

Does the MBNMS need more MPAs to protect the ecosystem?

Socio-economic study - Barbara Walker (UCSB)

Research Needs - Doyle Hanan (MLPA member)

Modeling - Ray Hilborn and Carl Walters

Review of existing regulations and effects - R. Parrish

Do we need additional protection in the Monterey Bay National Marine Sanctuary

Monterey Landings

2006	179 tons	1.4%
1996	12,383 tons	

National Marine Sanctuaries

EAST COAST 3 NMS 896 sq. mi.

WEST COAST 6 NMS 12,852 sq mi

. HR 1187 new area 15,118 sq mi

Olympic Coast 3,310

. Cordell Bank 526 + new 736

. Gulf of Farallons 1,255 + new 1,530

. Monterey Bay 5,328

. Davidson Seamount 775

. Channel Islands 1,658

GULF COAST 2 NMS 3,857 sq mi

New NMS HR 1187

3 Central
California NMS
extend 250 nm

Same as entire
coast of Oregon

Half of the
outer coast of
Washington is in
Olympic NMS

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

HR 1187

SEC. 3. POLICY AND PURPOSE

c) Effect on Fishing Activities- Nothing in this Act is intended to alter any existing authorities regarding the conduct and location of fishing activities in the Sanctuaries.

Ecosystem-based fishery Mgt.

1. Was ecosystem function in federal waters threatened by past federal management?
2. What are the existing protections?
3. How successful are existing protections?
4. Is ecosystem function in federal waters threatened by current federal management?
5. If threatened: what type of regulations will be the most beneficial?

1. Was ecosystem function in federal waters threatened by past federal management?

Before federal management

Whales, pinnipeds, otters, sardine, mackerel and some salmonid stocks were exploited to near extinction

On my watch

A number of groundfish species were overfished.

WHY?

Biologists used same concept as MPA advocates

Assumed high density-dependence with quick population doubling time at low biomass

Tropical reef fishes	- double	2-3 yrs	40%
Productive CC groundfish	- double	7-10 yrs	10%
Many CC groundfish	- double	15-25 yrs	3%

2. What are the existing protections?

Traditional State of California Resource Management (2006)

Report describes most of the California gear, area, season, size, sex, and bag limit regulations. Summarizes them by habitat type.

--- Very complicated, overlapping series of regulations that provide considerable ecosystem and fishery protection.

NOT ENOUGH PROTECTION OR NEAR TOTAL PROTECTION

Exceptions pot shellfish crab, lobster, spot prawn **SSS**

1. Some important species in hard-bottom nearshore, shelf and deeper habitats not adequately protected by California regulations.

2. In contrast, the total effect of traditional regulations make it impossible to economically harvest all but a few species living on soft-bottom nearshore, shelf and shelf break habitats.

3. Provide considerable ecosystem protection

(rockfish gillnet restrictions : protect birds and mammals)

2. What are the existing protections?

Pacific Fisheries Management Council

Federal regulations based on fishery management plans (FMPs)

Direct Control of Catch (DCC) - Optimum Yield -bimonthly limits

Traditional gear limitations - ecosystem protections

Essential Fish Habitat areas (MPAs) - ecosystem protections

Temporary MPAs - Rockfish Conservation Areas - weak stock mgt.

Single Species Management
Ecosystem Management

Belief-based Management
Knowledge-based Management

Adaptive Management
Static Management

Pacific Fisheries Management Council

knowledge-based, adaptive, single
species management

Salmon fishery No fishing season 2008.

Stock Synthesis Biomass Models

Weak stock management - RCAs

Sardine Harvest Rule

Belief-based, static, ecosystem management

NGOs and Forage Species

Krill fishing prohibited - AB 2712 - forage fish

NGOs and Trawling

Trawl buyout in Central California

Legislation prohibiting trawling in State Waters AB 2712

Present MBNMS MPA proposal

2 Active Trawl permits in MBNMS - None South of Pt. Sur

Landings in MBNMS

(Santa Cruz, Moss Landing, Monterey)

	1996	2006		
TOTAL	25,774 tons	29,969 tons		+16%
	\$18,448	\$6,402		-65%
Sardine, anchovy	12,722	27,939	93.2%	+120%
Other pelagics	3,917	873	2.9%	-78%
Total slope species	3,228	806	2.7%	-75%
Total everything else	2,068	372	1.2%	-82%

Pelagics were 96% of 2006 Landings

MPAs not effective protection for pelagic species

COASTAL PELAGICS tons

	1996	%	2006	%	change
Sardine	8,805	34.2%	19,523	65.1%	+122%
Anchovy	3,917	15.2%	8,416	28.1%	+115%
Squid	5,150	20.0%	561	1.9%	-89%
Mackerel unspec.	877	3.4%	189		-78%
Herring	274	1.1%	41		-85%

HIGHLY MIGRATORY PELAGICS tons

Albacore	238		22		-91%
Swordfish	221		19		-92%
Opah	20		1		-95%
Thresher shark	15		<1		-99%
Bluefin tuna	13		<1		-99%
Chinook salmon	937	3.6%	37		-96%
Other	14		4		-69%

Slope species - 2.7% 2006 landings

	1996	2006	change
TOTAL	3,228	806 tons	-75%
Grenadier	994 tons	46 tons	-95%
Dover sole	849	214	-75%
Sablefish	773	273	-65%
Thornyheads (2 sp.)	420	126	-70%
Splitnose Rockfish	160	96	-40%
Blackgill Rockfish	28	17	-39%
Bank Rockfish	4	22	+573%

Everything else - 1.2% 2006 landings

	1996	2006	change
TOTAL	2,068	372 tons	-82%
Bocaccio	126	2	-98%
Chilipepper Rf.	674	11	-98%
Widow Rf.	174	4	-98%
Sanddab	124	4	-93%
English sole	109	9	-92%
Rex sole	107	12	-89%
Lingcod	84	6	-92%
California halibut	56	35	-37%
Petrale sole	123	94	-33%
Spot Prawn	35	31	-11%
Dungeness crab	17	83	+392%
All other species	437	67	-75%

Why did the landings of non-pelagics and highly migratory species decline so markedly over the last decade?

Greatly reduced federal catch limits for groundfish

Rockfish Conservation Area (2003)

Area-based drift gillnet restrictions for leatherback turtles (2001)

State Nearshore Species Management Plan

Reduction in the number of commercial fishers:

(20,363 California comm. fishers in 1980 : 3,835 in 2007)

(9,229 comm. boats in 1980 ; 4,856 in 1996 : 2,968 in 2007

Limited entry, trawler buy-outs, loss of shore facilities,
economics

Do we need additional protection in the Monterey Bay National Marine Sanctuary

Monterey Landings

2006	179 tons	1.4%
1996	12,383 tons	

Since 2006

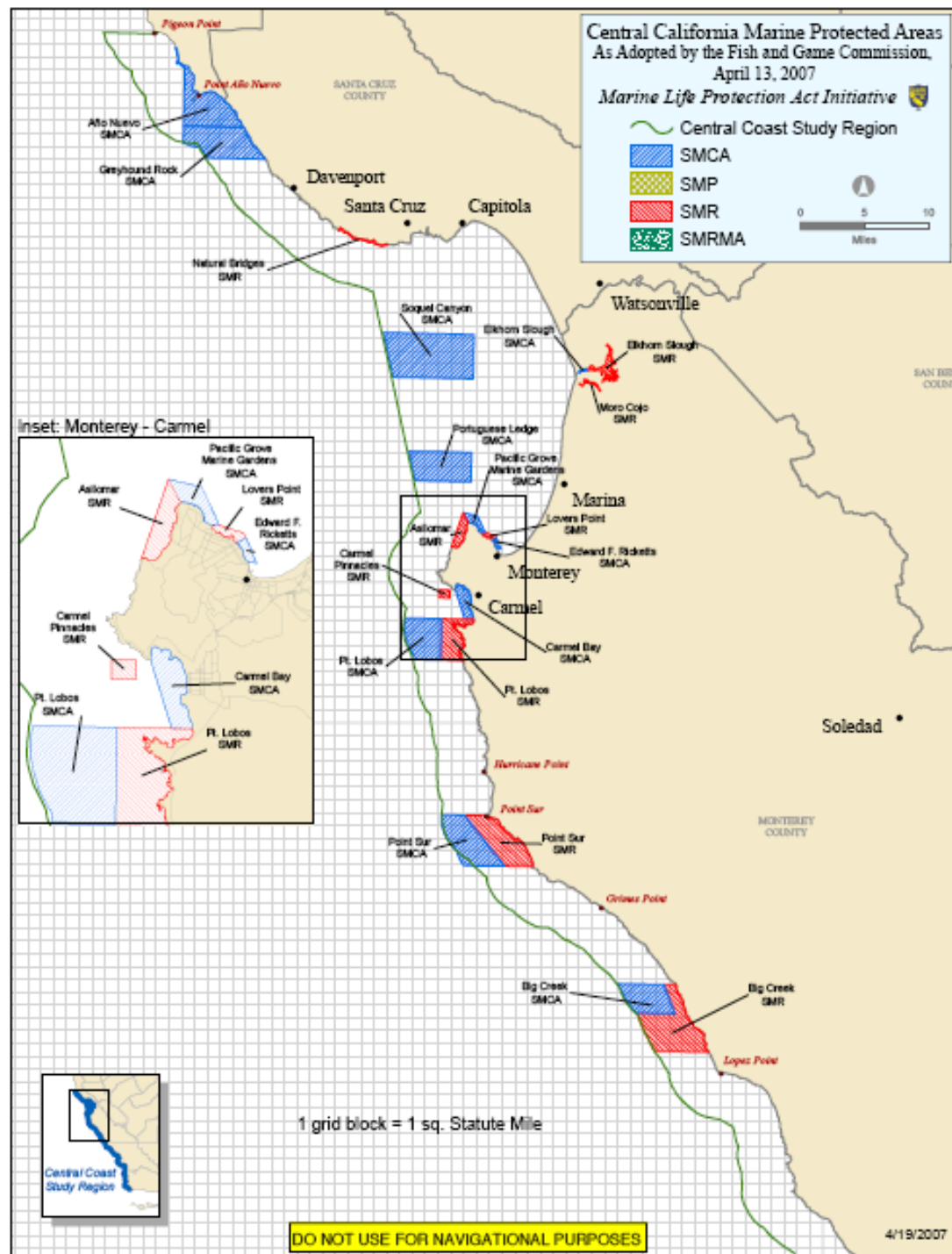
- 21 State MPAs created in MBNMS
- State no-trawl zone extended to 12 miles in MB
- 3 EFH Areas created in MB area (4,908 sq mi)
- Drift gillnet closed for HMS
- Trawl buyout of majority of Fed. trawl permits
 - . between Pt Conception and Golden Gate
 - . 2 active Fed. Permits in MBNMS; 0 south of MB
- Additional reductions in groundfish catch limits

State MPAs

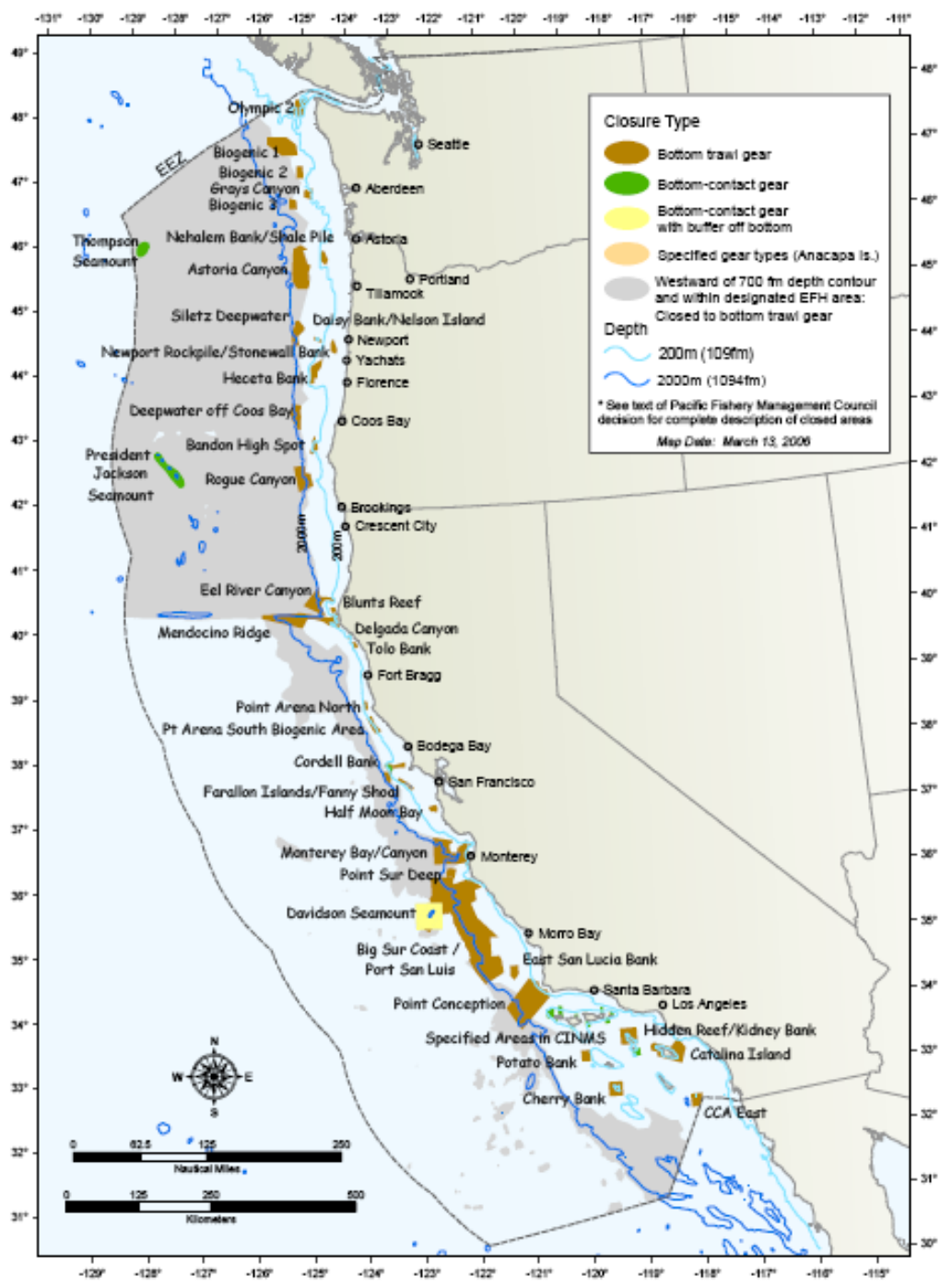
State waters

no-trawl

Fed. MPA



Federal Essential Fish Habitat MPAs



Federal Essential Fish Habitat MPAs

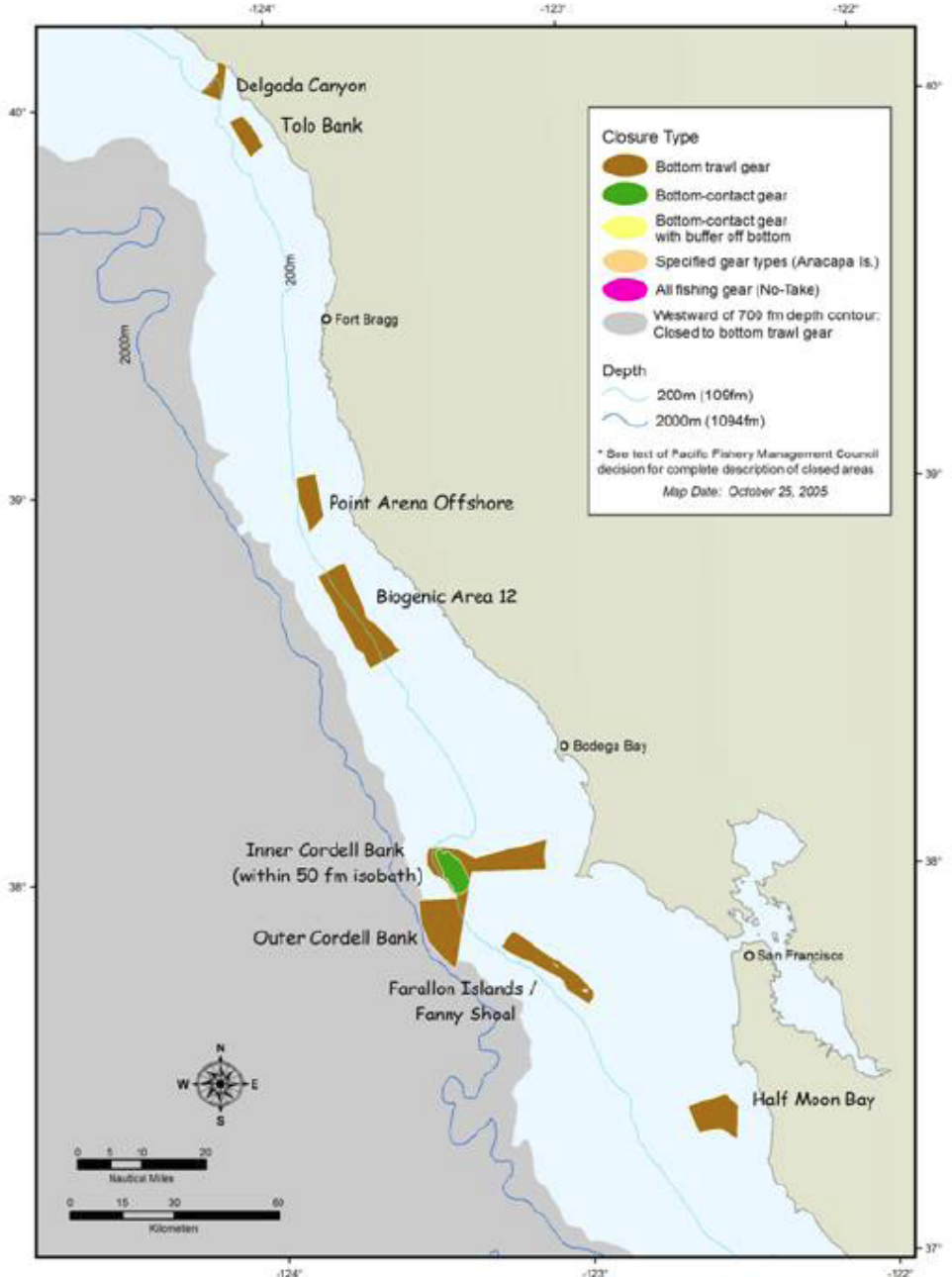


Figure 2-35: Areas Identified as Ecologically Important Areas Under the Council Preferred Alternative –Northern California. (new since DEIS)

Federal Essential Fish Habitat MPAs

Established June 12, 2006

3 EFH areas in study area

Total 4,907 sq mi

1,435 in study area

DSM 775 sq mi

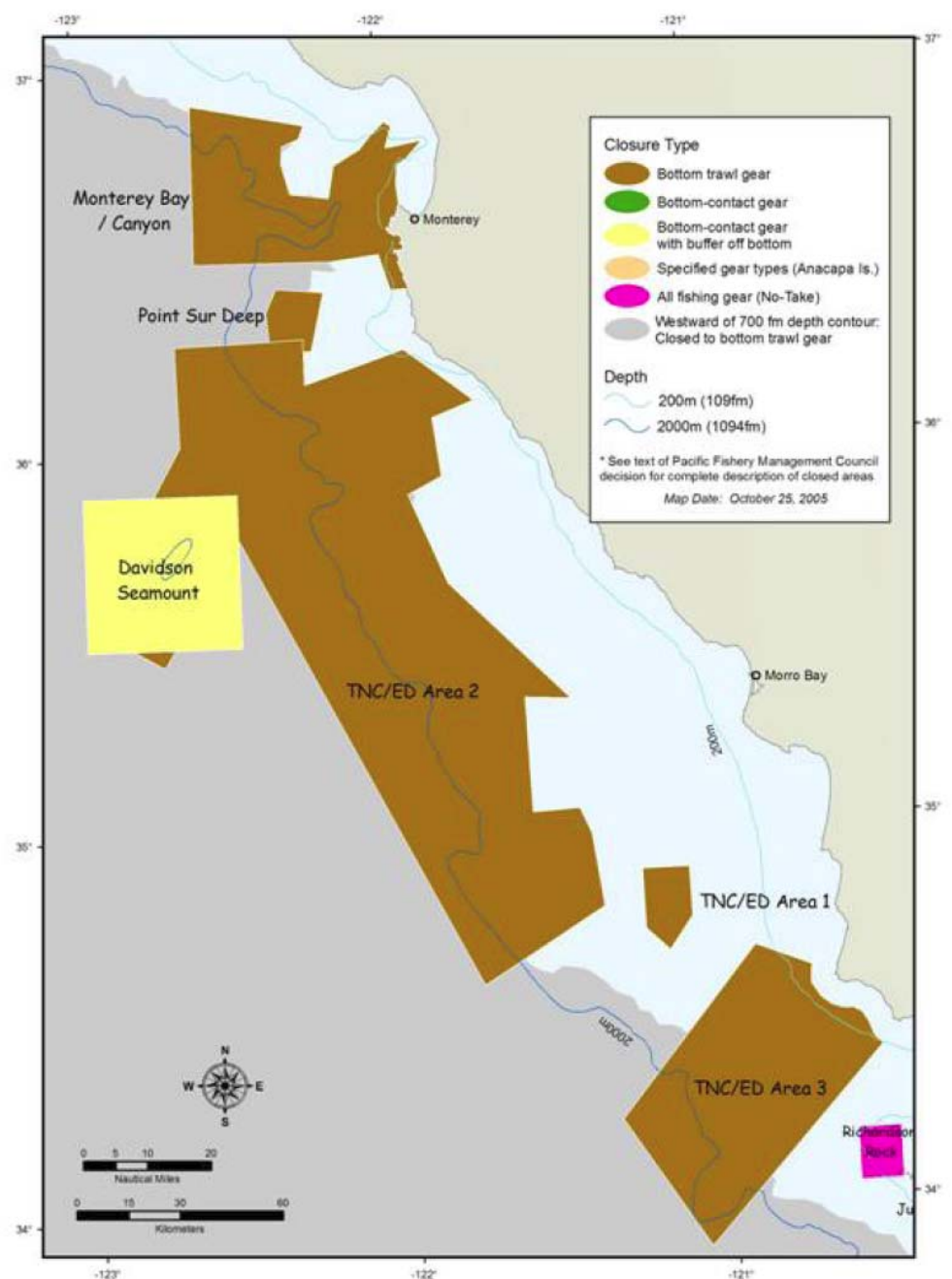
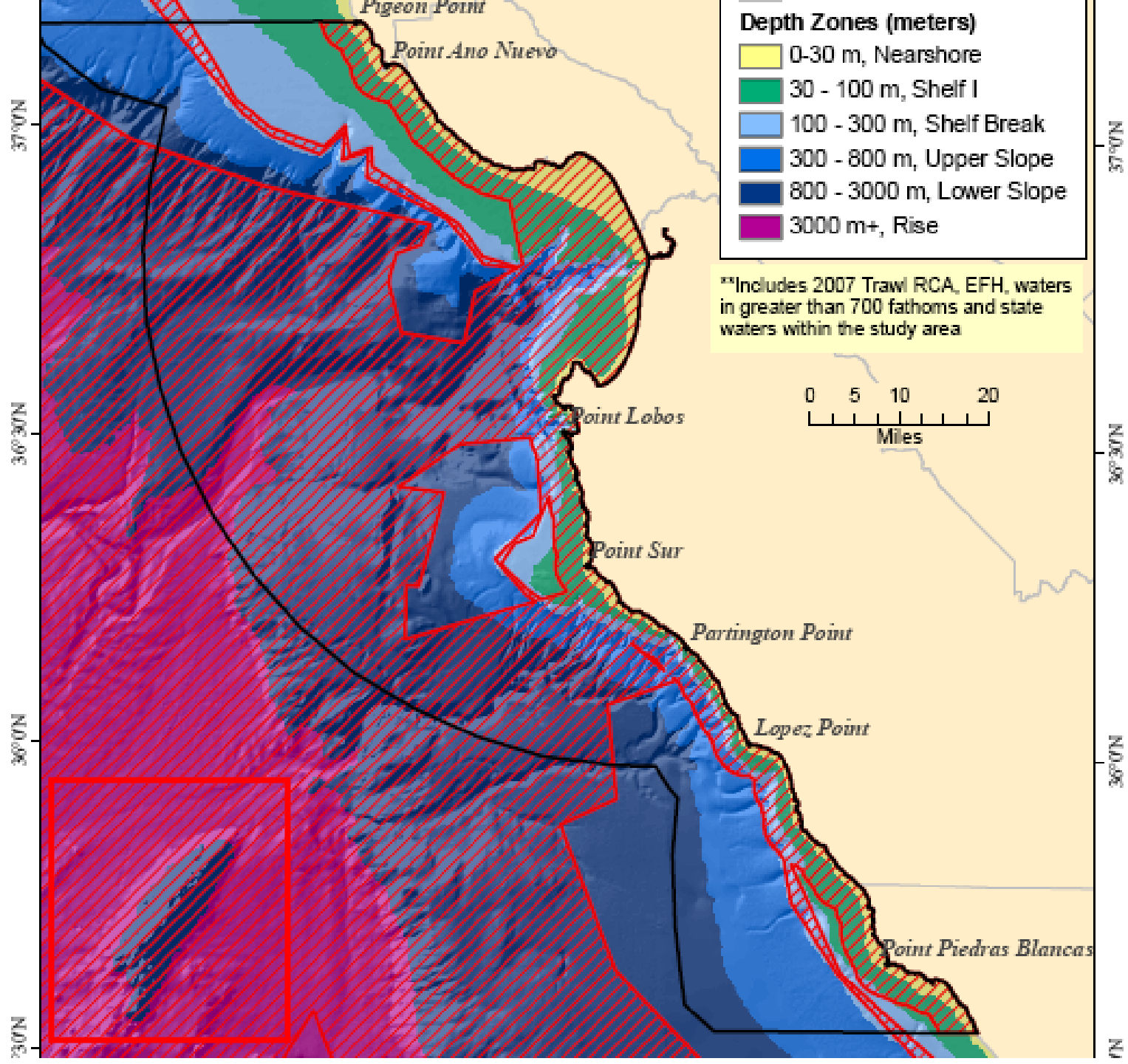


Figure 2-36: Areas Identified as Ecologically Important Areas Under the Council Preferred Alternative –Central California. (new since DEIS)

Area and percentage of area by habitat type for
no trawling and no take of bottomfish MPAs.
(data provided by Sophie De Beukelae MBNMS)

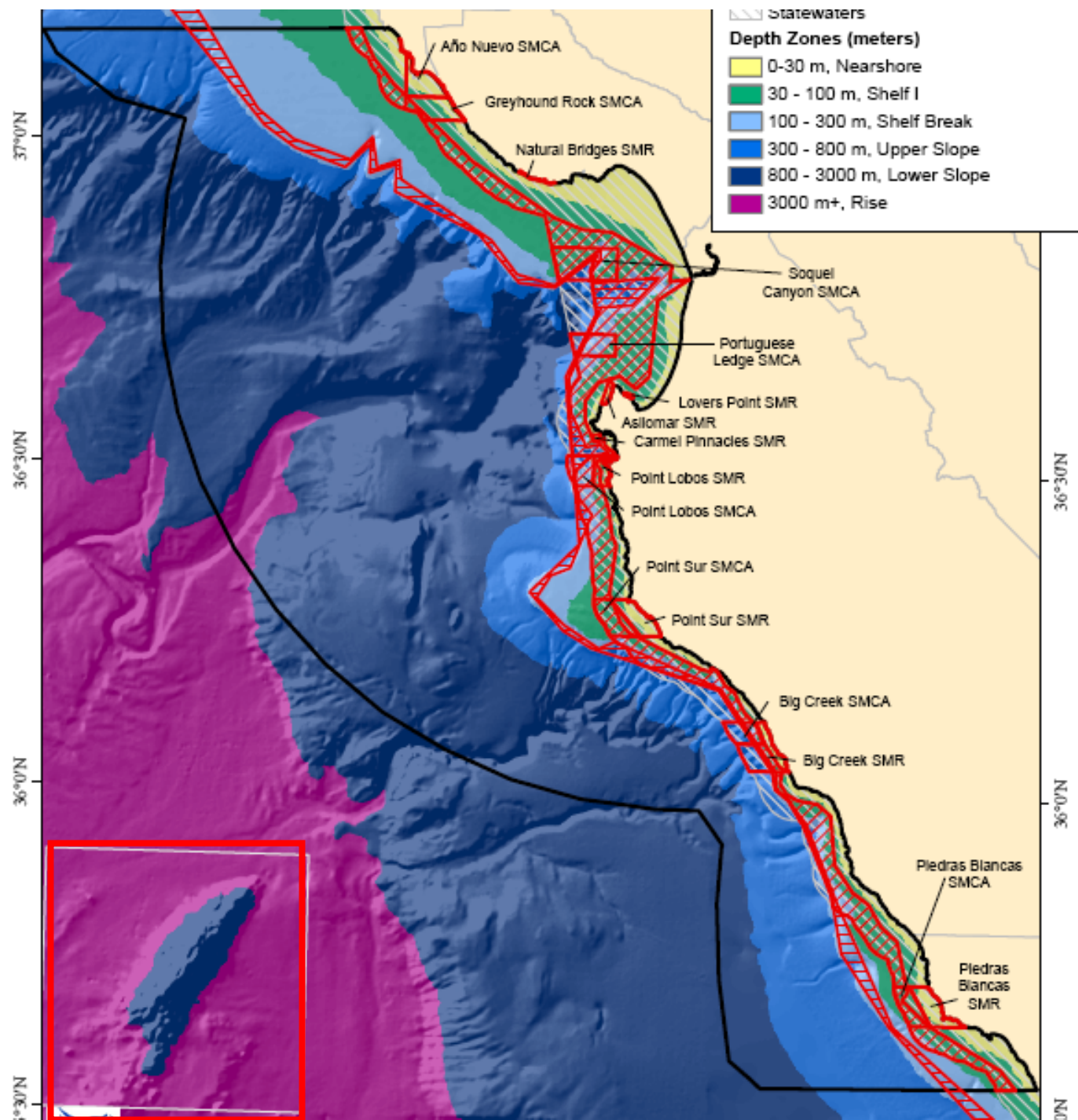
Habitat	Depth Meters	Area sq mi	No Trawling		No Bottomfish	
			RCA	-RCA	RCA	-RCA
Nearshore	0-30	164	99%	99%	18%	17%
Shelf	30-100	542	74%	73%	48%	12%
Shelf break	100-300	399	37%	23%	36%	5%
Upper slope	300-800	897	22%	20%	7%	2%
Lower slope	800-3000	2141	81%	81%	0%	0%
Rise	3000+	70	100%	100%	0%	0%
TOTAL		4215	64%	62%	12%	3%
Davidson Sea Mount		775		100%		100%

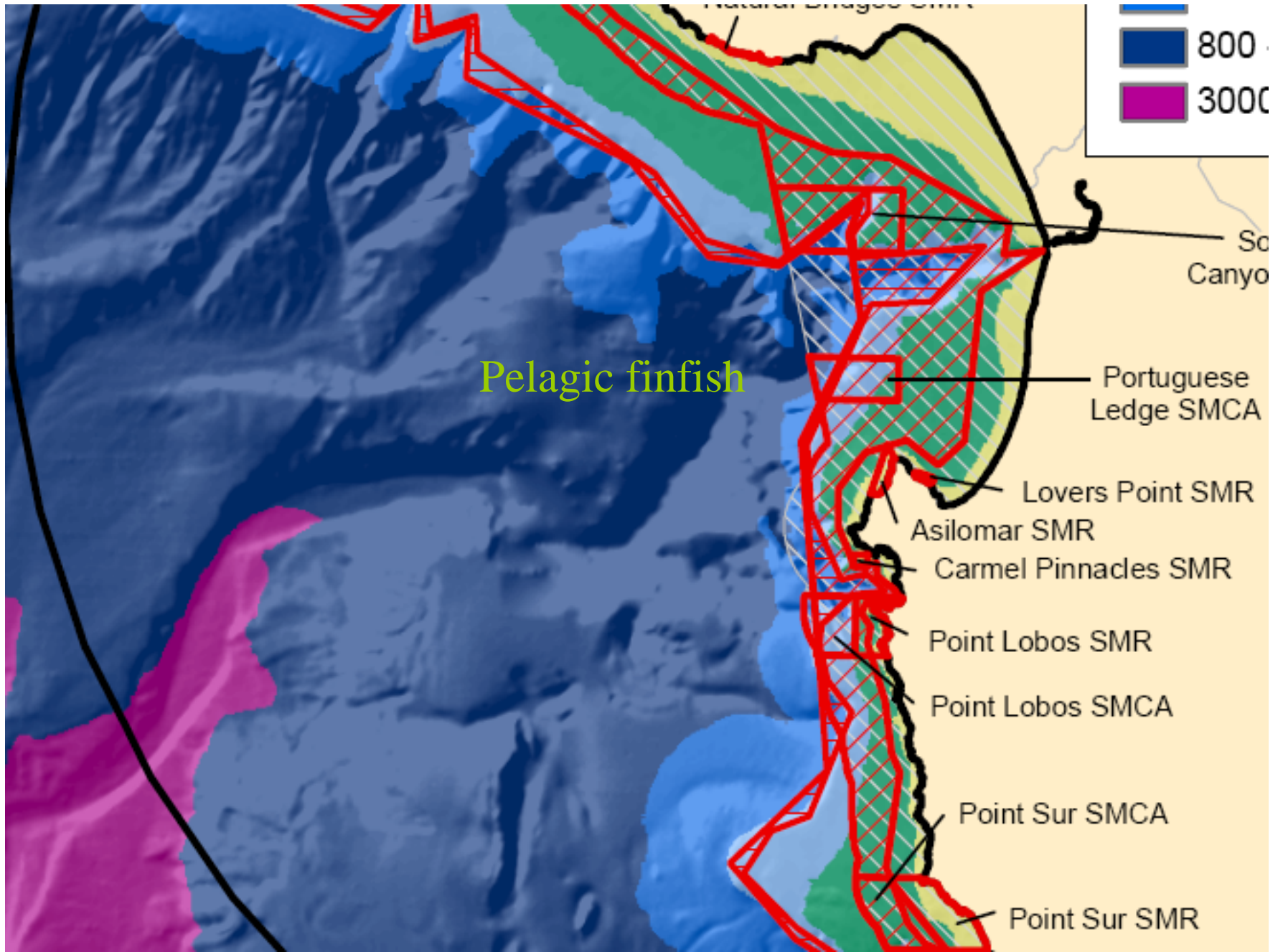
MPAs
with no
trawling



MPAs with
no take of
bottomfishes

Davidson
Sea Mount





Ecosystem Protection - unfished stock sizes for major pelagic and groundfish species in the California Current ecosystem.

Cabezon
1,350 mt

Bocaccio 70,000 mt

Groundfish
Species 12%

Pacific Mackerel

Whiting
9,200,000 MT
2005 landings
397,165 tons

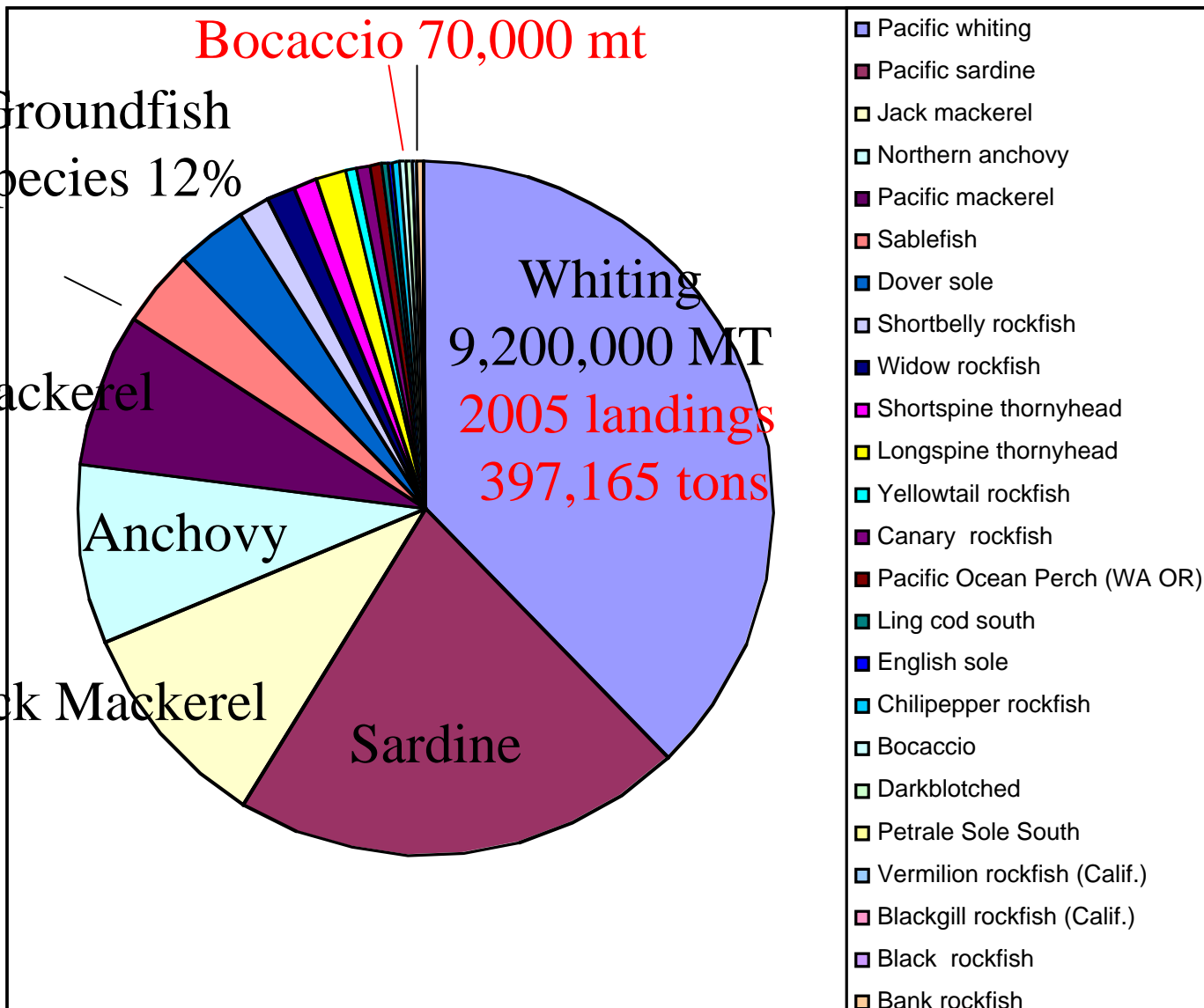
Anchovy

MBNMS
2006 landings
non-pelagics
1,178 tons

Jack Mackerel

Sardine

- Pacific whiting
- Pacific sardine
- Jack mackerel
- Northern anchovy
- Pacific mackerel
- Sablefish
- Dover sole
- Shortbelly rockfish
- Widow rockfish
- Shortspine thornyhead
- Longspine thornyhead
- Yellowtail rockfish
- Canary rockfish
- Pacific Ocean Perch (WA OR)
- Ling cod south
- English sole
- Chilipepper rockfish
- Bocaccio
- Darkblotched
- Petrale Sole South
- Vermilion rockfish (Calif.)
- Blackgill rockfish (Calif.)
- Black rockfish
- Bank rockfish



5. If ecosystem function is threatened what type of regulations will be the most beneficial

Two competing strategies for ecosystem protection
MPAs vs Quotas (catch limits)

MPAs work where they decrease the catch.

Overfished territorial species (tropical reef species)

MPAs will have little population effect in areas with highly regulated catch limits because they will not result in catch reductions.

WHY - Catch limits achieved outside

Catch limits and MPAs

With catch limits in place the only way that catch will be reduced is if densities outside the MPAs become so low that the catch limits cannot be caught.

Example: Lobster with a pretend annual OY

Compare 25% MPAs vs 25% OY reduction

2 tons fuel + 0.5 ton bait = 1 ton lobster

Fuel at \$3.50 per gallon = \$ 875 /ton

. Lobster at \$10.00 per lb = \$ 20,000/ton

2 tons fuel + 0.5 ton bait = 1 ton lobster

After 10 yrs MPAs: CPUE - 33% : Catch same

3 tons fuel + 0.75 ton bait = 1 ton lobster

No reduction in catch : No increase in population

more lobster in MPAs balanced by less outside

After 10 yrs MPAs: CPUE -50% : Catch - 25%

4 tons fuel + 1 ton bait = 1 ton lobster

Reduction in catch after 5 yrs : X increase in population

more lobster in MPAs and less outside

After 10 yrs Quota: CPUE +20% : Catch same

1.6 tons fuel + 0.4 ton bait = 1 ton lobster

Reduction in catch 10 yrs : 2X increase in population

more lobster everywhere

Ecosystem Management

Major Problem: Un-coordinated management by 4
. different agencies with 4 different philosophies.

California State Legislature

California Fish and Game Commission

Pacific Fisheries Management Council

National Marine Sanctuaries

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