



Marine Life Protection Act Initiative



Data Collection and Use in the MLPA North Coast Study Region

MLPA North Coast Data Outreach Meeting

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The Marine Life Protection Act (MLPA)

- California statute passed in 1999
- Requires the state to “re-examine and redesign” California’s system of marine protected areas
- Six goals of the MLPA focus on ecosystem-based management of marine resources



Summary of Legislative Findings

1. California's MPAs were established on a piecemeal basis, creating the illusion of protection while falling short far short of potential to conserve living marine life and habitats.
2. Coastal development, water pollution, and other human activities threaten marine habitats and species.
3. MPAs and fishery management are complementary.
4. MPAs can provide baseline information and improve our understanding of ecosystems.
5. It is necessary to modify existing MPAs to ensure they are designed and managed according to clear, conservation-based goals.



Six Goals of MLPA

- To protect the natural diversity and function of marine ecosystems.
- To help sustain and restore marine life populations.
- To improve recreational, educational, and study opportunities in areas with minimal human disturbance.
- To protect representative and unique marine habitats.
- Clear objectives, effective management, adequate enforcement, and sound science.
- To ensure that MPAs are designed and managed as a network.

* These goals are summarized here



California MLPA Initiative

Staff (Contractors and State Employees)

— — —

Provides Process Support/Guidance

Regional Stakeholder Group (RSG)

— — —

Develops MPA Proposals

Science Advisory Team (SAT)

— — —

Provides Guidance and Evaluations

Blue Ribbon Task Force (BRTF)

— — —

Provides Oversight and Policy Guidance

California Fish and Game Commission

— — —

Makes Final Decisions



MPA Design Guidelines

- Science guidelines
- Fish and Game feasibility guidelines
- State Parks guidelines
- Guidance from the Blue Ribbon Task Force

Why Marine Protected Areas?

Marine protected areas (MPAs) can help:

- Protect habitat and ecosystems
- Conserve biological diversity
- Maintain culturally significant resources
- Enhance recreational and educational opportunities
- Provide research opportunities
- Complement fisheries management

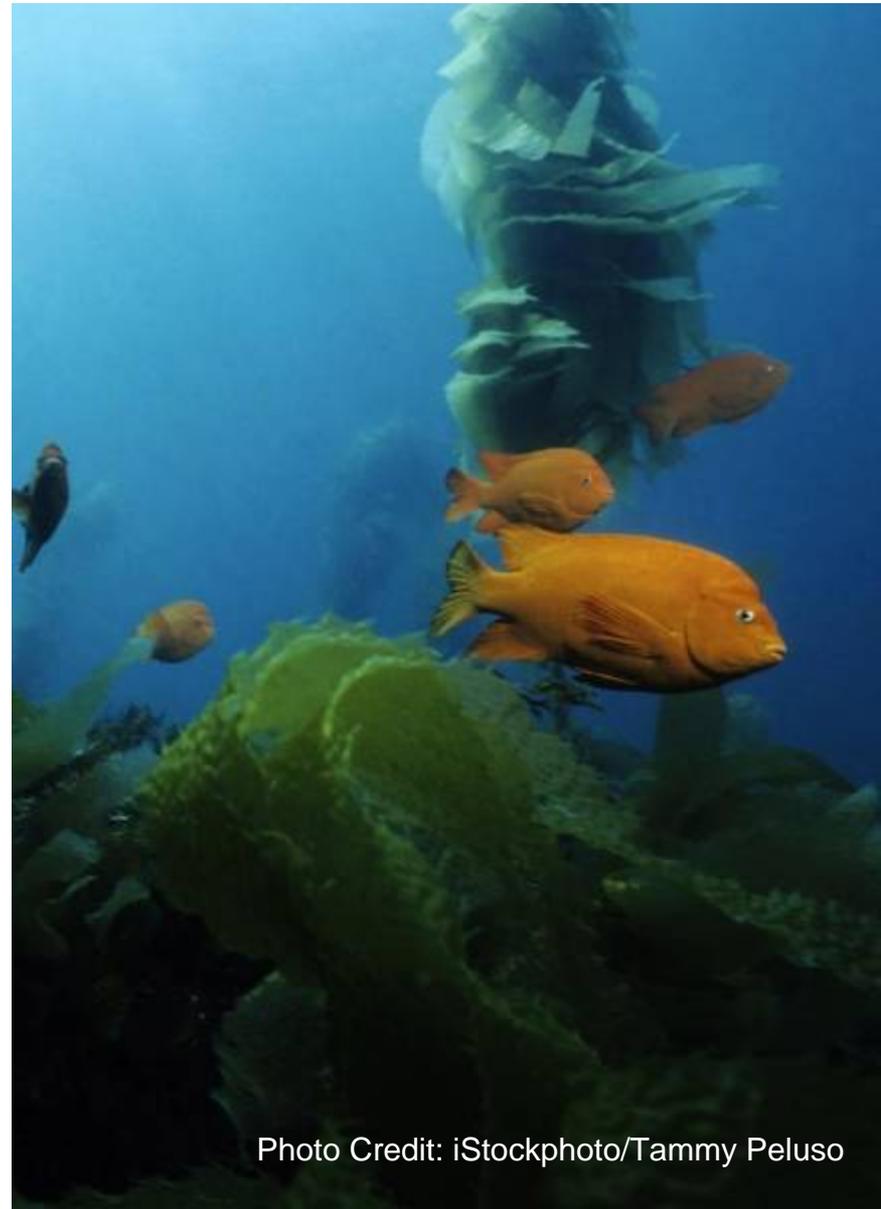
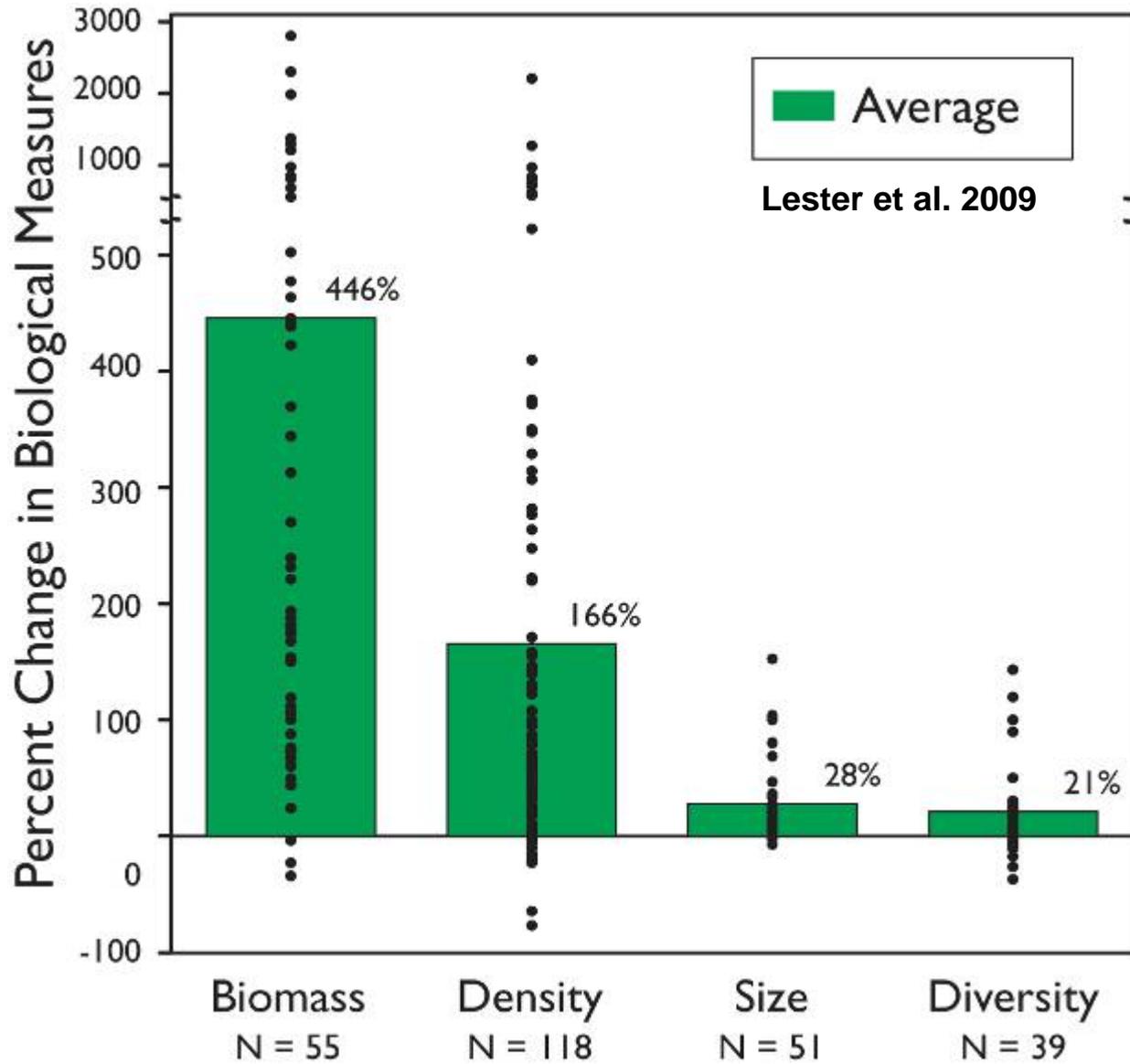
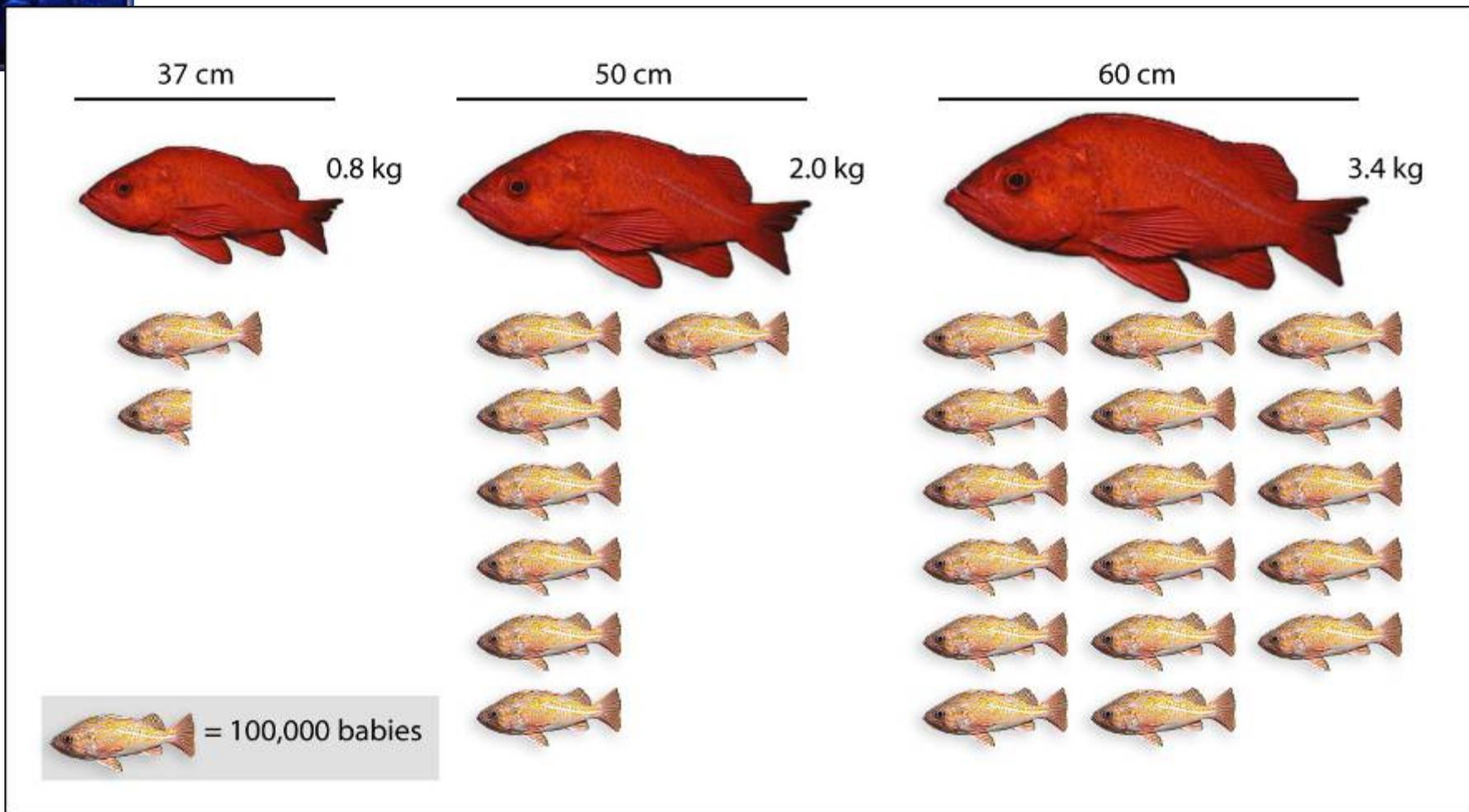


Photo Credit: iStockphoto/Tammy Peluso

Ecological Responses

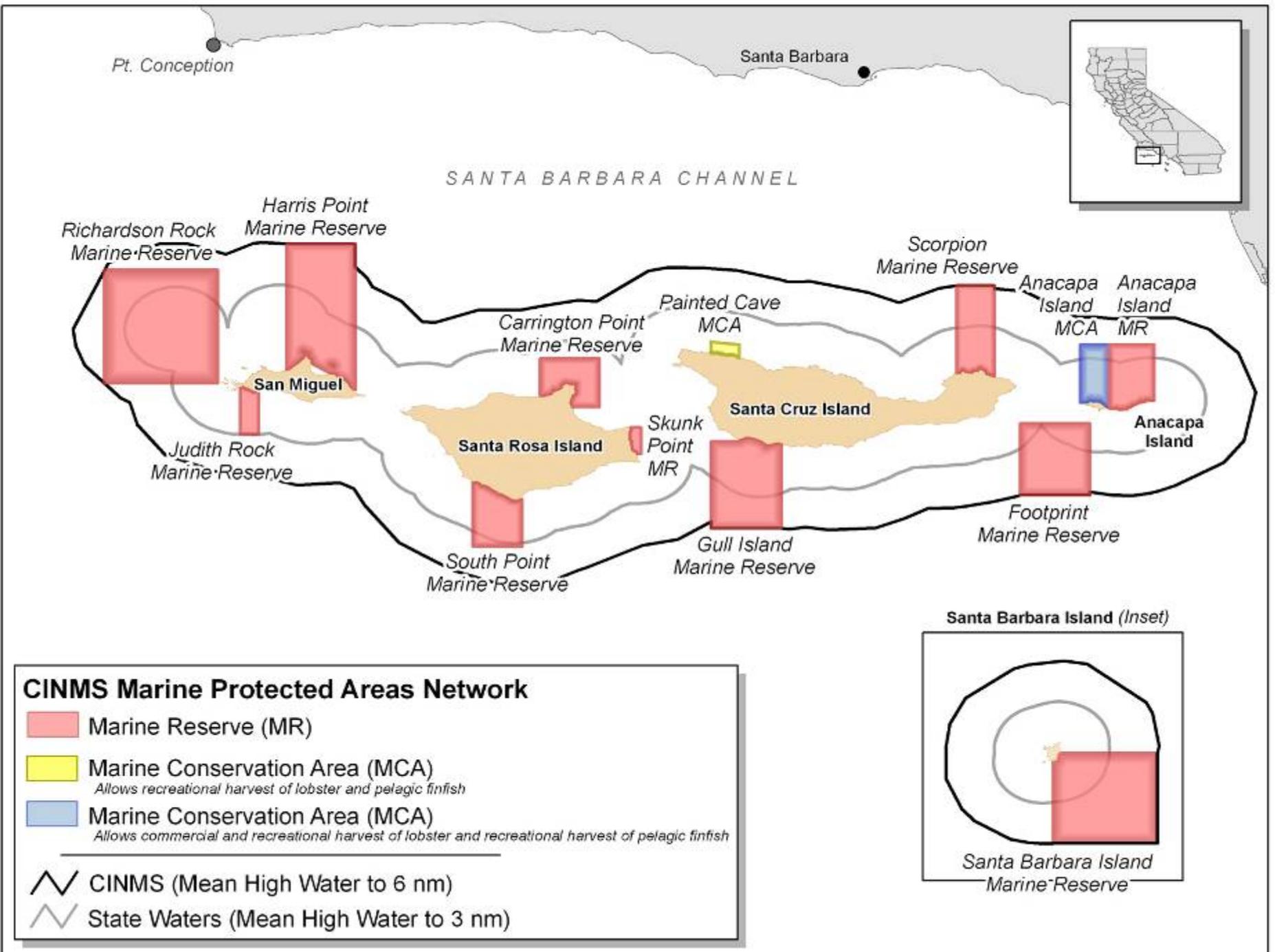


Big Fish Produce Far More Young



Vermilion Rockfish (*Sebastes miniatus*)

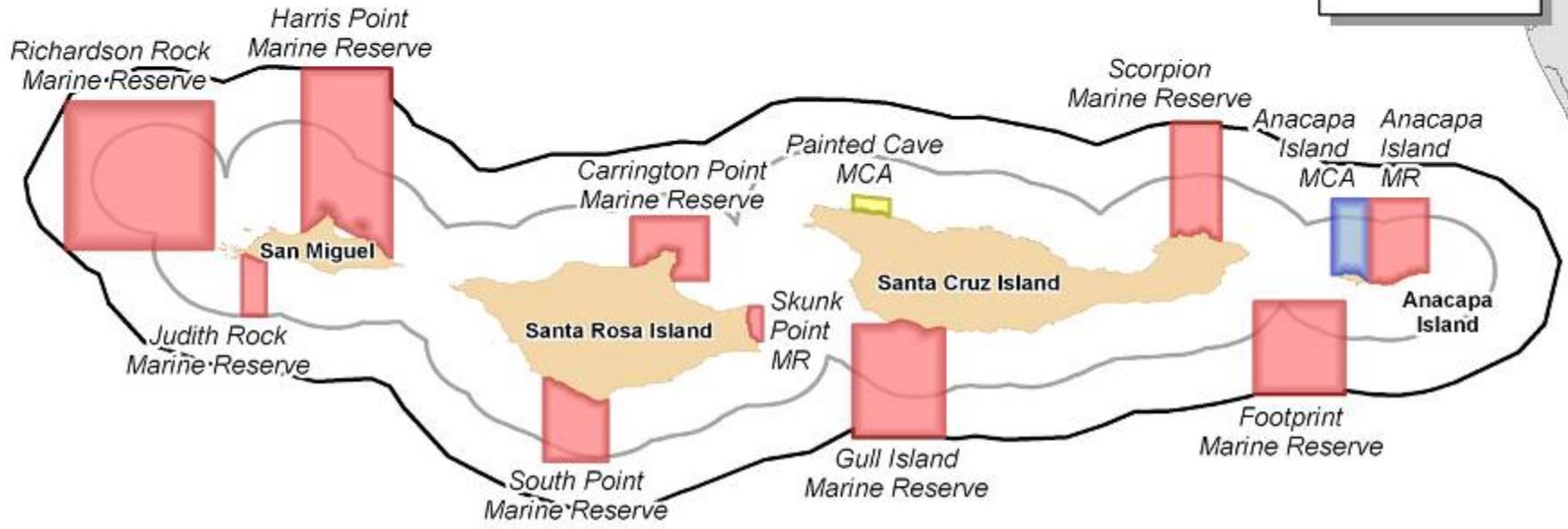




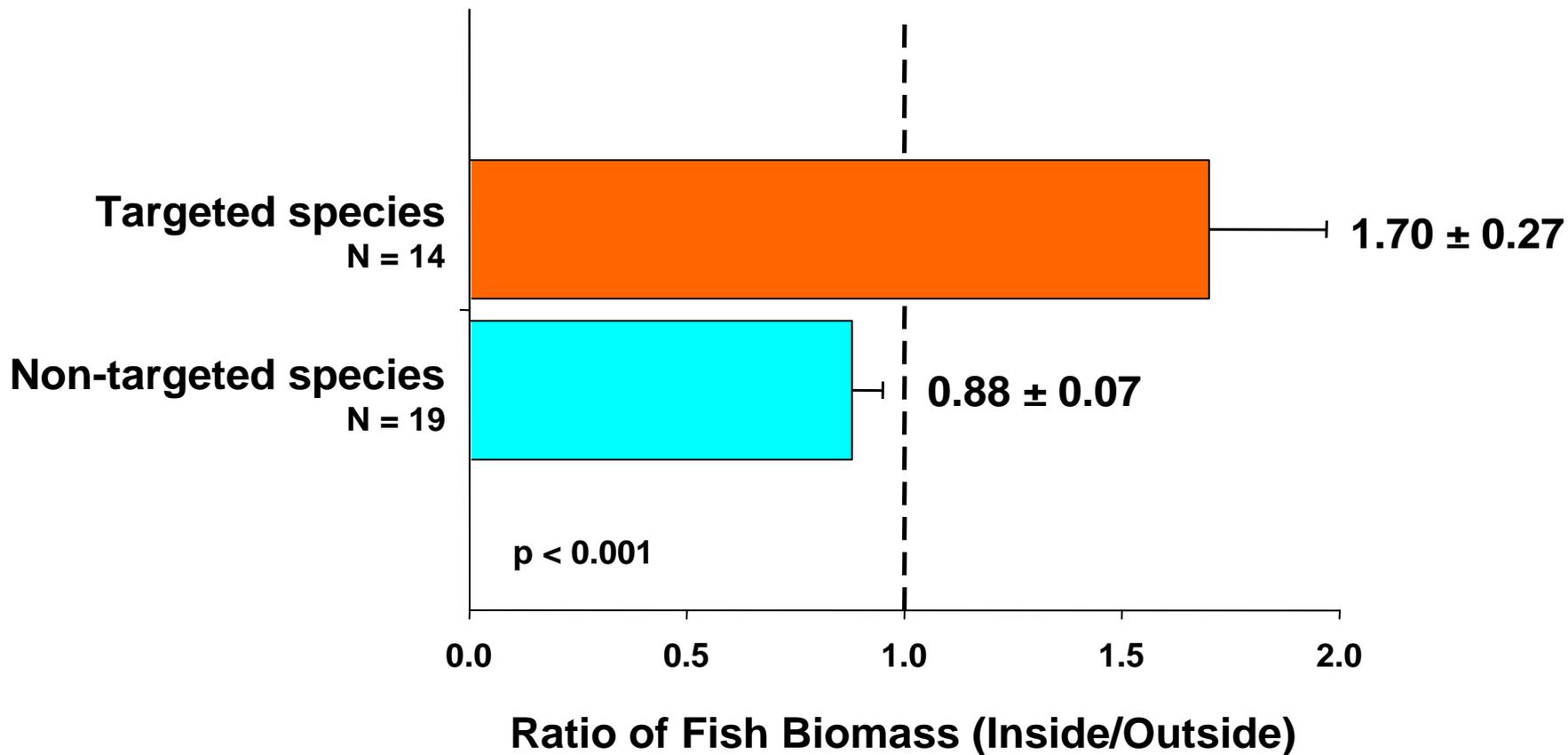
Pt. Conception

Santa Barbara

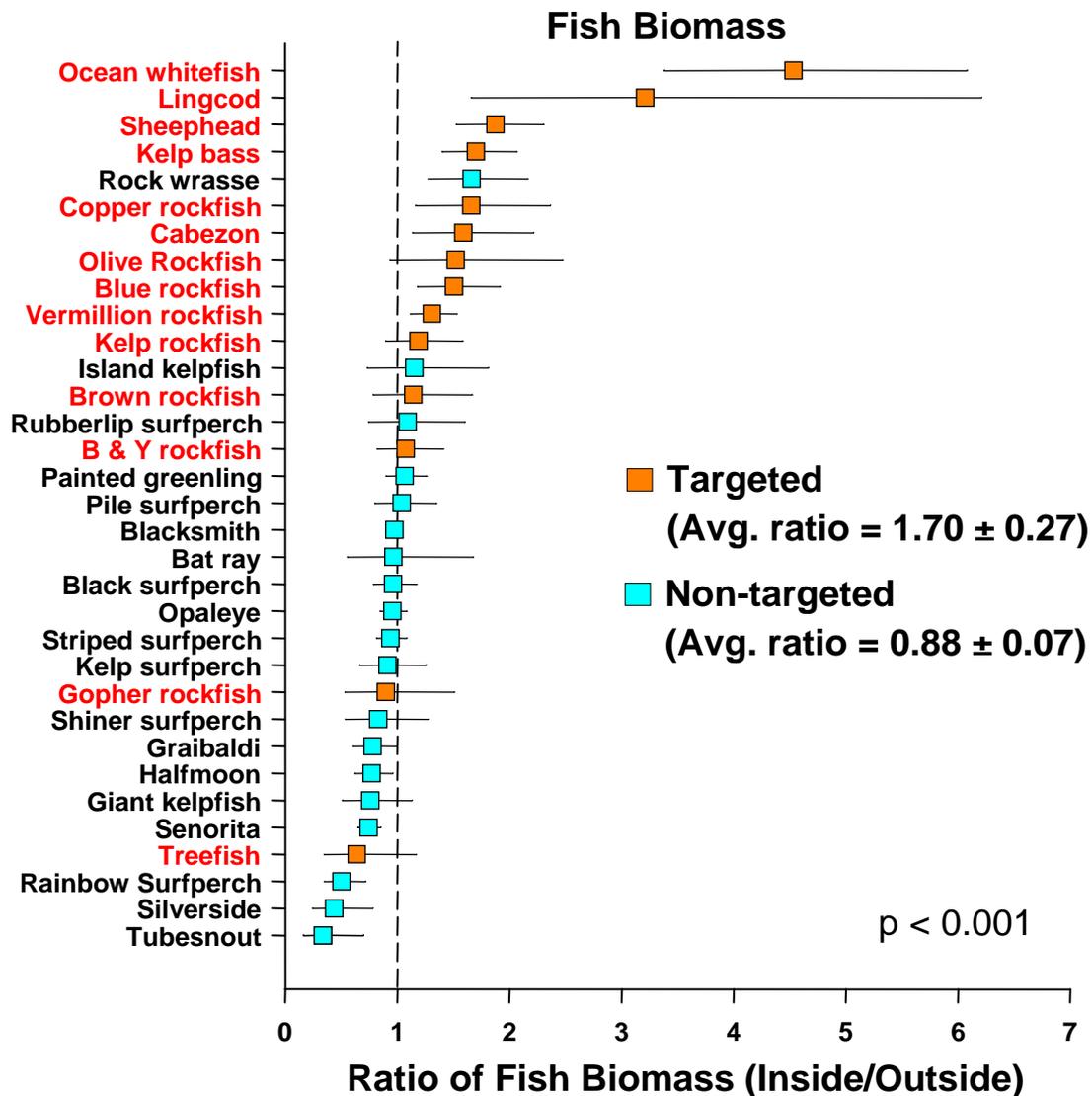
SANTA BARBARA CHANNEL



Targeted Fish Biomass: Greater in Reserves



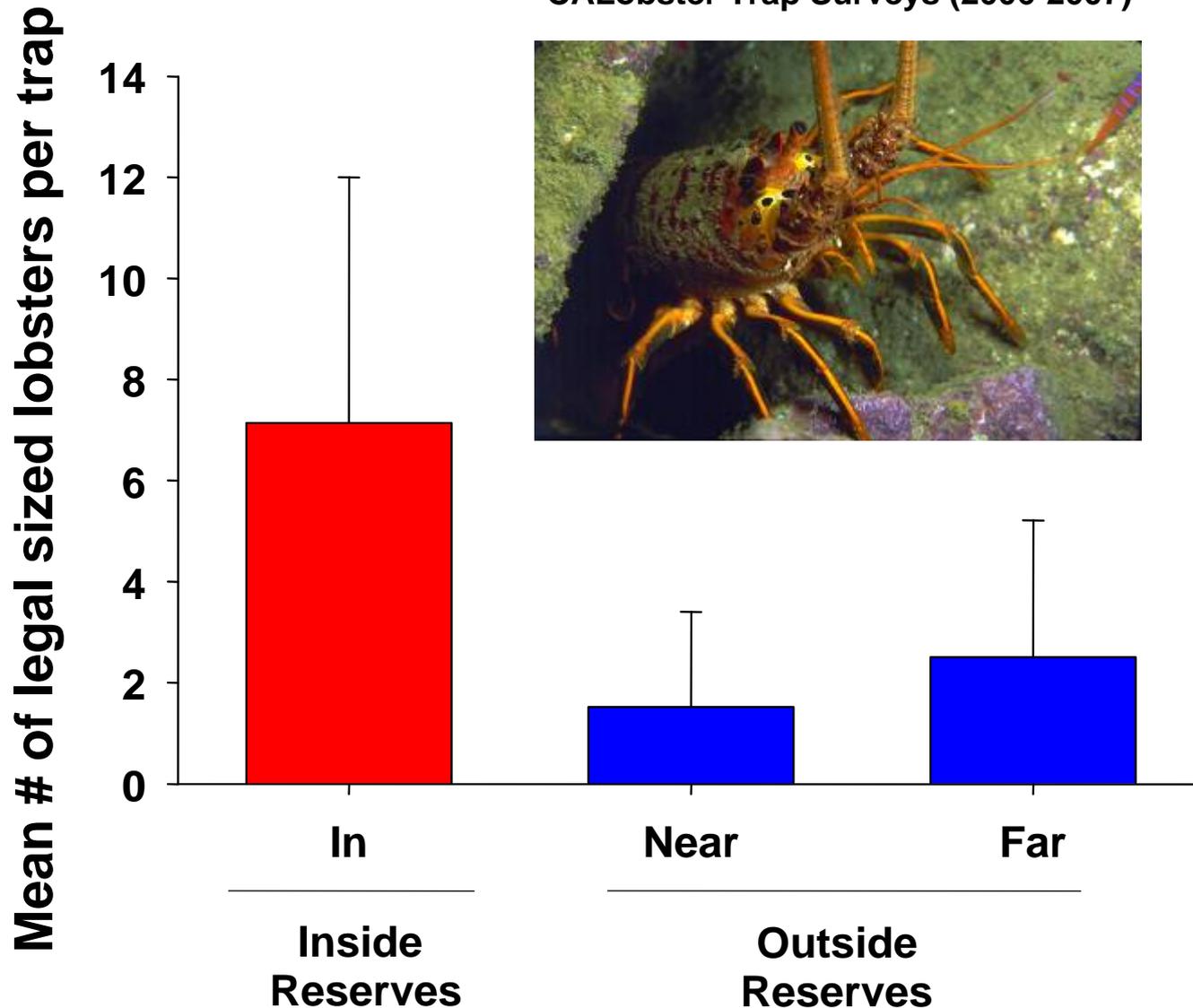
Targeted Fish Biomass: Greater in Reserves



Mean Number of Legal-sized Lobsters Per Trap



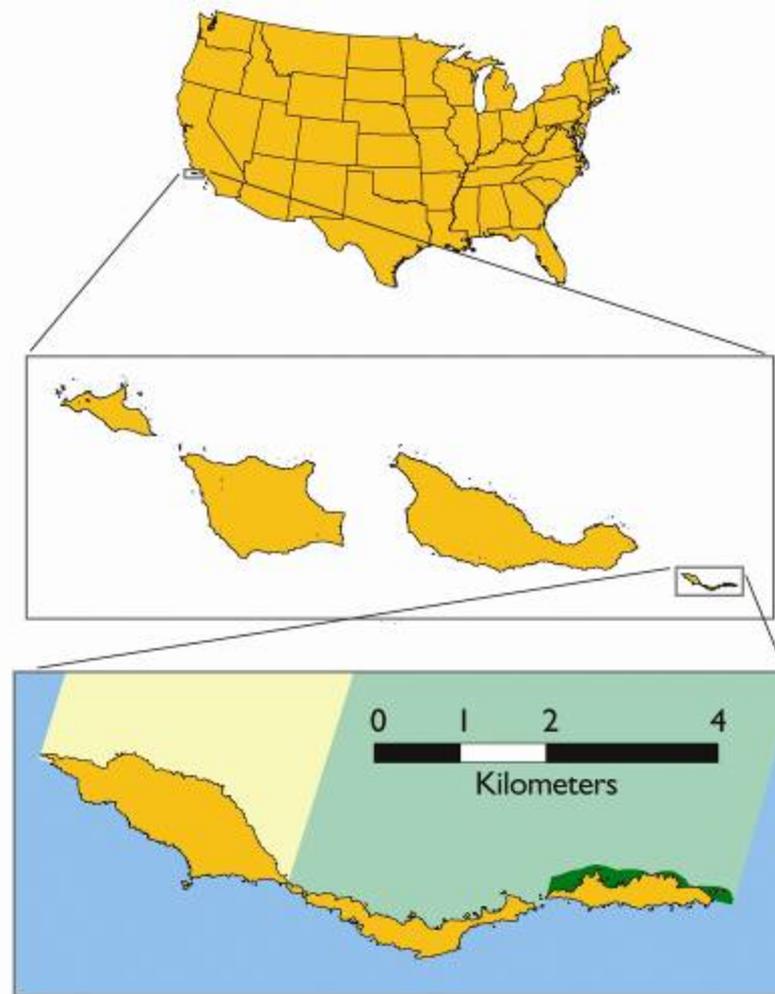
CALobster Trap Surveys (2006-2007)





North Anacapa Island
State Conservation Area

North Anacapa Island
State Marine Reserve



- Marine Reserve, 1978
- Marine Reserve, 2003
- Fished MPA, 2003



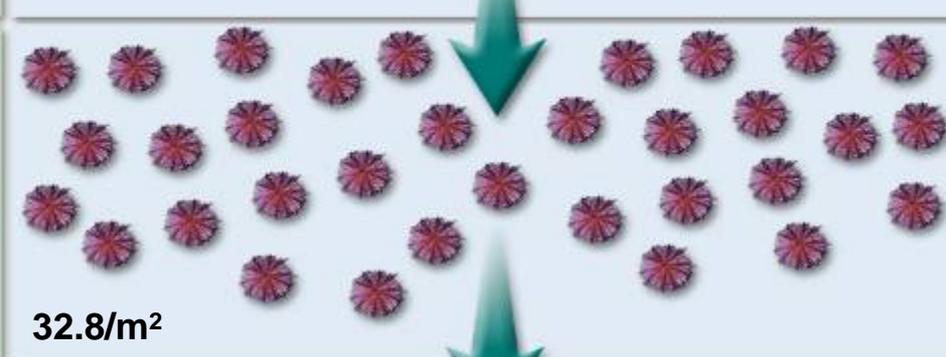
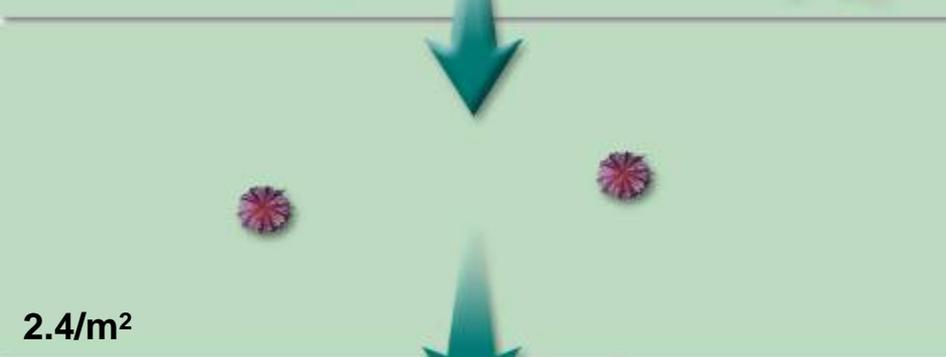
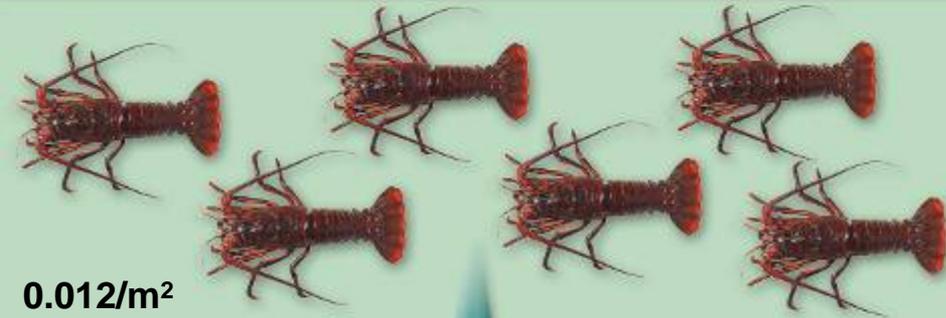
Anacapa Island Marine Reserve and
Marine Conservation Area

Food Web Changes at Anacapa Island



Reserve

Fished Area



Lafferty and Behrens 2004

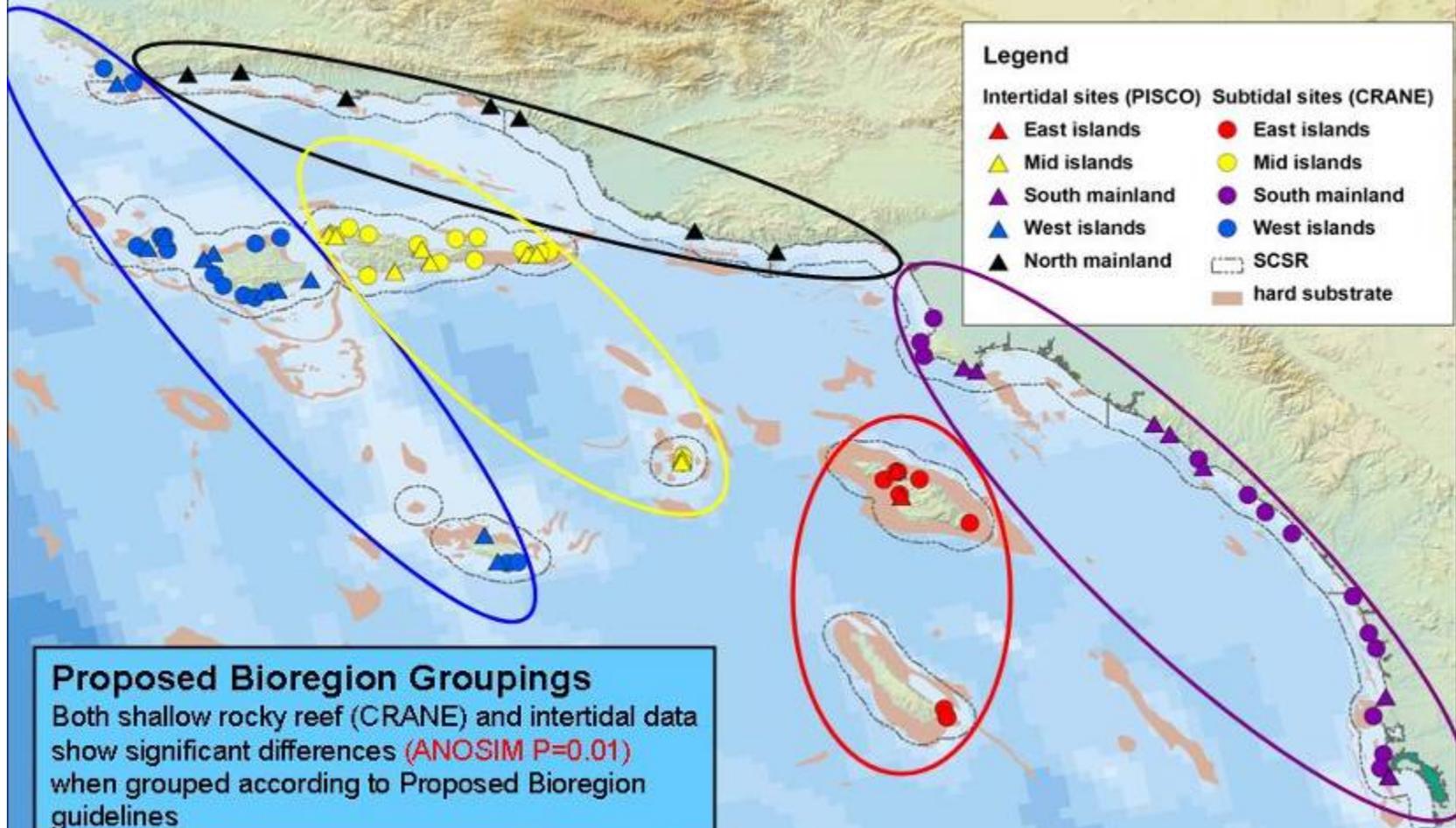


Scientific Guidelines and Evaluations

- ***Draft Methods Used to Evaluate Marine Protected Area Proposals in the MLPA South Coast Study Region***
 - Bioregions
 - Protection Levels (Goals 1, 2, 4 and 6)
 - Habitat Representation (Goals 1 and 4)
 - Habitat Replication (Goals 1, 2, 3, 4 and 6)
 - Size (Goals 2 and 6)
 - Spacing (Goals 2 and 6)
 - Bioeconomic Modeling
 - Marine Birds and Mammals
 - Water and Sediment Quality
 - Commercial and Recreational Fishery Impacts

South Coast Bioregions

Are the Assemblages in These Proposed Geographic Regions Different?
Intertidal and Shallow Subtidal Rocky Reef Communities





Levels of Protection

| | Level of Protection | MPA Type | Activities Associated with a Protection Level |
|--|---------------------|-------------|---|
| | Very high | SMR | No take |
| | High | SMCA | Coastal pelagic finfish, bonito, and market squid (pelagic seine, dip-net, crowder); jumbo squid (squid jigs); swordfish (harpoon); In water depth > 50m: pelagic finfish , bonito and white seabass (H&L; spear at any depth) |
| | Moderate-high | SMCA | Catch and release in <10m water or using surface gear (H&L single barbless hooks and artificial lures only); pier-based fishing (H&L, hoop-net); halibut (spear); In water depth 30<50m <u>on mainland</u>: pelagic finfish, bonito and white seabass (H&L) |
| | Moderate | SMCA SMP | spot prawn (trap/pots); sea cucumber (scuba/hookah); grunion (hand harvest); giant kelp (hand harvest); clams (hand harvest) |
| | Moderate-low | SMCA SMP | Catch and release in >10m (H&L); shore-based finfish (H&L); kelp bass, barred sand bass, lingcod, cabezon, and rockfish (H&L, spear); sheephead (H&L, spear, trap); spotted sand bass and halibut (H&L); lobster (trap, hoop net, scuba); urchin (scuba/hookah); rock crab and Kellet's whelk (trap); In water depth <50m at islands and <30m on mainland: pelagic finfish, bonito and white seabass (H&L) |
| | Low | SMCA SMP | rock scallop (scuba); mussels (hand harvest); giant kelp (mechanical harvest); marine algae other than giant and bull kelp (hand harvest) |



Habitat Representation (Goals 1 and 4)

“For an objective of protecting the diversity of species that live in different habitats and those that move among different habitats over their lifetime, every “key” marine habitat should be represented in the MPA network.”

Nearshore

Rocky intertidal

Sand beach

Estuary

Eelgrass

Surfgrass

Subtidal

Shallow sand

Deep sand

Shallow rock

Deep rock

Kelp forest

Submarine canyon



Photo:

Channel Islands National Marine Sanctuary



Habitat Replication (Goals 1 and 4)

- MLPA requires **3 to 5 replicates** of each key habitat within reserves in each **biogeographic region** (Point Conception to US-Mexico border)
- For the South Coast, scientists recommended at least **1 replicate** of each key habitat within a reserve in each of the **5 bioregions**





Habitat Replication (Goals 1 and 4)

90% threshold for different habitats

| Habitat | Area or Length of a Replicate | Data Source |
|---|-------------------------------------|--------------------------|
| Rocky Intertidal | 0.48 linear miles | PISCO Biodiversity |
| Shallow Rocky Reefs/Kelp Forests (0-30 m) | 1.14 linear miles | CRANE Subtidal Surveys |
| Deep Rocky Reefs (30-100 m) | 0.20 square miles | Love Surveys |
| Deep Rocky Reefs (100-3000 m) | 0.22 square miles | Love Surveys |
| Sandy Beaches * | 1.14 linear miles | See below |
| Soft-Bottom Habitat (0-30 m) | 1.14 linear miles | See below |
| Soft-Bottom Habitat (30-100 m) | 2.24 square miles | SCCWRP (BIGHT '98 & '03) |
| Soft-Bottom Habitat (100-200 m) | 1.10 square miles | SCCWRP (BIGHT '98 & '03) |
| Soft-Bottom Habitat (>200 m) | 0.46 square miles | SCCWRP (BIGHT '98 & '03) |
| <i>All Soft-Bottom Habitat (>0 meters)</i> | 8 square miles | <i>Preferred option</i> |
| Estuarine Habitats | 0.12 square miles (77 acres) | SONGS sampling |



Guideline for MPA Size

“For an objective of protecting adult populations, based on adult neighborhood sizes and movement patterns, MPAs should have an alongshore span of 5-10 km (3-6 miles) of coastline, and preferably 10-20 km (6-12.5 miles).”



Photo Credit: iStockphoto/Amanda Cotton

Scales of Adult Movement



| 0-1 km | 1-10 km | 10-100 km | 100-1000 km | >1000 km |
|--|--|--|--|--|
| <p>Invertebrates: abalone, mussel, octopus, sea star, snail, urchin</p> <p>Rockfishes: black & yellow, brown, copper, gopher, grass*, kelp, quillback, starry, treefish, vermilion</p> <p>Other Fishes: cabazon, eels, greenlings, giant seabass, black, striped and pile perch, pricklebacks</p> | <p>Rockfishes: black, China, greenspotted*, olive, yelloweye</p> <p>Other Fishes: walleye perch*</p>  | <p>Invertebrates: Dungeness crab**</p> <p>Rockfishes: blue, bocaccio, yellowtail</p> <p>Other Fishes: California halibut, lingcod, starry flounder</p> <p>Birds: gulls, cormorants</p> <p>Mammals: harbor seal, otter</p> | <p>Rockfishes: canary</p> <p>Other Fishes: anchovy, big skate, herring, Pacific halibut, sablefish**, salmonids**, sole, sturgeon</p> <p>Birds: gulls**</p> <p>Mammals: porpoise, sea lion**</p> | <p>Invertebrates: jumbo squid**</p> <p>Other Fishes: sardine, shark**, tunas**, whiting**</p> <p>Reptiles: turtles**</p> <p>Birds: albatross**, pelican**, shearwater**, shorebirds**, terns**</p> <p>Mammals: dolphins, sea lion**, whales**</p> |

* *Studies of this species included fewer than 10 individuals*

** *Seasonal migration*



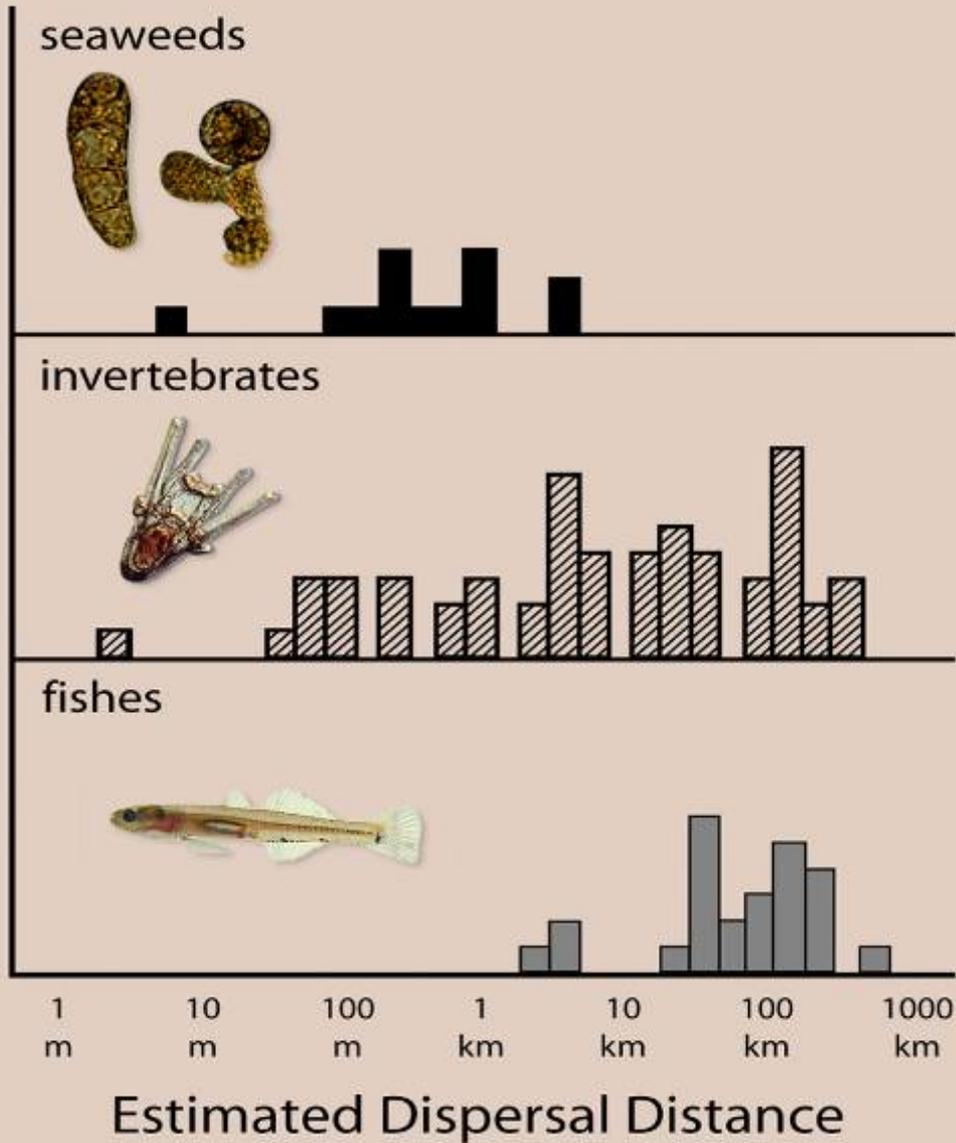
Guideline for MPA Spacing

“For an objective of facilitating dispersal of important bottom-dwelling fish and invertebrate groups among MPAs, based on currently known scales of larval dispersal, MPAs should be placed within 50-100 km (31-62 miles) of each other.”

*For south coast, applies to mainland and not to islands due to complex circulation and geography.



Scales of Larval Dispersal





Marine Birds and Mammals

Scientific evaluation considers:

- locations of **breeding bird/mammal colonies and rookeries**;
- nearby **foraging areas** and “hot spots”;
- proportion of marine birds and mammals that inhabit **estuaries and beaches** protected by MPAs.

Photo: Channel Islands National Marine Sanctuary





Water and Sediment Quality

Areas of water quality concern:

- Cooling water intake sites for power plants,
- Storm water plumes from larger watersheds, and
- Municipal sewage or industrial outfalls.

Areas of water quality opportunity:

- Areas of Special Biological Significance



Photo Credit: Kevin Lafferty USGS



Guideline for Socioeconomic Impact

“For an objective of lessening negative impact while maintaining value, placement of MPAs should take into account local resource use and stakeholder activities.”



Photo Credit: iStockphoto/David Gunn

Overview of MLPA Study Regions





North Coast Study Region

- Alder Creek (near Point Arena) to Oregon border
- Out to three miles offshore
- Includes areas of tidal extent in estuaries





The Importance of Data

- The MLPA Initiative is a science-based, stakeholder driven process of designing MPAs
- The process relies on the use of the “best readily available information”
- Stakeholders engage in “joint fact-finding”
- Stakeholders and policy makers rely on accurate data to make informed decisions

Uses: MarineMap

- Allows stakeholders to view data layers
- Data layers inform MPA placement





Uses: Regional Profile

Regional Profile Maps

- Intertidal, nearshore, offshore habitats
- Oceanographic patterns
- Marine birds and mammals
- Water quality
- Commercial and recreational fisheries
- Coastal access and recreation
- Monitoring/education
- Management and jurisdiction



Planned Data Collection

- Study region wide substrate data
- Commercial and recreational fisheries data (Ecotrust)