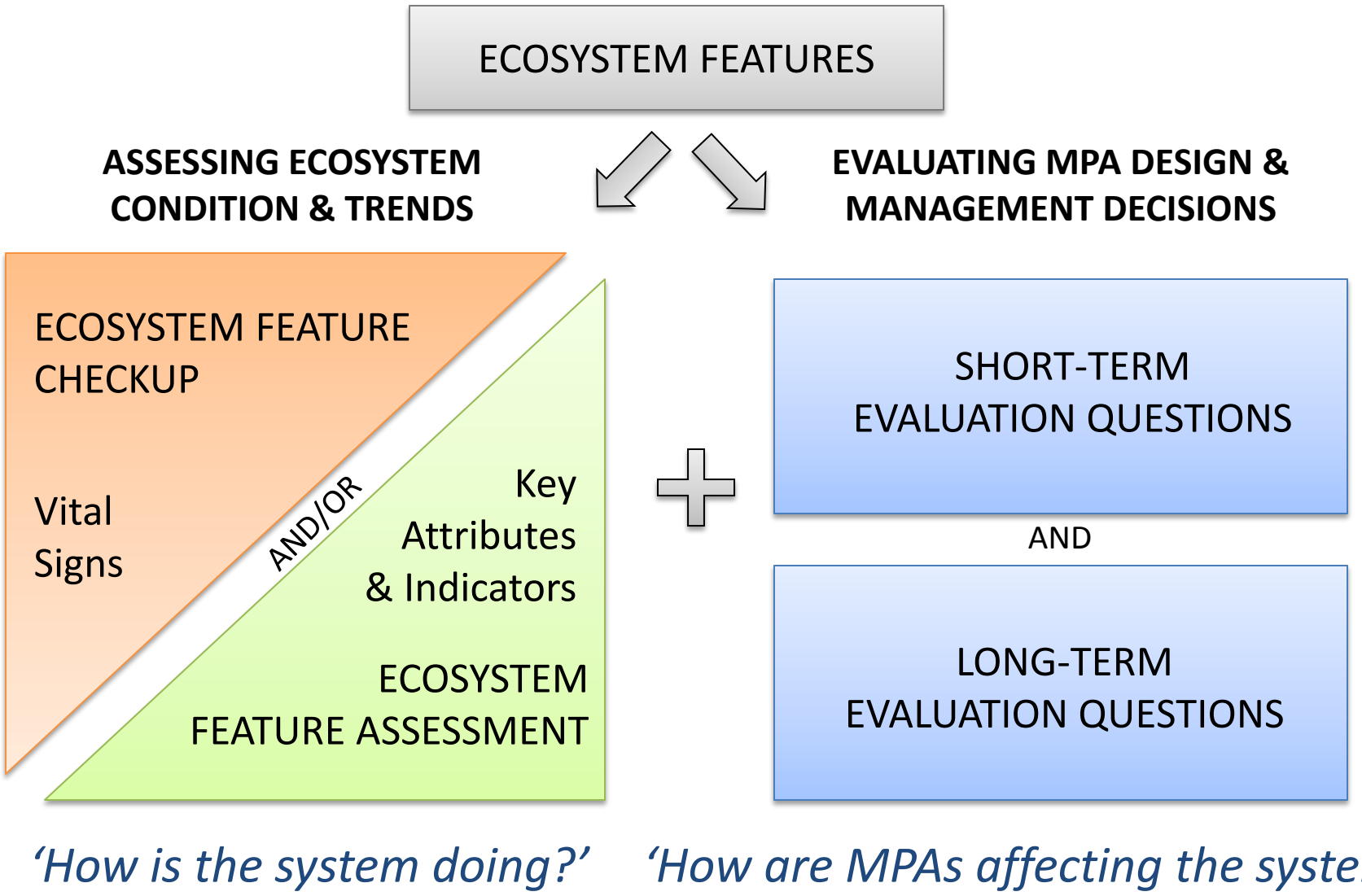
‘protect structure, function & integrity of marine ecosystems’

‘rebuild depleted populations’

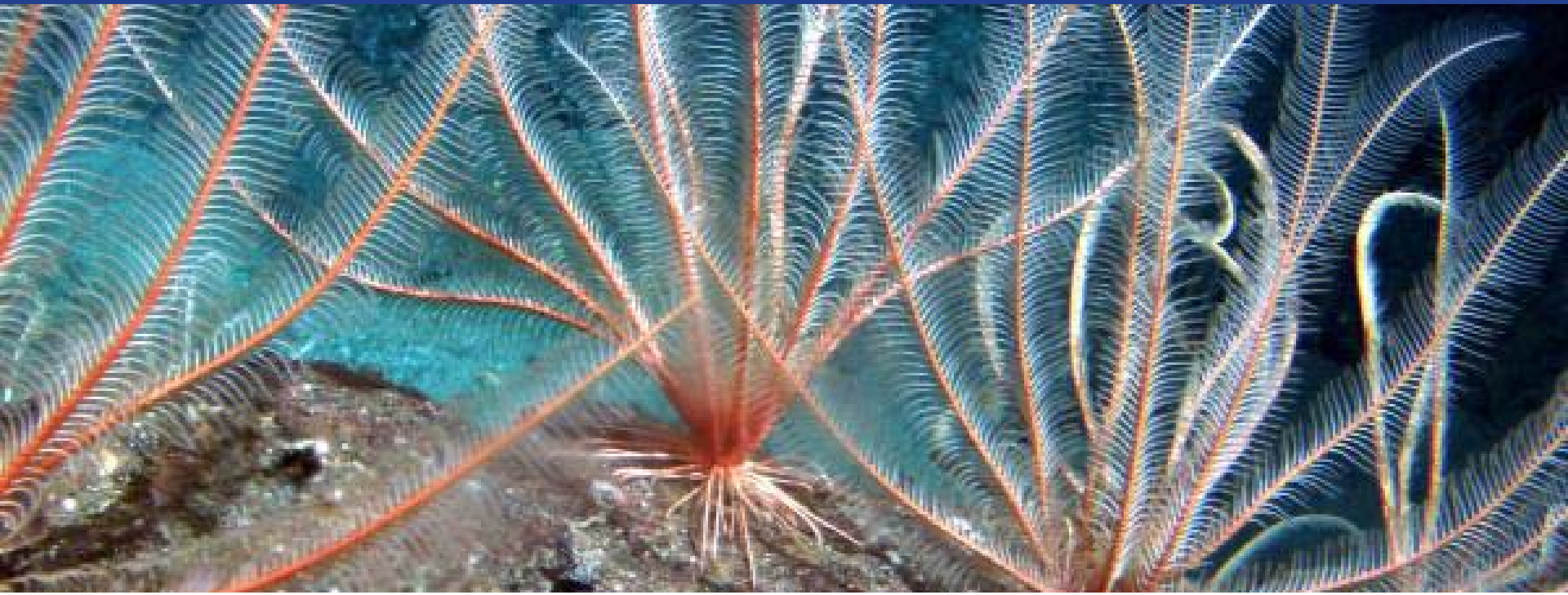
‘improve recreational opportunities’

‘protect natural marine heritage’

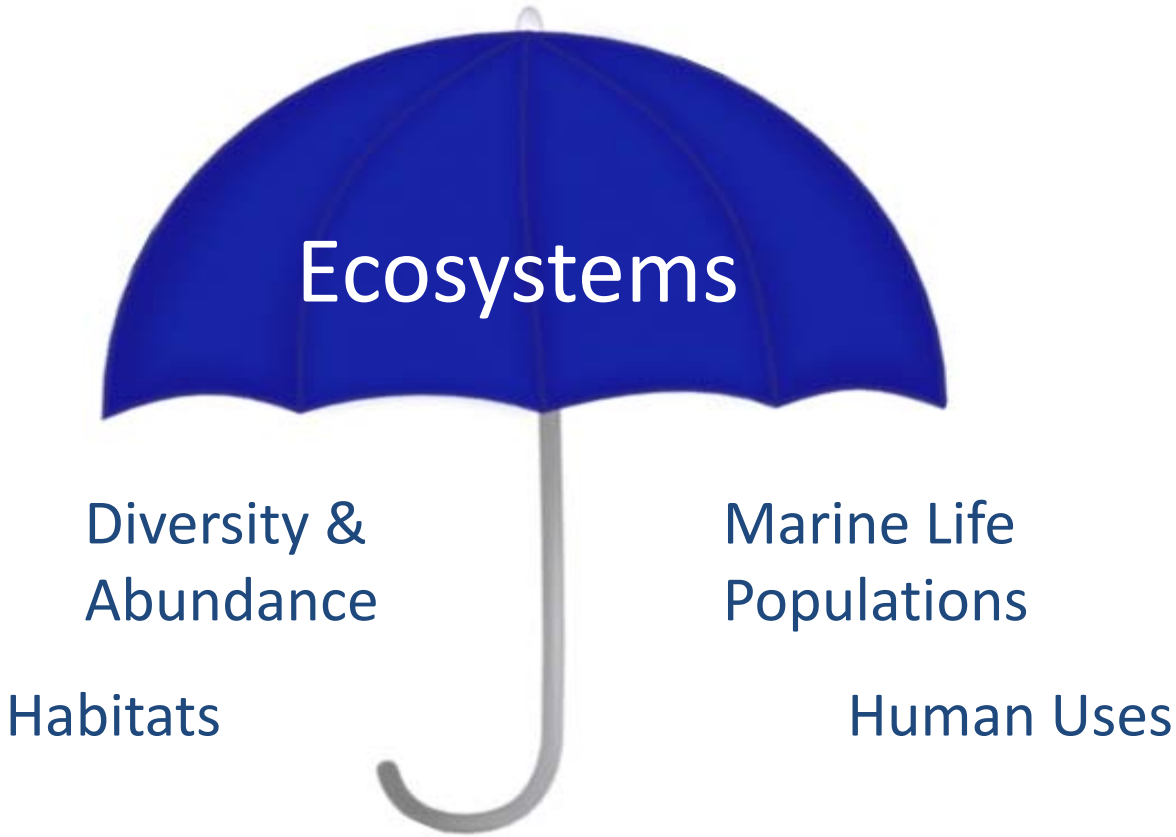
MPA Monitoring Framework



Evaluating progress towards MLPA goals
- Assessing ecosystem condition



An ecosystem-based approach



Using Ecosystem Features

A small number of targets for monitoring that collectively represent and encompass a region



- Together give a good sense of how the region is doing
- Encompass ecosystems and human uses

…to focus MPA monitoring

Consumptive Uses

Non-consumptive Uses

Rocky Intertidal

Soft-bottom Intertidal including Beaches

Wetlands & Estuaries

Kelp & Shallow Rock (0 – 30m)

Mid-Depth Rock (30-100m)

Soft-bottom Subtidal (0-100m)

Deep Ecosystems (>100m) including Canyons

Nearshore Pelagic (in state waters >30m)

Kelp & Shallow Rock Ecosystems (0-30m)

Key Attributes

- Biogenic habitat
- Strong Ecological Interactors
- Trophic Structure: Predatory fishes
- Trophic Structure: Predatory invertebrates
- Trophic Structure: Planktivorous fishes
- Trophic Structure: Herbivorous invertebrates

Kelp & Shallow Rock Ecosystems (0-30m)

Key Attributes

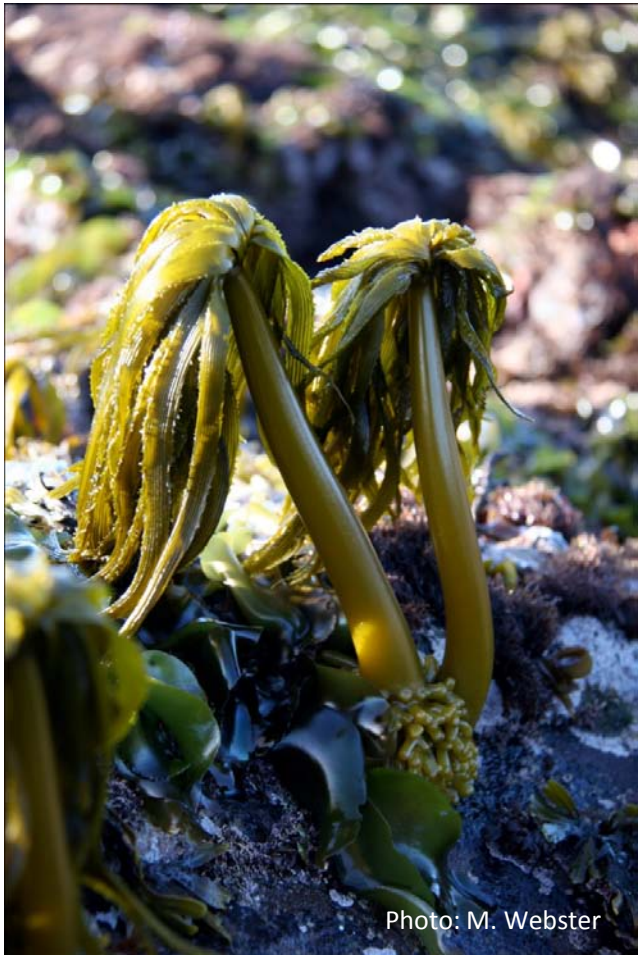
Biogenic habitat

Indicator

Giant kelp areal extent

A role for maps employing CMECS?

- An information source for selecting Ecosystem Features?
- Guidance for data collection on monitoring metrics
- Others?



Informing adaptive management
- evaluating MPA design & management

MLPA Initiative

Marine Life Protection Act Planning Process and MPA Design Guidelines

California Department of Fish and Game

Habitat Representation

Guideline: Every "key habitat" should be represented in each bioregion in the MPA network

- Identify key habitats and their availability
  - Beaches, rocky shores, kelp, hard bottom (0-30m, 30-100m, 100-3000m), soft bottom (0-30m, 30-100m, 100-3000m), and several estuarine habitats

- Evaluation metrics: percentage of each key habitat and the associated levels of protection in MPA proposals


R. Garwood

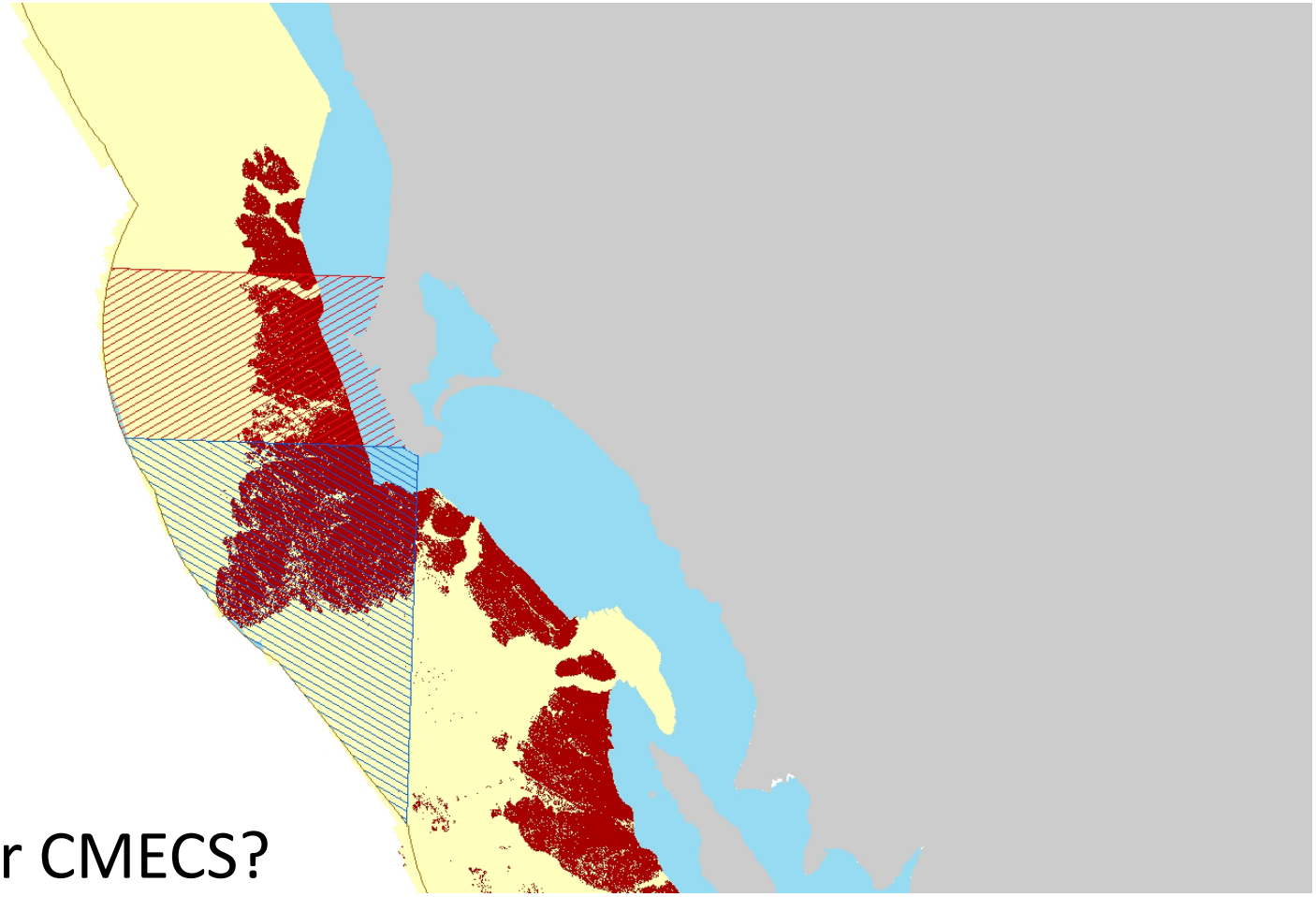
Habitat Replication

Guideline: 3-5 replicates of each key habitat per biogeographic region (1 replicate per bioregion)

- Protect greater diversity of species and communities and to protect species from environmental fluctuations, as well as provide analytical power

Habitat	Required amount
Kelp, rock 0-30m, soft 0-30m, beaches	1.14 linear miles
Soft bottom 30-100	2.24 square miles
Deep rock 0-1000m	0.2 linear miles
Rocky shores, surfgrass	0.48 linear miles
Estuary	0.12 square miles

Evaluating MPA design



A role for CMECS?

Habitat representation

Are the identified **key habitats represented and replicated** in the implemented MPAs?

Are there **‘unique habitats’** not represented or replicated in the regional MPA network?

Habitat replication

Do **MPAs enclosing multiple habitat types harbor higher species abundances or more diverse communities** than those that encompass only a single habitat type through the effects of increased habitat structural complexity?

Initial thoughts…

Ecological classification schemes in a management context – MPAs & monitoring:

1. Potential to inform planning efforts focused on spatial data
2. Can guide sampling strategies to assess long-term trends in ecosystem condition
3. Testing of classifications can inform science-based adaptive management of MPAs