

**California Marine Life Protection Act Initiative
Regional Profile Central Coast Study Region
(Pigeon Point to Point Conception, CA)**

DRAFT FINAL
August 2, 2005 (v.2.0)

APPENDICES

Appendix I: Regionally Important Species for the MLPA

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1: Spatial Data Layers Available for MPA Planning on the Central Coast - revised 8/1/05

Data Category (Feature Class)	Data Layer Name	Description (but see metadata for full description)	Geographic Extent	Data Source	Status		
					Available yet?	Uploaded to UCSB Gdb?	Uploaded to UCSB IMS?
Base	Coastline	1:24,000 scale California coastline	statewide		Yes	Yes	Yes
	California rocks	California rocks and islets; most part of CA Coastal National Monument	statewide	BLM	Yes		
	Hillshade bathymetry	Undewater "topography" from Digital Elevation Model	statewide	CDFG	Yes		
	NOAA Nautical charts	NOAA Nautical charts	statewide	NOAA	Yes		
	Central Coast Study Region	Central Coast Study Region (mean high tide to 3nmi)	Pigeon Pt to Pt. Conception	CDFG	Yes		Yes
	MBNMS study region	Monterey Bay National Marine Sanctuary study region	off Golden Gate to Pt. Sal	MBNMS	Yes		Not yet?
	Counties	Coastal counties	statewide		Yes	Yes	Yes
	Ports	Ports and harbors	statewide	CDFG	Yes	Yes	Yes
	Coastal points	Locations and names of headlands and points	CC Study region	CDFG	Yes	Yes	
Biological	Kelp 1989	Kelp Coverage - 1989 (from aerial surveys)	statewide	CDFG	Yes	Yes	Yes
	Kelp 1999	Kelp Coverage - 1999 (from aerial surveys)	statewide	CDFG	Yes	Yes	Yes
	Kelp 2002	Kelp Coverage - 2002 (from aerial surveys)	statewide	CDFG	Yes	Yes	Yes
	Kelp 2003	Kelp Coverage - 2003 (from aerial surveys)	statewide	CDFG	Yes	Yes	Yes

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	Kelp Union	Union of 3 years of kelp data (89,99,02)	statewide	Brian Kinlan/UCSB	Yes		
	ESI Shoreline types	Shoreline types (n=13) in linear segments (sandy beach, rocky shores, tidal flats, marsh)	statewide	NOAA-Environmental Sensitivity Index (as categorized by TNC)	Yes	Yes	Yes
	Estuaries	Estuaries-categorized as small, medium, large	statewide	Multiple sources compiled by TNC	Yes	Yes	Yes
	Coastal marsh	Coastal marsh - includes salt marsh and brackish marsh	statewide	Multiple sources compiled by TNC	Yes	Yes	Yes
	Eelgrass	Eelgrass distribution	statewide	Multiple sources compiled by TNC	Yes	Yes	Yes
	Surfgrass	Surfgrass distribution	Central Coast	Digitized by Tenera	Yes		
	Seabird colonies	Seabird colonies data from SOWLS et al 1980; updated by Carter 1992. Colony location and counts of abundance of seabirds.	statewide	USFWS	Yes		Yes
	Bird breeding colonies	Major Marine bird breeding colonies	Pt Arena to Pt Sal	NOAA Biogeo	Yes		
	Marine mammal haulouts	Marine mammal haulout point locations	statewide	NOAA (Mark Lowry)	Yes		Yes
	Marine mammal rookeries	Marine mammal rookeries as point locations	statewide	NOAA (Mark Lowry)	Yes		Yes
	Salmonid stream outlets	Point locations for coastal stream outlets w/ steelhead, chinook, or coho currently present	statewide	TNC (from multiple sources)	Yes		
	Cold seep communities	Chemosynthetic biological communities in Monterey Bay	Monterey Bay	MBARI	Yes	Yes-draft	
	Bird biomass densities	Marine bird biomass by season, all seasons	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes

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	Bird biomass (Coldwater period)	Marine bird biomass during cold period (La Nina)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird biomass (Neutral period)	Marine bird biomass during neutral period	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird biomass (Davidson season)	Marine bird biomass by season, Davidson season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	
	Bird biomass (Oceanic season)	Marine bird biomass by season, oceanic season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	
	Bird biomass (Upwelling season)	Marine bird biomass by season, upwelling season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird biomass (Warm water period)	Marine bird biomass during warm period (El Nino)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density	Marine bird density by season, all seasons	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Cold water period)	Marine bird density during cold period (La Nina)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Davidson season)	Marine bird density by season, Davidson season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Neutral period)	Marine bird density during neutral period	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Oceanic season)	Marine bird density by season, oceanic season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Upwelling season)	Marine bird density by season, upwelling season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird density (Warm water period)	Marine bird density during warm period (El Nino)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity	Marine bird diversity by season, all seasons	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity (Cold water period)	Marine bird diversity during cold period (La Nina)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity (Davidson season)	Marine bird diversity by season, Davidson season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity (Neutral period)	Marine bird diversity during neutral period	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes

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	Bird diversity (Oceanic season)	Marine bird diversity by season, oceanic season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird Diversity (Upwelling season)	Marine bird diversity by season, upwelling season	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity (Warm water period)	Marine bird diversity during warm period (El Nino)	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Bird diversity and density	Diversity, density, hot spots marine birds	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish and Bird Density and Diversity	Integration of density & diversity fishes & birds	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish and Bird Diversity	Integration of density & diversity fishes & birds	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish and Bird Density	Integration of density & diversity fishes & birds	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish Diversity and density	Diversity, density, hot spots demersal fishes	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish Mean Diversity and Density	Mean Species Diversity of demersal fish	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Fish Diversity and Richness (1977-2001)	Species Richness of demersal rockfish	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Sea Otter Density (spring)	Density of sea otters in linear coastal segments based on May 2002 counts	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	
	Sea Otter Counts (Fall)	Nov 2001 Northern sea otter counts	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes
	Sea Otter Counts (Spring)	May 2002 Northern sea otter counts	Pt Arena to Pt Sal	NOAA Biogeo	Yes	Yes	Yes

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Substrate	Coarse-scale substrate	coarse-scale substrate data (hard and soft bottom, canyons/no canyons) intercepted with 6 depth zones	Pt Reyes to Pt. Conception	G. Greene et al, 2004, Fisheries Habitat Characterization of the California	Yes		
	Nearshore fine-scale substrate	Fine scale (high resolution, 1-2m) substrate data (hard and soft bottoms) from multibeam and interpreted side scan sonar	Limited to Monterey Bay south to Pt. Sur	CSUMB, USGS, industry data compiled for nearshore region-	Yes		
	Nearshore finescale substrate	Fine scale (high resolution, 1-2m) substrate data (hard and soft bottoms), intercepted with depth zones	Limited to Monterey Bay south to Pt. Sur	CSUMB, USGS and other sources	Yes		
	Pinnacles	Pinnacles	Central Coast	?	Not yet		
	Canyons	Submarine canyons	Central Coast	derived from Greene et al	Yes		
	Nearshore canyon heads	Point file of canyon heads within 20nmi of shore digitized	Central Coast	TNC from DEM	Yes		
Bathymetry	Depth zones of Central California	Depth zones of Central California (0, 0-30m, 30-100m, 100-200m, 200-3000m, >3000m)	Central Coast	EFH Depth polygons	Yes	Yes	Yes
	Bathymetric complexity	Bathymetric complexity - defined by standard deviation around mean bathymetry within 1km area of grid.	statewide	TNC, from 200m DEM	Yes		
	Bathymetric contours at 10m	10 meter depth contours	statewide		Yes	Yes	Yes

Physical	California hydrography	Coastal rivers and streams	statewide		Yes	Yes	Yes
	Coastal watersheds	Calwater 2.2 hydrologic units and watershed basins	Central Coast	Calwater 2.2			
	California topography	200m Digital Elevation Model of California	statewide		Yes	Yes	Yes
	Submarine features	Major submarine features	Central Coast	MBNMS -	Yes	Yes	Yes
Oceanographic	Upwelling fronts Q1 (1985-2004)	Upwelling fronts Q1 (1985-2004)	St. Anthony's Pt. to Mussell Pt.	PFEL	Yes		
	Upwelling fronts Q2 (1985-2004)	Upwelling fronts Q2 (1985-2004)	St. Anthony's Pt. to Mussell Pt.	PFEL	Yes		
	Upwelling fronts Q3 (1985-2004)	Upwelling fronts Q3 (1985-2004)	St. Anthony's Pt. to Mussell Pt.	PFEL	Yes		
	Upwelling fronts Q4 (1985-2004)	Upwelling fronts Q4 (1985-2004)	St. Anthony's Pt. to Mussell Pt.	PFEL	Yes		
	Upwelling areas	Upwelling - nearshore in 3 season from SEAWIFFs sea surface temperature data	Pigeon Pt to Pt. Conception	Bernardo Broitman	Yes		
	Retention areas	Retention areas	Pigeon Pt to Pt. Conception	Bernardo Broitman	Yes		
	Freshwater areas	Freshwater plumes in 4 seasons from Seawiffs data	Pigeon Pt to Pt. Conception	Bernardo Broitman	Yes		
	Warm water fronts	Oligotrophic warm water fronts	Pigeon Pt to Pt. Conception	PFEL	NO		

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Consumptive Use	CPFV	Recreational Fishing (Commercial Passenger Fishing Vessel data 1987-1998, summarized by microblock)	Central Coast	CDFG - Note Confidential Data	Yes		
	CRFS	Recreational Fishing (CRFS data for 5 fishing modes and multiple species; summarized by microblock)	Central Coast	CDFG - Note Confidential Data	Yes		Yes -one set only
	Dive sites	Consumptive dive sites and areas	Central Coast	Eric Endersby, Tom Mattusch	Yes-draft		
	Cencal dive sites	Cencal spearfishing dive meet locations	CC Study region	CDFG	Yes		
	Trawl Areas	Commercial Fishing - Groundfish Trawl track data from logbooks	Duncans Pt. to Pt. Conception	DFG/NMFS - Note confidential data	Yes		
	Squid	Commercial Fishing - Squid logbook data	Central Coast	CDFG - Note Confidential Data	Yes		
	General - will be many separate layers when finished	Commercial Fishing - Refinement of block data for 19 fisheries (will list when complete)	Central Coast	DFG/ECOTRUST - Note Confidential Data	Not yet		
	LowPriority Squid/wet fish	LowPriority Squid/wet fish areas	CC Study region	CCRSG	Yes-draft		
	High priority kelp beds	High priority kelp beds for harvest or roe	CC Study region	CCRSG	Yes - draft		
	Low priority dungenesscrab	Low priority areas for dungeness crab (not necessarily for rock crab)	CC Study region	CCRSG	Yes - draft		
	Recreational fishing effort (CRFS)	Recreational fishing effort (CRFS)			Yes	Yes	Yes

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Non-Consumptive Use	Recreational dive sites	Dive sites (note - includes consumptive use sites as not possible to distinguish)	CC study region	Multiple sources - CCRSG members, REEF, Pt. Lobos, etc	Yes -draft		Yes -draft
	Technical dive sites	Technical dive sites	CC study region	Multiple sources - CCRSG members, REEF, Pt. Lobos,	Yes -draft		Yes -draft
	Diving areas	Dive sites	CC Study region	LaFranchi contract			
	Kayak areas	Kayak use areas	CC Study region	"			
	Whale watch areas	Whale watching areas	CC Study region	"			
	Wildlife viewing	Wildlife viewing - shore/boat	CC Study region	"			
	Tidepooling areas	Tidepooling	CC Study region	"			
Cultural							
	Shipwrecks of Monterey Bay	Shipwrecks of Monterey Bay	CC Study region		Yes	Yes	Yes
	Coastal access points	Coastal access points			Yes	Yes	Yes
Research / Monitoring	Monitoring sites	Scientific Monitoring Sites (PISCO, MARINE, LIMPET, CENCOOS)	CC Study region	various sources (P. Raimondi, J.Engles,)/SIMON	Yes		
	Research/Educational Institutions	Research and educational stations/facilities	CC Study region	various sources; compiled by Bren school students	Yes		
	Scientific Collection areas	Scientific collection areas	CC Study region	??? John Pearse??	No		
	CCAMP Water quality monitoring locations	Central California Ambient Monitoring Program water quality monitoring locations	CC Study region	SWQCB	Yes		

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Management	3nmi Offshore Jurisdictional Boundary	3nmi Offshore Jurisdictional Boundary (state waters boundary)	statewide	CDFG	Yes	Yes	Yes
	CalTrawl Blocks	CalTrawl blocks (10minute grid)	statewide	CDFG	Yes		
	Cal Trawl Microblocks	CalTrawl microblocks (1 minute grid for fishery catch data records)	statewide	CDFG	Yes		
	State MPAs	Existing state MPAs; Feb. 2005 version	statewide	CDFG	Yes		Yes
	Central California National Marine Sanctuary boundaries	Central California National Marine Sanctuary boundaries	statewide	MBNMS	Yes		Yes
	Non-trawl Rockfish closure areas (north, south, central)	Non-trawl Rockfish closure areas (north, south, central)	statewide	CDFG	Yes		Yes
	Trawl Rockfish closure areas (north, central, south)	Trawl Rockfish closure areas (north, central, south)	statewide	CDFG	Yes	Yes	Yes
	Fulltime Closures - 2005	Rec. Groundfish Fulltime Closures - 2005	statewide	CDFG	Yes	Yes	Yes
	Exclusive economic zone (EEZ - federal waters)	Exclusive economic zone (EEZ - federal waters)	statewide		Yes	Yes	Yes
	Power plant and military hazard areas	Power plant closures, military safety and hazard zones	Central Coast	CDFG	Yes		
	Admin kelp beds	Administrative kelp beds	statewide	CDFG	Yes	Yes	Yes
	Groundfish EFH - no trawl zones	Groundfish EFH - most recent no trawl zones from PFMC	statewide	PFMC	Yes?		

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	ASBS	State Areas of Special Biological Significance (ASBS, or water quality protection areas)	statewide	CDFG/SWQCB	Yes		
	Terrestrial protected areas	Terrestrial protected areas (state parks, state beaches, DOD lands, other state and federal protected areas in coastal watersheds)	statewide	Multiple sources; compiled by TNC	Yes	Yes	Yes
	NERRs	National Estuarine Research Reserves	statewide	USFWS/NERR Program	Yes	Yes	Yes
Other	Pollution discharge points	Permitted pollution discharge points	statewide	SWQCB, 2004 data	Yes		
	Coastal watersheds	Coastal watersheds classified by urban, agriculture, and road density	Pt. Conception to Oregon	TNC from multiple sources	Yes		
	Impaired water bodies	Section 303d impaired water bodies (rivers, shoreline, estuaries, bays and harbors)	statewide	SWQCB, 2005 TMDL list	Yes		
	Hardened shoreline	Marinas/seawalls/riprap	statewide	Environmental Sensitivity Index	Yes		?wrong name
	ESI for northern Central California	ESI for northern Central California - has info on human use areas, habitat areas, shoreline, etc	statewide		Yes		Yes

Key to Acronyms

ASBS	Areas of Special Biological Significance	MBARI	Monterey Bay Aquarium Research Institute
BLM	Bureau of Land Management	MBNMS	Monterey Bay National Marine Sanctuary
CC	Central Coast	MLML	Moss Landing Marine Laboratories
CCAMP – B105	Central Coast Ambient Monitoring Program	MPA	Marine protected area
CCRS	Central Coast Regional Stakeholder Group	NERRs	National Estuarine Research Reserves
CDFG	California Department of Fish and Game	NMFS	National Marine Fisheries Service
CENCOOS	Central California Ocean Observing System	NOAA	National Oceanic and Atmospheric Administration
CPFV	Commercial Passenger Fishing Vessel	PFEL	Pacific Fisheries Environmental Laboratory
CRFS	California Recreational Fisheries Survey	PFMC – E118	Pacific Fisheries Management Council
CSUMB	California State University, Monterey Bay	PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
DEM	Digital elevation model	REEF	Reef Environmental Education Foundation
DOD – C120	Department of Defense	SIMON	Sanctuary Integrated Monitoring Network
ED	Environmental Defense	SWQCB	State Water Quality Control Board
EEZ	Exclusive Economic Zone	TNC	The Nature Conservancy
EFH	Essential Fish Habitat	UCSB	University of California, Santa Barbara
ESI	Environmental Sensitivity Index	USFWS	United States Fish and Wildlife Service
LIMPET	Longterm Monitoring Program and Experiential Training for Students	USGS	United States Geological Service
MARINe	Multi-agency Rocky Intertidal Network		

2 (a): List of Fishes Likely to Benefit from the Establishment of Marine Protected Areas in Central California

Species	Primary depth range in feet (x 0.305= meters)	Primary geographic range within state using four regions	Habitat preference juveniles	Habitat preference adults	Unique or significant life-history characteristics	Larval type	Larval duration [potential larval dispersal]	Potential for adult dispersal
Butterfish (Pacific pompano)	30-300	All	coastal pelagic	coastal pelagic	a schooling species;	planktonic	unknown	moderate
Cabezon	0-250	All regions, including islands	rocky reefs, break-waters, kelp beds, tide pools, open ocean	rocky reefs, kelp beds	eggs adhesive, attach to substrate, often macroalgae	planktonic	3-4 months	low
Croaker, white	0-420	All; most common Point Reyes to Mexico border	near bottom in shallow soft habitat	soft bottom, primarily nearshore and estuaries	schooling; multiple spawning each year; adults in deeper water than juveniles	planktonic larvae become epibenthic	short	low
Eel, wolf-	Intertidal to 600	N, NC, SC	pelagic	rocky reefs, kelp beds	not a true eel; spawn Oct.-February	planktonic ?	1-2 months	moderate
Flounder, starry	Shallow - 900	N,NC,SC	estuaries and bays, nearshore soft bottom	soft bottom; estuaries and bays to upper slope	spawn near river mouths and estuaries and bay	planktonic	25-75 days	moderate
Greenling, kelp	0-150	N,NC,SC	rocky reefs, kelp beds	rocky reefs, kelp beds	eggs adhere to rocky substrate	planktonic	unknown	moderate
Greenling, rock	shallow	N,NC	rocky reefs, kelp beds	rocky reefs, kelp beds	eggs adhere to rocky substrate	planktonic	unknown	moderate

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Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Grunion, California	0-60	SC,S	sandy nearshore areas	sandy nearshore areas	eggs deposited on sandy beaches; lack filaments	planktonic	low to moderate	moderate
Guitarfish, shovelnose	0-50	SC,S	as adults	shallow sand, mud, open coast, bays, and estuaries	live-bearing	benthic	none	moderate
Hagfish, Pacific	30-3096	All	?	soft bottom	deposit egg cases	?	unknown	moderate
Halibut, California	0-300	All	estuaries, shallow open coast soft bottom	estuaries and soft bottom open coast	distribution influenced by El Niño events	planktonic	< 30 days	moderate
Jacksmelt	shallow	All	kelp and eel grass beds; sandy beaches; harbors	kelp and eel grass beds; sandy beaches; harbors	eggs with filaments for attachment to eel grass and shallow algal beds	planktonic	low	moderate
Lingcod	0-1400	All	rocky reefs, kelp beds, hard bottom, soft bottom	rocky reefs, kelp beds, hard bottom, soft bottom	Spawns nearshore on rocky reefs; males guard eggs	planktonic	3 months	high
Lizardfish, California	5-750	SC,S	primarily soft bottom	primarily soft bottom	rest on bottom using pelvic fins	planktonic	unknown	moderate
Midshipman, plainfin	0-1000	All	soft bottom	soft bottom; spawn on hard substrate	Eggs deposited on rocks and hard substrate	planktonic	unknown	moderate
Opaleye	0-95	SC,S	rocky intertidal	rocky reefs, kelp beds	regulates kelp growth by grazing	planktonic	unknown	moderate
Prickleback, monkeyface	0-80	N,NC,SC	rocky intertidal	rocky reefs, kelp beds	deposit eggs on rocky substrate	planktonic	low	low

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Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Prickleback, rock	0-60	N,NC,SC	rocky intertidal	rocky reefs, shallow	deposit eggs on rocky substrate	planktonic	low	low
Queenfish	0-180	SC,S	soft bottom	shallow water and sandy bottom; in bays and sloughs	spawn at night from March to September	planktonic	short	moderate
Ray, bat	0-150	All	shallow soft bottom; bays and estuaries	shallow sandy and rocky areas, including bays and estuaries; kelp beds	live-bearing	miniature adults	none	moderate
Rockfish, aurora	600-1800	All	soft bottom	hard and soft bottom	live-bearing	planktonic	moderate	moderate
Rockfish, bank	102-810	All	midwater	midwater over hard bottom, drop offs	live-bearing	planktonic	moderate	moderate
Rockfish, black	0-1200	N,NC,SC	soft bottom	rocky reefs, kelp forests	live-bearing	planktonic	moderate	moderate
Rockfish, black-and-yellow	0-120	NC,SC,S	shallow rocky reefs	shallow rocky reefs, kelp forests	live-bearing	planktonic	Low to moderate	low
Rockfish, blackgill	720-1800 (juv. < 660)	All	soft bottom	hard bottom, soft bottom, canyons, steep drop offs	live-bearing	planktonic	moderate	moderate
Rockfish, blue	0-300	All	rocky reefs, kelp forests, soft bottom	rocky reefs, kelp forests	live-bearing	planktonic	moderate	moderate

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Bocaccio	0-1050	All	over hard and soft bottom	midwater over hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, brown	0-420	All	low-relief hard and soft bottom	low-relief hard and soft bottom	live-bearing	planktonic	low to moderate	low
Rockfish, calico	60-840	SC,S	soft bottom	hard bottom, sand-rock and mud-rock interface	live-bearing	planktonic	moderate	low
Rockfish, canary	0-900	N,NC,SC	soft bottom; sand-rock interface	midwater and near bottom over hard bottom	live-bearing	planktonic	moderate	moderate to high
Chilipepper	0-1080	All	soft bottom	midwater over hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, China	36-420	N,NC,SC	rocky reefs	rocky reefs, kelp forests	live-bearing	planktonic	low to moderate	low
Rockfish, copper	0-600	All	rocky reefs and soft bottom	rocky reefs, kelp forests	live-bearing	planktonic	moderate	low
Cowcod	68-1200	All	soft and hard bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, darkblotched	240-1800	All	soft bottom	soft and hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, flag	100-600	SC,S	rocky reefs	rocky reefs, canyons	live-bearing	planktonic	Moderate	low
Rockfish, gopher	0-180	NC,SC,S	rocky reefs	rocky reefs, kelp forests	live-bearing	planktonic	low to moderate	low

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Rockfish, grass	0-150	All	shallow rocky reefs	shallow rocky reefs, kelp forests	live-bearing	planktonic	moderate	low
Rockfish, greenblotched	200-1300	SC,S	soft bottom	hard and soft bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, greenstriped	200-1320	All	soft bottom	low relief hard bottom, soft bottom	live-bearing	planktonic	moderate	moderate
Rockfish, greenspotted	160-660	NC,SC,S	soft bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, halfbanded	192-1320	SC,S	soft bottom	low relief hard and soft bottom, cobble	live-bearing	planktonic	moderate	moderate
Rockfish, kelp	0-150	NC,SC,S	kelp forests and rocky reefs	kelp forests	live-bearing	planktonic	moderate	low
Rockfish, Olive	0-480	NC,SC,S	kelp forests, soft bottom	rocky reefs, kelp forests	live-bearing	planktonic	moderate	low
Pacific ocean perch	180-2100	All	midwater over hard bottom	midwater over hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, pink	250-1200	NC,SC,S	soft bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, pinkrose	325-960	SC,S	soft bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, quillback	75-900	N,NC	rocky reefs	rocky reefs	live-bearing	planktonic	moderate	low
Rockfish, redbanded	300-1560	All	soft bottom	soft and hard bottom	live-bearing	planktonic	moderate	low
Rockfish, redstripe	300-1200	N,NC	hard bottom	hard bottom	live-bearing	planktonic	moderate	moderate

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Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Rockfish, rosethorn	390-1800	N,NC,SC	soft and hard bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, rosy	50-420	All	soft and hard bottom	hard bottom	live-bearing	planktonic	moderate	low
Rockfish, sharpchin	300-1050	All	hard bottom	hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, shortbelly	0-930	All	midwater over hard bottom	midwater over hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, speckled	100-1200	All	hard bottom	hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, splitnose	700-1560	All	soft bottom	hard bottom, canyons	live-bearing	planktonic	moderate	moderate
Rockfish, squarespot	60-600	All	hard bottom	hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, starry	80-900	NC,SC,S	hard bottom	hard bottom	live-bearing	planktonic	moderate	low
Rockfish, stripetail	192-1320	All	soft bottom	soft and hard bottom	live-bearing	planktonic	moderate	moderate
Rockfish, swordspine	250-1420	NC,SC,S	soft bottom	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, tiger	200-900	N,NC	hard bottom	hard bottom	live-bearing	planktonic	moderate	low
Rockfish, treefish	0-150	SC,S	rocky reefs	rocky reefs, kelp forests	live-bearing	planktonic	moderate	low
Rockfish, vermilion	0-900	All	soft and hard bottom	wide depth range, rocky reefs, kelp forests, canyons	live-bearing	planktonic	moderate	low
Rockfish, widow	0-1200	All	midwater over hard bottom	midwater over hard bottom	live-bearing	planktonic	moderate	moderate

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Rockfish, yelloweye	150-1200	N,NC,SC	rocky reefs	hard bottom, canyons	live-bearing	planktonic	moderate	low
Rockfish, yellowtail	0-1800	All	midwater	midwater over hard bottom	live-bearing	planktonic	moderate	moderate
Sanddab, Pacific	30-1800	All	soft bottom	soft bottom	may spawn twice a year	planktonic	unknown	moderate
Seabass, white	0-400	NC,SC,S occurs farther north during El Niño events	sandy area, estuaries, piers, jetties, kelp beds	kelp beds. Rocky reefs, offshore banks, open ocean	adults aggregate in spring-summer during spawning	planktonic		high
Shark, brown smoothhound	0-360	All	bays and estuaries	soft bottom, bays and estuaries, nearshore	live-bearing	miniature adults	zero	moderate
Shark, gray smoothhound	0-150	All	bays and estuaries	soft bottom, bays and estuaries, nearshore	live-bearing	miniature adults	zero	moderate
Shark, horn	0-492	S	rocky reefs, kelp beds	rocky reefs, kelp beds	lay egg cases	miniature adults	zero	moderate
Shark, Pacific angel	3-600	SC,S	flat, sandy bottoms;	flat, sandy bottoms; sand channels between reefs	live-bearing	miniature adults	zero	moderate
Shark, leopard	0-300	All	enclosed bays and sloughs; kelp beds; shallow sandy areas	enclosed bays and sloughs; kelp beds; shallow sandy areas near reefs	aggregate in very shallow water to release young; live-bearing	miniature adults	zero	moderate

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Sheephead, California	0-180	SC,S	rocky reefs, kelp beds	rocky reefs, kelp beds	changes sex from female to male with size	planktonic	unknown	moderate
Skate, big	10-360	N,NC,SC	soft bottom	soft bottom, occasionally rocky reefs	young hatch from eggs in cases	miniature adults	zero	moderate
Skate, California	60-2200	All	soft bottom	soft bottom	young hatch from eggs in cases	miniature adults	zero	moderate
Skate, longnose	180-2040	All	soft bottom	soft bottom	young hatch from eggs in cases	miniature adults	zero	moderate
Smelt, night	0-420	N,NC,SC	soft bottom	shallow sandy coastal areas	spawn in surf zone at night	planktonic	low to moderate	moderate
Smelt, surf	shallow	N,NC,SC	soft bottom	shallow sandy coastal areas	spawn in surf zone in daytime	planktonic	low to moderate	moderate
Smelt, whitebait	0-180	N,NC,SC	soft bottom	shallow sandy coastal areas, bays, and estuaries	spawn in sandy subtidal areas	planktonic	low to moderate	moderate
Sole, Dover	60-3000	All	soft bottom, deep water	soft bottom, deep water	a portion of the stock migrates	planktonic	at least 1 year	moderate
Sole, English	60-1000	All	soft bottom, shelf	soft bottom	migrates, spawns at 200-360 ft	planktonic	6-10 weeks	moderate
Sole, petrale	60-1500	All	soft and hard bottom, shelf	soft and hard bottom, shelf	migrates, spawns at 900-1200 ft	planktonic	unknown	moderate
Sole, rex	60-2100	All	Soft bottom, shelf and slope	soft bottom, shelf and slope	spawns at 300-900 ft	planktonic	at least 1 year	moderate
Sole, rock	50-1200	N,NC,SC	soft and hard bottom, shelf	soft and hard bottom, shelf	one of few flatfishes found on rocky bottom	planktonic	unknown	moderate

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Sole, sand	5-312	N,NC,SC	Soft bottom, nearshore, estuaries	soft bottom, nearshore	one of few medium-large flatfish found inshore	planktonic	unknown	moderate
Sole, slender	250-1700	All	soft bottom, shelf and slope	soft bottom, shelf and slope	relatively abundant offshore species	planktonic	moderate	moderate
Surfperch, barred	0-240	NC,SC,S	beaches	beaches	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, black	0-130	All	rocky reef, kelp beds	rocky reef, kelp beds	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, calico	0-30	All	beaches	beaches	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, pile	0-240	All	rocky reefs, kelp beds, soft bottom	rocky reefs, kelp beds, soft bottom	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, rainbow	0-130	All	rocky reef, kelp beds	rocky reef, kelp beds	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, redtail	0-60	N,NC	beaches	beaches	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, rubberlip	0-150	All	rocky reefs, kelp beds, soft bottom	rocky reefs, kelp beds, soft bottom	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, shiner	0-480	All	estuaries, soft bottom, kelp beds, rocky reef	estuaries, soft bottom, kelp beds, rocky reef	bear live, free-swimming young	not applicable	not applicable	moderate to high(?)
Surfperch, striped	0-55	All	rocky reef, kelp beds	rocky reef, kelp beds	bear live, free-swimming young	not applicable	not applicable	moderate
Surfperch, walleye	0-60	All	beaches	beaches	bear live, free-swimming young	not applicable	not applicable	moderate

Species	Primary depth range	Primary geographic range	Habitat preference juveniles	Habitat preference adults	Unique/significant Life-history characteristics	Larval type	Larval duration	Potential for adult dispersal
Surfperch, white	0-140	All	rocky reefs, kelp beds, soft bottom	rocky reefs, kelp beds, soft bottom	bear live, free-swimming young	not applicable	not applicable	moderate
Thornyhead, longspine	1090-5000	All	deep hard and soft bottom	deep hard and soft bottom; slope	lack swim bladder; may survive after being brought to surface and released; spawn gelatinous floating egg masses	planktonic	unknown	moderate to high
Thornyhead, shortspine	84-5000+	All	deep hard and soft bottom	deep hard and soft bottom; slope	lack swim bladder; may survive after being brought to surface and released; spawn gelatinous floating egg masses	planktonic	unknown	moderate to high
Tomcod, Pacific	0-720	N,NC,SC	unknown	soft bottom	broadcast spawners; high fecundity	planktonic	unknown	moderate
Topsmelt	shallow	All	kelp and eel grass beds; sandy beaches, harbors	kelp and eel grass beds; sandy beaches, harbors	spawns in eel grass and algal beds, possibly kelp beds; eggs attach to spawning substrate by adhesive filaments	planktonic	low	moderate
Turbot, C-O	shallow-966	All	rocky reef, sand; shelf	rocky reef, sand; shelf	one of few flatfishes to occur in kelp beds	planktonic	unknown	moderate
Turbot, curlfin	25-1146	All	soft bottom	soft bottom; shelf	small mouth; difficult to catch with hook-and-line	planktonic	unknown	moderate
Whitefish, ocean	0-300	SC,S	unknown	midwater over hard and soft bottom	responds favorably to El Niño conditions	planktonic	unknown	moderate

2 (b) List of Invertebrates and Plants Likely to Benefit from the Establishment of Marine Protected Areas in Central California

Species	Primary depth range (feet) (x 0.305 = meters)	Primary Geographic range within state using four regions	Habitat preference juveniles	Habitat preference adults	Unique or significant life history characteristics	Larval type	Larval duration [potential larval dispersal]	Potential for adult dispersal (vagility)
Crab, box	0-1800	All regions, including islands	rocky reef, submarine canyons	rocky reef, submarine canyons	unknown	planktonic	unknown	unknown
Crab, brown rock	0-300	All regions, including islands	rocky reefs, kelp beds,	rocky reefs, kelp beds,	rock crabs may live 5-6 years	planktonic	3-4 months	moderate
Crab, Dungeness	0-750	N,NC,SC	sand, sand-mud, estuaries	sand, sand-mud	larvae may be transported more than 50 miles offshore	planktonic	105-125 days	moderate
Crab, red rock	0-750	All regions, including islands	rocky reefs, submarine canyons	rocky reefs, submarine canyons	may co-occur with spot prawns	planktonic	3-4 months	moderate
Crab, sand	Intertidal	All regions, including islands	intertidal, shallow subtidal sand	intertidal, shallow subtidal sand	larvae often co-occur with Dungeness crab larvae	planktonic	unknown	low
Prawn, spot	150-1,600	All regions, including islands	shallower mud, mud-sand, sand/rock. rocky reef, submarine canyons	mud, mud-sand, sand/rock. rocky reef, submarine canyons	change sex from male to female during year 4	planktonic	unknown	moderate

Species	Primary depth range	Primary Geographic range	Habitat preference juveniles	Habitat preference adults	Life history characteristics	Larval type	Larval duration	Potential for adult dispersal
Shrimp, ghost and mud shrimp (several species)	Intertidal	All regions	sand, sand/mud, sand/gravel	sand, sand/mud, sand/gravel	form permanent burrows or impermanent tunnels	planktonic	unknown	low
Shrimp, ocean	150-1200	N,NC,SC: Oregon border to Pt. Arguello	green mud, mud-sand	green mud, mud-sand	change sex from male to female during year 2	planktonic	2.5 to 3 months	moderate
Urchin, purple	0-300	All regions, including islands	rocky reefs, kelp beds, under canopy of adults	rocky reefs, kelp beds	require high densities for successful spawning	planktonic	6-8 weeks	low
Urchin, red	Intertidal to 500	All regions, including islands	rocky reefs, kelp beds, under canopy of adults	rocky reefs, kelp beds	require high densities for successful spawning	planktonic	6-8 weeks	low
Abalone, black	Intertidal, 0-20	NC,SC,S	crevices in rocky reefs, kelp beds	rocky reefs, kelp beds	susceptible to withering syndrome disease	planktonic	4-7 days	low
Abalone, flat	20-70	All regions, including islands	crevices in rocky reefs, kelp beds	rocky reefs, kelp beds	generally a cryptic species	planktonic	4-7 days	low
Abalone, pinto	Intertidal to 70	N,NC,SC	crevices in rocky reefs, kelp beds	rocky reefs, kelp beds	commonly found at approx. 4-inch length	planktonic	4-7 days	low

Species	Primary depth range	Primary Geographic range	Habitat preference juveniles	Habitat preference adults	Life history characteristics	Larval type	Larval duration	Potential for adult dispersal
Abalone, red	Intertidal to 100	All regions, including islands	crevices in rocky reefs, kelp beds, boulder outcrops, under canopy of red urchins	rocky reefs, kelp beds, boulder outcrops	largest abalone species in the world	planktonic	4-7 days	low
Clam, California jackknife	Intertidal to	South, mainland and islands	sandy mud, estuaries	sandy mud, estuaries	occupies a permanent burrow	planktonic	unknown	low
Clam, chione (several species)	Intertidal to 165	South, mainland and islands	mud, sand, estuaries	mud, sand, estuaries	smooth chione subject to habitat loss due to harbor development	planktonic	unknown	low
Clam, littleneck (several species)	Intertidal	All regions, including islands	cobble beds	cobble beds	prized food item	planktonic	unknown	low
Clam, gaper (several species)	Intertidal to 150	All regions	sand, sand/mud, estuaries	sand, sand/mud, estuaries	may live to 17 years	planktonic		low
Clam, geoduck	0-360	All regions	sand/mud, estuaries	sand/mud, estuaries	individuals may exceed 10 pounds	planktonic	2 weeks	low
Clam, Manila	Intertidal	All regions	sand/mud, estuaries	sand/mud, estuaries	introduced from Japan; important recreational species	planktonic	3 weeks	low

Species	Primary depth range	Primary Geographic range	Habitat preference juveniles	Habitat preference adults	Life history characteristics	Larval type	Larval duration	Potential for adult dispersal
Clam, Pismo	Intertidal to 80	SC,S	exposed sand	exposed sand	primary prey item of California sea otters	planktonic	pelagic phase 2-3 days	low
Clam, razor	Intertidal and shallow subtidal	N,NC,SC	exposed sand	exposed sand	individuals can bury themselves in 7 seconds	planktonic	8 weeks	low
Clam, softshell	Intertidal	N,NC,SC	mud	mud	may have been introduced with eastern oyster	planktonic	unknown	low
Clam, Washington (several species)	Intertidal to 100	All regions	sand/mud, estuaries	sand/mud, estuaries	known to concentrate paralytic shellfish poisoning toxin	planktonic	4 weeks	Low
Cockles	Intertidal to 660	All regions, including islands	sand, sand/mud, mud, estuaries	sand, sand/mud, mud, estuaries	one species may live to 16 years	planktonic	unknown	Low
Limpets	Intertidal to 100	All regions, including islands	rocky reefs	rocky reefs	some species may live 15 years	planktonic	less than 1 week	Low
Mussels (several species)	Intertidal to 130	All regions, including islands	rocky reefs, pilings	rocky reefs, pilings	bio-accumulator of toxins.	planktonic	1 month	Low
Octopus (several species)	Intertidal to 660	All regions, including islands	rocky reefs, kelp beds, soft bottom	rocky reefs, kelp beds, soft bottom	eggs are attached to substrate and brooded by females	planktonic	1 month or less	Low

Species	Primary depth range	Primary Geographic range	Habitat preference juveniles	Habitat preference adults	Life history characteristics	Larval type	Larval duration	Potential for adult dispersal
Scallop, rock	Intertidal to 100	All regions, including islands	rocky reefs, pier pilings, rock jetties	rocky reefs, pier pilings, rock jetties	intolerant of salinity less than 25 ppt	planktonic	5 weeks	Low
Sea hare (two species)	0-60	NC,SC,S	hard and soft bottom, kelp beds	hard and soft bottom, kelp beds	large nerve ganglia make them useful for research	planktonic	4-5 weeks	Low
Sea stars (many species)	Intertidal to deepest canyons	All regions, including islands	rocky reefs, hard bottom, sand	rocky reefs, hard bottom, sand	some species adapted to exposure at low tides	planktonic	unknown	Low
Snail, moon	Intertidal to 500	All regions, including islands	soft bottom	soft bottom	has aquiferous system of spongy sinuses in foot	planktonic	2 weeks	low
Snail, turban (several species)	Intertidal to 250	All regions, including islands	shallower rocky reefs, kelp beds, including canopy	rocky reefs, kelp beds, including canopy	feeds primarily on kelp and coralline algae	planktonic	unknown	low
Worms (polychaetes)	Intertidal to deepest canyons	All	rocky reefs in mussel beds, cobble beds, soft bottom	rocky reefs in mussel beds, cobble beds, soft bottom	several species have toothed proboscis	planktonic	variable	low

Species	Primary depth range	Primary Geographic range	Habitat preference juveniles	Habitat preference adults	Life history characteristics	Larval type	Larval duration	Potential for adult dispersal
Algae								
<i>Gelidium</i> sp. (many species)	Intertidal, to 100	All regions, including islands	rocky reefs	rocky reefs	may form mats of algal turf	not applicable	not applicable	none
<i>Gracilaria</i> sp. (many species)	Intertidal to 50	All regions, including islands	soft bottoms	soft bottoms	used as spawning substrate by herring in SF Bay	not applicable	not applicable	none
<i>Porphyra</i> sp. (many species)	Intertidal to 100	All regions, including islands	rocky reefs	rocky reefs	may be common in high-energy surf zones	not applicable	not applicable	none
Sea palm	Intertidal	N,NC,SC	exposed rocky reefs	exposed rocky reefs	individuals can regenerate blades but not stipe.	not applicable	not applicable	none
Kelp, giant	20-120	NC,SC,S	on sand and rock substrate	on sand and rock substrate	fronds may grow up to 24 inches per day	not applicable	not applicable	none
Kelp, bull	10-70	N,NC,SC	on rock or cobble substrate	on rock or cobble substrate	found where water temp is less than 60 F	not applicable	not applicable	none

3. Special Status Species

Mammal Common Name	Scientific Name	ESA	CESA
Blue whale	<i>Balaenoptera musculus musculus</i>	E (06-02-70)	
Fin whale	<i>Balaenoptera physalus</i>	E (06-02-70)	
Humpback whale	<i>Megaptera novaeangliae</i>	E (06-02-70)	
North Pacific right whale	<i>Eubalaena japonica</i>	E (06-02-70)	
Gray whale	<i>Eschrichtius robustus</i>	Delist (06-15-94)	
Sei whale	<i>Balaenoptera borealis</i>	E (06-02-70)	
Sperm whale	<i>Physeter macrocephalus</i>	E (06-02-70)	
Killer Whale	<i>Orcinus orca</i>	PT (12-22-04); SC (NMFS)	
Steller sea lion (Eastern stock)	<i>Eumetopias jubatus</i>	T (04-05-90)	
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	T (12-16-85)	T (06-27-71)
Southern sea otter	<i>Enhydra lutris nereis</i>	T (01-14-77)	

Bird Common Name	Scientific Name	ESA	CESA
Common loon	<i>Gavia immer</i>		SSC
Short-tailed Albatross	<i>Phoebastria albatrus</i>	E (08-30-00)	SSC
Black-footed albatross	<i>Phoebastria nigripes</i>	SC (FWS)	
Ashy storm-petrel	<i>Oceanodroma homochroa</i>	SC (FWS)	SSC (SP)
Fork-tailed storm-petrel	<i>Oceanodroma furcata</i>		SSC (FP)
Black storm-petrel	<i>Oceanodroma melania</i>		SSC (TP)
California brown pelican	<i>Pelecanus occidentalis californicus</i>	E (10-13-70)	E (06-27-71)
American white pelican	<i>Pelecanus erythrorhynchos</i>		SSC (FP)
American bittern	<i>Botaurus lentiginosus</i>	SC (FWS)	
Least bittern	<i>Ixobrychius exilis</i>		SSC (TP)

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Bird Common Name	Scientific Name	ESA	CESA
White-faced ibis	<i>Plegadis chihi</i>	SC (FWS)	
Harlequin duck	<i>Histrionicus histrionicus</i>	SC (FWS)	SSC (FP)
California clapper rail	<i>Rallus longirostris obsoletus</i>	E (10-13-70)	E (06-27-71)
California black rail	<i>Laterallus jamaicensis coturniculus</i>	SC (FWS)	T (06-27-71)
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T (04-05-93)	SSC
Black oystercatcher	<i>Haematopus bachmani</i>	SC (FWS)	
Whimbrel	<i>Numenius phaeopus</i>	SC (FWS)	
Long-billed curlew	<i>Numenius americanus</i>	SC (FWS)	
Marbled godwit	<i>Limosa fedoa</i>	SC (FWS)	
Black turnstone	<i>Arenaria melanocephala</i>	SC (FWS)	
Red knot	<i>Calidris canutus</i>	SC (FWS)	
Elegant tern	<i>Sterna elegans</i>	SC (FWS)	SSC (TP)
California least tern	<i>Sterna antillarum browni</i>	E (10-13-70)	E (06-27-71)
Marbled murrelet	<i>Brachyramphus marmoratus marmoratus</i>	T (09-30-92)	E (03-12-92)
Xantus's murrelet	<i>Synthliboramphus hypoleucus</i>	SC / Candidate (FWS)	T (12-22-04)
Cassin's auklet	<i>Ptychoramphus aleuticus</i>	SC (FWS)	SSC (SP)
Rhinoceros auklet	<i>Cerorhinca monocerata</i>		SSC (TP)
Tufted Puffin	<i>Fratercula cirrhata</i>		SSC (FP)

Reptile Common Name	Scientific Name	ESA	CESA
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E (06-02-70)	

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Fish Common Name	Scientific Name	ESA	CESA
Chinook salmon (spring run) Sac Rv and tributaries	<i>Oncorhynchus tshawytscha</i>	PT (06-14-04); T (11-15-99)	T (02-05-99)
Chinook salmon (fall/late fall run) Sacramento river	<i>Oncorhynchus tshawytscha</i>	Candidate; SC (NMFS)	SSC
Chinook salmon (winter run) Sacramento River	<i>Oncorhynchus tshawytscha</i>	PT (06-14-04); E (02-03-94)	E (09-22-89)
Coho salmon (central CA coast ESU)	<i>Oncorhynchus kisutch</i>	PE (06-14-04); T (12-02-96)	E (12-31-95)
Steelhead (central CA coast ESU) Russian Rv to Soquel Creek	<i>Oncorhynchus mykiss irideus</i>	PT (06-14-04); T (10-17-97)	
Steelhead (south/cen CA coast ESU) Pajaro Rv to Santa Maria Rv	<i>Oncorhynchus mykiss irideus</i>	PT (06-14-04); T (10-17-97)	
Tidewater goby	<i>Eucyclogobius newberryi</i>	E (02-04-94)	SSC (QE)
Pacific lamprey	<i>Lampetra tridentata</i>	SC (FWS)	
White sturgeon	<i>Acipenser transmontanus</i>	E (09-06-94)	
Green sturgeon	<i>Acipenser medirostris</i>	Candidate; SC (NMFS)	SSC (QT)
Cowcod	<i>Sebastes levis</i>	SC (NMFS)	
Bocaccio	<i>Sebastes paucispinis</i>	SC (NMFS)	
Eulachon	<i>Thaleichthys pacificus</i>		SSC (WL)

Invertebrate Common Name	Scientific Name	ESA	CESA
Black abalone	<i>Haliotis cracherodii</i>	SC (NMFS)	
Pinto abalone	<i>Haliotis kamtschatkana</i>	SC (NMFS)	

Index of the listing codes used in the tables above

FEDERAL LISTING CODES

ESA: Endangered Species Act of 1973 Listing Codes

E	Federally listed as Endangered
T	Federally listed as Threatened
PE	Proposed for federal listing as Endangered
PT	Proposed for federal listing as Threatened
PD	Proposed for federal de-listing
Candidate	Candidate for federal listing as endangered or threatened
SC	Species of Concern

STATE LISTING CODES

CESA: California Endangered Species Act Listing Codes

E	State-listed as Endangered
T	State-listed as Threatened
CE	Candidate for state listing as Endangered
CT	Candidate for state listing as Threatened
SSC	Species of Special Concern
QE	Qualify as Endangered (fish list)
QT	Qualify as Threatened (fish list)
WL	Watch List (fish list)
FP	First Priority (bird list)
SP	Second Priority (bird list)
TP	Third Priority (bird list)

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SUMMARY OF MONTEREY BAY PORT AREA FISHERIES

(ranked by average value 1999-2004)

= primarily in federal waters

Fishery	Species Targeted	Number of Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters ?	2004 volume in pounds	2004 value	1999-2004 average volume in pounds	1999-2004 average value	Volume Rank in Port	Value Rank in Port
Market squid	market squid	55	Seine, brail	5-30fms	Sand	State	12.2 million	\$2.9 million	21.1 million	\$3.5 million	2	1
Salmon	King (chinook)	279	troll hook-and-line	surface to 50fms	pelagic, open ocean	State and Federal	777k	\$2.3 million	858k	\$1.7 million	5	2
Pelagic wetfish	Pacific sardine, northern anchovy, jack mackerel, Pacific mackerel	26	Seine	5-50fms	Sand	State	34 million - sardines, 8.6 million - anchovy, 1 million - mackerel	\$1.2 million sardine, \$290k - anchovy, \$53k - mackerel	26 million - sardines, 10 million - anchovy, 294k mackerel	\$1.1 million - sardines, \$328k - anchovy, \$20k mackerel	1, 3, 9	3, 8, 24
Dover sole / thornyhead / sablefish	Dover sole, longspine thornyhead, shortspine thornyhead, sablefish	1-46 permits for 9 distinct species combinations	Bottom trawl, longline (thornyheads and sablefish), gill nets and traps (sablefish)	150-700fms	soft bottom, low-relief mixed and hard bottom	Federal	580k - Dover sole, 199k - thornyheads, 509k - sablefish	\$197k Dover sole, \$351k thornyheads, \$523k sablefish	927k - Dover sole, 390k - thornyheads, 619k - sablefish	\$293k Dover sole, \$480k thornyheads, \$705k sablefish	4, 8, 7	9, 7, 4
Albacore / other tuna	Albacore, also bluefin, bigeye, yellowfin, skipjack tunas	114	troll hook-and-line, purse seine	surface and subsurface waters	open ocean, pelagic waters	Federal	395k albacore, 4k other tuna	\$326k albacore, \$11k other tuna	843k albacore, 61k other tuna	\$631k albacore, \$103k other tuna	6, 17	5, 15

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Fishery	Species Targeted	Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters	2004 volume in pounds	2004 value	1999-2004 average volume	1999-2004 average value	Volume Rank	Value Rank
Spot prawn trap	Spot prawn	7	Traps	100-150fms	canyon, hard, soft and mixed bottom	State and Federal	48k	\$520k	54k	\$511k	18	6
California halibut	California halibut	trawl 34, hook-and-line 85	trawl, hook-and-line, gill and trammel net	2-50fms	sand	State and Federal	101k	\$290k	88k	\$202k	15	10
Dungeness crab	Dungess crab	34	circular traps	0-50fms	sand	State and Federal	169k	\$321k	86k	\$192k	16	11
Nearshore finfish	Nearshore rockfish, cabezon, kelp greenling	58	Hook and line, trap	0-20fms	rocky reefs, kelp	State	26k rockfish; 13k cabezon, 0.8k kelp greenling	\$113k rockfish, \$63k cabezon, \$4,501 greenling	41k rockfish, 16k cabezon, 2k greenling	\$168k rockfish, \$67k cabezon, \$11k greenling	20, 26, 30	12, 19, 27
Other flatfishes	Pacific sanddab, Petrale and other soles, and flatfish	28 sanddab, 41 other flatfish	bottom trawl	30-700fms	low-relief soft bottom	State and Federal	159k sanddab, 232k other flatfish	\$72k sanddab, \$209k other flatfish	278k sanddab, 221k other flatfish	\$86k sanddab, \$162k other flatfish	10, 12	18, 13
Swordfish	Swordfish	6	drift gill net, hook-and-line, harpoon	surface and near-surface waters	open ocean, pelagic waters	Federal	8k	\$25k	49k	\$127k	19	14
Shelf rockfish	24 species of shelf rockfish	Hook-and-line 53, trawl 22, gill net 1	bottom trawl, midwater trawl, longline, hook-and-line, gill net	30-200fms	deep rocky reefs, cobble and sand, edges of canyons	State and Federal	27k	\$26k	181k	\$102k	14	16

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Fishery	Species Targeted	Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters	2004 volume in pounds	2004 value	1999-2004 average volume	1999-2004 average value	Volume Rank	Value Rank
Slope rockfish / grenadier	several "slope" rockfish species, grenadier	9-25 permits for 6 distinct gear/species combinations	bottom trawl, set longline	200-700fms	soft bottom on continental slope, submarine canyons	Federal	192k slope rockfish, 199k grenadier	\$137k slope rockfish, \$38k grenadier	192k slope rockfish, 239k grenadier	\$101k slope rockfish, \$40k grenadier	13, 11	17, 20
White seabass	White seabass	6	hook-and-line	0-40fms	kelp beds, reefs, offshore banks, open ocean	State and Federal	0.2k	\$432	19k	\$39k	24	21
Shark	Thresher, mako, dogfish, other sharks	Hook-and-line 18, trawl 19, gill net 5	Hook and line, trawl, gill nets	0-400fms	open ocean, pelagic, nearshore, soft bottom, hard bottom, rocky reefs, kelp forest	State and Federal	46k	\$21k	35k	\$22k	21	22
Lingcod	Lingcod	Hook-and-line 95, trawl 27, trap 5, gill net 1	hook-and-line, trawl, gill net, trap	2-200fms	deep and shallow rocky reef, kelp beds, mixed substrate, hardbottom, canyons	State and Federal	26k	\$37k	18k	\$21k	25	23
Butterfish	Butterfish	4	seine	5-50fms	nearshore, pelagic waters	State	12k	\$17k	14k	\$15k	27	26

Fishery	Species Targeted	Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters	2004 volume in pounds	2004 value	1999-2004 average volume	1999-2004 average value	Volume Rank	Value Rank
Rock crab	Several species of rock crab	13	Traps	15-40fms	kelp beds, rocky reefs, mixed substrate, sand	State	3k	\$3k	7k	\$9k	29	28
Jacksmelt	Jacksmelt	5	seine	0-30fms	nearshore, pelagic waters	State	2k	\$2k	25k	\$8k	22	29

Monterey port area landings (pounds)

Year	1999	2000	2001	2002	2003	2004	6-year average
FINFISH						(preliminary)	
Sardine	35,929,390	25,058,931	15,658,063	29,998,833	17,432,494	34,047,042	26,354,126
Anchovy	3,291,385	14,494,753	25,706,123	5,992,263	1,555,834	8,577,584	9,936,324
Dover sole	1,081,154	1,095,224	924,238	878,152	1,000,780	579,811	926,560
King salmon*	1,082,526	1,718,270	381,167	713,242	475,651	777,337	858,032
Albacore	1,139,895	757,494	1,366,732	923,384	473,375	394,936	842,636
Sablefish	726,326	709,963	570,765	526,019	673,999	508,517	619,265
Thornyheads	500,926	464,804	311,631	452,469	409,648	199,283	389,794
Mackerel	59,341	196,655	379,415	4,024	48,916	1,079,949	294,717
Sanddabs	471,791	98,200	90,765	205,537	640,612	159,143	277,675
Grenadier	313,742	222,928	234,592	236,636	225,411	198,568	238,646
Other flatfish	333,053	178,468	271,484	174,679	137,479	231,971	221,189
Rockfish slope	182,707	157,911	185,753	102,961	333,083	192,430	192,474
Rockfish shelf	472,608	291,760	183,785	101,979	10,021	27,369	181,254
California halibut	198,817	45,454	45,830	84,135	52,313	100,618	87,861
Other tuna	251,949	10,963	97,715	272	3,142	4,460	61,417
Swordfish	236,171	29,247	6,521	132	15,242	7,705	49,170
Rockfish nearshore	57,993	45,736	51,227	44,652	19,280	26,213	40,850
Shark	86,237	34,545	7,036	26,338	10,845	46,142	35,191
Jacksmelt	855	9,595	58,460	67,881	8,251	2,190	24,539
Rockfish other	105,102	10,328	5,389	2,568	3,487	1,716	21,432
White seabass	4,252	24,448	54,692	23,333	7,685	180	19,098
Lingcod	27,708	7,700	10,702	20,813	16,792	26,245	18,327
Cabazon	23,326	23,851	16,713	13,545	5,827	13,442	16,117
Butterfish	307	2,969	8,983	43,008	17,545	12,199	14,169
Kelp greenling	4,308	3,433	1,672	1,903	716	821	2,142

* From DFG Ocean Salmon Project records

INVERTEBRATES							
Market squid	588,960	15,421,113	17,078,248	55,263,371	30,691,176	12,219,049	21,876,986
Dungeness crab	25,027	25,691	24,260	107,446	163,020	169,041	85,748
Spot prawn	52,980	37,248	48,389	81,880	58,236	47,804	54,423
Rock crab	21,136	9,421	2,916	954	2,054	2,787	6,545

Monterey port area ex-vessel value (dollars)

Year	1999	2000	2001	2002	2003	2004	6-year average
FINFISH							(preliminary)
King salmon*	1,896,701	3,064,105	763,267	1,072,455	859,270	2,258,987	1,652,464
Sardine	966,959	968,887	1,434,123	1,289,283	667,100	1,193,567	1,086,653
Sablefish	673,935	943,786	699,211	600,037	790,973	523,408	705,225
Albacore	772,862	688,292	1,053,981	616,683	327,193	326,099	630,852
Thornyheads	582,709	514,856	360,476	528,450	542,808	350,741	480,007
Anchovy	219,661	551,252	569,140	255,108	81,964	290,592	327,953
Dover sole	311,836	346,658	296,954	285,270	322,641	196,755	293,352
California halibut	368,063	101,754	112,062	205,129	133,185	289,563	201,626
Rockfish nearshore	189,974	210,636	247,751	168,693	76,898	112,981	167,822
Other flatfish	211,816	139,658	193,403	120,198	95,499	209,077	161,609
Swordfish	564,682	108,061	19,137	694	41,740	24,880	126,532
Other tuna	487,957	10,424	101,253	431	6,351	10,688	102,851
Rockfish shelf	218,138	180,404	115,781	60,410	10,686	25,837	101,876
Rockfish slope	55,233	109,765	106,253	61,478	172,233	99,060	100,670
Sanddabs	126,180	26,159	36,226	62,373	193,431	72,067	86,073
Cabazon	77,010	107,954	74,849	50,330	26,656	63,114	66,652
Grenadier	44,733	38,348	35,141	37,379	49,000	38,119	40,453
White seabass	8,213	46,251	115,716	46,604	15,516	432	38,789
Shark	57,344	23,916	7,798	9,619	10,528	20,640	21,641
Lingcod	24,659	9,225	12,830	17,696	21,855	37,369	20,606
Mackerel	11,707	29,406	18,877	458	6,681	52,691	19,970
Rockfish other	72,768	14,914	5,805	1,758	4,248	2,327	16,970
Butterfish	563	2,679	15,753	41,243	11,376	16,773	14,731
Kelp greenling	17,717	19,293	9,877	9,797	3,884	4,501	10,845
Jacksmelt	548	5,909	18,269	15,053	3,068	2,244	7,515

*From DFG Ocean Salmon Project records

INVERTEBRATES							
Market squid	78,579	1,881,719	1,773,494	6,787,256	7,920,422	2,852,367	3,548,973
Spot prawn	374,011	342,491	473,359	768,816	586,299	519,893	510,812
Dungeness crab	74,729	78,821	76,009	260,325	341,753	320,610	192,041
Rock crab	26,076	12,434	4,406	1,308	5,701	3,294	8,870

**Profile of Major Pelagic Wet Fish Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Pelagic wet fish

Species targeted: Pacific sardine (*Sardinops sagax*), northern anchovy (*Engraulis mordax*), jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Scomber japonicus*)

2004 preliminary landings (pounds): 43,704,575 (check totals)
comprised of 34,047,042 lbs sardine, 8,577,584 lbs anchovy, 1,079,949 lbs mackerel
2004 preliminary ex-vessel value: \$1,536,850
comprised of \$1,193,567 sardine, \$290,592 sardine, \$52,691 mackerel

2003 landings: 18,637,244
comprised of 17,432,494 lbs sardine, 1,155,834 lbs anchovy, 48,916 lbs mackerel
2003 ex-vessel value: \$755,745
comprised of \$ 667,100 sardine, \$81,964 anchovy, \$6,681 mackerel

1999-2004 average landings: 36,585,167
comprised of 26,354,126 sardine, 9,936,324 anchovy, 294,717 mackerel
1999-2004 average ex-vessel value: \$1,434,576
comprised of \$1,086,653 sardine, \$327,953 anchovy, \$19,970 mackerel

Rank of average annual landings in port area 1999-2004:
Sardine (1)
Anchovy (3)
Mackerel (9)

Rank of average annual value in port area 1999-2004:
Sardine (3)
Anchovy (8)
Mackerel (24)

General trend in annual landings 1999-2004:
Sardine landings have varied by approximately two-fold, from approximately 16 million to 34 million lbs, with no trend. Anchovy landings have ranged from 1.5 million lbs to more than 25 million lbs with no trend. Mackerel landings have shown extreme variability, ranging from 4,000 lbs to more than 1 million lbs with no trend.

Comments: The availability of sardines or anchovies is variable and dependent upon water temperature and the success of the local squid fishery. During good squid seasons, boats will target squid only. When squid availability wanes, focus shifts to sardines, usually during the fall. The two major pelagic wet fish fleets operating in California are located in Monterey and San Pedro. Harvest of wet fish may be year round in San Pedro while it is seasonal in Monterey. Pacific mackerel is typically caught with sardines in San Pedro while the Monterey fleet rarely lands any, except for warm water years.

Sardines and northern anchovy are important bait, live and frozen, for most game fish. Fish caught for commercial purposes are generally exported for human consumption, bait, or tuna feed. Some is sold domestically for bait, pet food, and consumption.

Number of fishermen making landings in 2003 and/or 2004 in port area: 26

Primary gear type(s): purse seine, drum seine

Primary depth range: 5-50 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

This fishery is federally managed with guidance from the Coastal Pelagic Species Management Plan. The plan dictates methods for stock assessment, quota limits, restricted access, and harvest allocation. The quota for the U.S. Pacific coast is divided into two sub-areas with a September reallocation of the remaining quota. The season for sardine is January 1 through December 31 and the season for Pacific mackerel is July 1 through June 30.

Sardine and mackerel may be harvested day or night and there are no closed areas other than as specified in particular MPAs.

The sardine harvest guideline for 2005 is 136,179 metric tons (mt). The July 04/ June 05 harvest guideline for Pacific mackerel is 13,268 mt.

Logbook Required?: No

Relevant spatially-explicit data concerning location of fishery: This process will rely on the expertise of local fishermen to provide this data, and, if time permits, by interviews conducted by EcoTrust.

**Profile of Major Market Squid Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey

Name of fishery: Market squid

Species targeted: Market squid (*Loligo opalescens*)

2004 landings (pounds): 12,219,049

2004 ex-vessel value: \$2,852,367

2003 landings: 30,691,176

2003 ex-vessel value: \$7,920,422

1999-2004 average landings: 21,876,986

1999-2004 average ex-vessel value: \$3,548,973

Rank of average annual landings in port area 1999-2004: 2

Rank of average annual value in port area 1999-2004: 1

General trend in annual landings 1999-2004: Annual landings varied by almost two orders of magnitude during this period, with highest landings in 2002-2003.

Comments: The availability of squid is highly variable and is negatively correlated with El Niño events. International market conditions further influence annual catch. The life span of individual squid is less than 1 year, and squid are generally harvested during aggregations on known spawning grounds. There are three major fishing fleets; these are based out of Monterey, Ventura (this includes many out-of-state vessels), and San Pedro, and boats will travel between the spring-autumn fishery in the Monterey area and the autumn-spring fishery in southern California. The spawning grounds in the southern portion of Monterey Bay are the most important spawning grounds north of Pt. Conception and this area is of greatest importance to the Monterey area fishery.

Number of fishermen making landings in 2003 and/or 2004 in port area: 55

Primary gear type(s): purse seine, drum seine, brail

Primary depth range: 5-30 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The Fish and Game Commission adopted a comprehensive Squid Fishery Management Plan (FMP) in August 2004. This is one of the few fisheries in California to have a FMP.

This is a restricted access fishery as of April 1, 2005. Between 1997 and 2000 there was a moratorium on new vessels entering the fishery. During this period separate vessel-based permit systems were established for squid vessels and for light boat owners.

Weekend closures are in effect year-round and state-wide. Squid may not be harvested from 1200 hours (noon) on Friday and 1200 hours (noon) on Sunday.

Vessels are limited to a 30,000-watt maximum for attracting lights and required light shields must cover the entire filament and be parallel to the deck of the vessel.

A harvest guideline of 118,000 tons statewide is established for the April 1 to March 31 fishing year.

There are no closed areas other than as specified in particular MPAs. Attracting lights from light boats may not be used north of Pigeon Point. No attracting light may be used within the Gulf of the Farallons NMS.

Logbook Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

Logbook data containing specific set locations and catch have been aggregated by microblock (approx. 1 x 1 square miles) from 1999 to 2005 and will be available.

Profile of Major Dover Sole/Thornyhead/Sablefish Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey

Fishery: Dover sole/thornyhead/sablefish

Species targeted: Dover sole (*Microstomus pacificus*), longspine thornyhead (*Sebastolobus altivelis*), shortspine thornyhead (*S. alascanus*), sablefish (*Anoplopoma fimbria*)

2004 preliminary landings (pounds): 1,287,611

comprised of 579,811 lbs Dover sole, 199,283 thornyheads, 508,517 lbs sablefish

2004 preliminary ex-vessel value: \$1,070,904

comprised of \$196,755 Dover sole, \$350,741 thornyheads, \$523,408 sablefish

2003 landings: 2,084,427

comprised of 1,000,780 lbs Dover sole, 409,648 lbs thornyheads, 673,999 lbs sablefish

2003 ex-vessel value: \$1,656,422

comprised of \$322,641 Dover sole, \$542,808 thornyheads, \$790,973 sablefish

1999-2004 average landings: 1,935,619

comprised of 926,560 lbs Dover sole, 389,794 lbs thornyheads, 619,265 lbs sablefish

1999-2004 average ex-vessel value: \$1,478,584

comprised of \$293,352 Dover sole, \$480,007 thornyheads, \$705,225 sablefish

Rank of average annual landings in port area 1999-2004:

Dover sole (4)

Thornyheads (8)

Sablefish (7)

Rank of average annual value in port area 1999-2004:

Dover sole (9)

Thornyheads (7)

Sablefish (4)

General trend in annual landings 1999-2004:

Landings were fairly consistent from 1999 through 2003, then declined significantly in 2004, particularly for Dover sole and thornyheads.

Comments:

It is likely that the establishment of the Rockfish Conservation Area (RCA), a fishery management area closed to all bottom gear targeting finfish, resulted in some reduced effort for these species, even though their primary concentrations are in deeper water. In addition, trawl effort has been reduced recently due to a federal groundfish buyback program which has retired some trawl vessels. Thornyheads caught by longline gear are retained on board and sold in a live condition, increasing their market value in recent years.

Number of fishermen making landings in 2003 and/or 2004 in port area:

All species trawl: 27
Thornyhead and/or sablefish hook-and-line: 30
Dover sole trawl: 22
Thornyheads hook-and-line: 13
Thornyheads trawl: 25
Sablefish hook-and-line: 46
Sablefish trap: 19
Sablefish trawl: 25
Sablefish gill net: 1

Primary gear type(s): bottom trawl, longline (thornyheads and sablefish), gill nets (sablefish), trap (sablefish)

Primary depth range: 150-700 fathoms

Primary habitat type(s): soft bottom, low-relief mixed and hard bottom

Primary area of fishery: State waters _____ Federal waters X

Synopsis of regulations applicable to central coast study region:

Trawling is prohibited within 3 miles of shore.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Trawl limited entry:

Dover sole: two-month harvest limits.
Thornyheads: two-month harvest limits.
Sablefish: two-month harvest limits.

Trawl open access:

Dover sole: monthly harvest limits.
Thornyheads: may not be taken.
Sablefish: daily, weekly, and two-month harvest limits.

Fixed gear limited entry:

Dover sole: monthly harvest limits.
Thornyheads: two-month harvest limits.
Sablefish: daily, weekly, and two-month harvest limits.

Non-trawl open access:

Dover sole: monthly harvest limits.
Thornyheads: may not be taken
Sablefish: daily, weekly, and two-month harvest limits.

All trawl gear is permitted seaward of the RCA.

Log book Required?: Yes for trawl and sablefish trap

Relevant spatially-explicit data concerning location of fishery:

Although the fishery occurs primarily in federal waters, a small amount of effort occurs within state waters in the Monterey Bay area. The trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer. EcoTrust will provide information on the distribution of non-trawl sablefish fishing effort.

**Profile of Major Albacore and other Tuna Commercial Fisheries in Central Coast Study
Region: Monterey Area**

Port area: Monterey

Fishery: Albacore/other tuna

Species targeted: albacore (*Thunnus alalunga*)

Other species harvested: bigeye tuna (*Thunnus obesus*), bluefin tuna (*T. thynnus*), yellowfin tuna (*T. albacares*), skipjack (*Euthynnus pelamis*)

2004 preliminary landings (pounds): 399,396

comprised of 394,936 lbs albacore, 4,460 other tuna

2004 preliminary ex-vessel value: \$336,787

comprised of \$326,099 albacore, \$10,688 other tuna

2003 landings: 476,517

comprised of 473,375 lbs albacore, 3,142 lbs other tuna

2003 ex-vessel value: \$333,544

comprised of \$327,193 albacore, \$6,351 other tuna

1999-2004 average landings: 904,053

comprised of 842,636 lbs albacore, 61,417 lbs other tuna

1999-2004 average ex-vessel value: \$733,703

comprised of \$630,852 albacore, \$102,851 other tuna

Rank of average annual landings in port area 1999-2004:

Albacore (6)

Other tuna (17)

Rank of average annual value in port area 1999-2004:

Albacore (5)

Other tuna (15)

General trend in annual landings 1999-2004:

Albacore landings have declined steadily since 2001 from approximately 1.4 million lbs to 0.4 million lbs. Landings of other tuna exceeded one quarter million lbs in 1999, primarily due to bluefin tuna, but have not exceeded 5,000 lbs since 2001.

Comments:

The abundance of that portion of the Pacific Ocean's albacore stocks available to the local fleet has fluctuated considerably over the last several decades, with strong and weak periods occurring intermittently.

Number of fishermen making landings in 2003 and/or 2004 in port area: 114

Primary gear type(s): troll hook-and-line, purse seine

Primary depth range: surface and subsurface waters

Primary habitat type(s): open ocean, pelagic waters

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

Must possess a federal Highly Migratory Species fishery permit.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters. Coupled with the high mobility of the species involved, spatially explicit data will be of little value to the MLPA Initiative process.

Profile of Major Salmon Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey
Fishery: Salmon

Species targeted: king salmon (Chinook) (*Oncorhynchus tshawytscha*)

2004 preliminary landings (pounds): 777,337
2004 preliminary ex-vessel value: \$2,258,987

2003 landings: 475,651
2003 ex-vessel value: \$859,270

1999-2004 average landings: 858,032
1999-2004 average ex-vessel value: \$1,652,464

Rank of average annual landings in port area 1999-2004: 5
Rank of average annual value in port area 1999-2004: 2

General trend in annual landings 1999-2004:
Landings have varied by approximately four-fold during the period with no trend.

Comments:
Landings are influenced by several important factors: 1) the availability of 3- and 4-year old fish from the Sacramento and San Joaquin River system runs; and 2) the length of the fishing season, which may be shortened to protect salmon from the Klamath River system (Klamath River stocks may mix with the stocks from central California). When the Klamath River stocks are relatively low, the commercial season is shorter statewide.

Number of fishermen making landings in 2003 and/or 2004 in port area: 279

Primary gear type(s): troll hook-and-line

Primary depth range: fishery occurs from the surface to 50 fathoms although the bottom depth may greatly exceed that.

Primary habitat type(s): pelagic, open ocean

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The area between Pt. Pinos and Pt. Sur is one of the Pacific Fishery Management Council's (PFMC) salmon management areas.

The fishing season varies each year, and is set by National Marine Fisheries Service under recommendation of the PFMC. Considerations in shaping the chinook fisheries in this area include the protection of Endangered Species Act-listed Sacramento River winter and California coastal chinook, and achievement of fall chinook spawning escapement goals for the Klamath, Sacramento, and Oregon coastal rivers. California commercial seasons are based on preseason forecasts of ocean abundances of Klamath fall chinook by age and estimates of total California Central Valley fall chinook adult abundance. The commercial season may not open in this area earlier than May 1 and closes no later than September 30. In 2005, the season is open May 1-31, July 4- August 29, and September 1-30.

In 2005 minimum legal length is 27 inches in May and September, and 28 inches in July and August.

Single point, barbless hooks are required. No more than six fishing lines are allowed per vessel.

There are no closed areas within the study region other than existing State Marine Reserves.

Coho salmon may not be taken.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

Due to the combination of the high mobility of salmon, its widespread range, and its inter- and intra-annual variability in distribution, spatially explicit data will be less important to the MLPA Initiative process than that from other fisheries.

Profile of Major Flatfish Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey

Fishery: Other flatfishes

Species targeted: Pacific sanddab (*Citharichthys sordidus*), Petrale sole (*Eopsetta jordani*), rex sole (*Glyptocephalus zachirus*)

Other species landed: English sole (*Parophrys vetulus*), rock sole (*Lepidopsetta bilineata*), sand sole (*Psettichthys melanostictus*), slender sole (*Lyopsetta exilis*), starry flounder (*Platichthys stellatus*), turbot (*Pleuronichthys* spp.),

2004 preliminary landings (pounds): 391,114

comprised of 159,143 lbs sanddabs, 231,971 lbs other flatfish

2004 preliminary ex-vessel value: \$281,144

comprised of \$72,067 sanddabs, \$209,077 other flatfish

2003 landings: 778,091

comprised of 640,612 lbs sanddabs, 137,479 lbs other flatfish

2003 ex-vessel value: \$288,930

comprised of \$72,067 sanddabs, \$209,077 other flatfish

1999-2004 average landings: 498,864

comprised of 277,675 lbs sanddabs, 221,189 lbs other flatfish

1999-2004 average ex-vessel value: \$247,682

comprised of \$86,073 sanddabs, \$161,609 other flatfish

Rank of average annual landings in port area 1999-2004:

Sanddabs (10)

Other flatfish (12)

Rank of average annual value in port area 1999-2004:

Sanddabs (18)

Other flatfish (13)

General trend in annual landings 1999-2004:

Other flatfish landings have varied by 2- 3-fold during the period and show no trend. Sanddab landings have varied by more than 6-fold with the highest landings during the period occurring in 2003.

Comments:

With the establishment of the Rockfish Conservation Area in 2002, trawling was prohibited in 100-150 fathoms. This resulted in an effort shift into shallower and deeper water, and was in part responsible for the three-fold increase in landings of sanddabs (a shallow-water species) from 2002 to 2003. A 70% increase in flatfish landings from 2003 to 2004 is in part due to the increase in bimonthly trip limits for flatfish.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Sanddabs: 28

Other flatfish: 41

Primary gear type(s): bottom trawl

Primary depth range: 30-700 fathoms

Primary habitat type(s): low-relief soft bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA) along the central coast, trawling is prohibited between 100 and 150 fathoms.

Trawling is prohibited within 3 miles of shore.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Two-month harvest limits are in effect for "other flatfish" which, under the definition of the Pacific Fishery Management Council, includes sanddabs. Within these limits, Petrale sole has its own limit.

Small footrope trawl gear is required shoreward of the RCA.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

Although this fishery occurs more commonly in federal waters, this is the most significant trawl fishery occurring within the state waters of this portion of the study region, primarily in the area flanking the Monterey submarine canyon. The trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major Slope Rockfish/Grenadier Commercial Fisheries in Central Coast Study
Region: Monterey Area**

Port area: Monterey

Fishery: Slope rockfish/grenadier

Species targeted: slope rockfishes: splitnose (*Sebastes diploproa*), darkblotched (*S. crameri*)
Grenadiers (Pacific rattail- *Coryphaenoides acrolepis*)

Other rockfish species landed: aurora (*S. aurora*), bank (*S. rufus*), blackgill (*S. melanostomus*),
Pacific ocean perch (*S. alutus*), redbanded (*S. babcocki*), sharpchin (*S. zacentrus*)

2004 preliminary landings (pounds): 390,998
comprised of 192,430 slope rockfish, 198,568 grenadier

2004 preliminary ex-vessel value: \$137,179
comprised of \$99,060 slope rockfish, \$38,119 grenadier

2003 landings: 558,494
comprised of 333,083 slope rockfish, 225,411 grenadier

2003 ex-vessel value: \$221,233
comprised of \$172,233 slope rockfish, \$49,000 grenadier

1999-2004 average landings: 431,120
comprised of 192,474 pounds slope rockfish, 238,646 pounds grenadier

1999-2004 average ex-vessel value: \$141,123
comprised of \$100,670 slope rockfish, \$40,453 grenadier

Rank of average annual landings in port area 1999-2004:

Slope rockfish (13)

Grenadier (11)

Rank of average annual value in port area 1999-2004:

Slope rockfish (17)

Grenadier (20)

General trend in annual landings 1999-2004:

Slope rockfish landings increased significantly in 2003 and declined in 2004 to earlier levels. Landings of grenadier have been fairly consistent throughout the period.

Comments:

It is likely that the increased landings of slope rockfish were in part due to a shift in trawl fishing effort to deeper water with the establishment of the Rockfish Conservation Area (RCA) in continental shelf waters. The RCA is a long-term fishery closure to all bottom gear targeting rockfish. The slope rockfish/grenadier fishery occurs in the same general area as the Dover sole/sablefish/thornyhead fishery.

Number of fishermen making landings in 2003 and/or 2004 in port area:

All species trawl: 25
All species longline: 30
Rockfish trawl: 24
Rockfish longline: 22
Grenadier trawl: 9
Grenadier longline: 21

Primary gear type(s): bottom trawl, set longline

Primary depth range: 200-700 fathoms

Primary habitat type(s): soft bottom of continental slope and submarine canyons

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

Trawling for rockfishes is prohibited within 3 miles of shore
Gill netting for rockfishes is prohibited in state waters.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month trip limits are in effect.

All trawl gear is permitted seaward of the RCA.

Rockfishes landed must be sorted by species or species group prior to weighing.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major Shelf Rockfish Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Shelf rockfish

Species targeted: shelf rockfishes: bocaccio (*Sebastes paucispinis*), canary (*S. pinniger*), chilipepper (*S. goodei*), shortbelly (*S. jordani*), widow (*S. entomelas*), and yelloweye (*S. ruberrimus*)
Other species landed: shelf rockfishes: bronzespotted (*S. gilli*), cowcod (*S. levis*), flag (*S. rubrivinctus*), greenblotched (*S. rosenblatti*), greenspotted (*S. chlorostictus*), greenstriped (*S. elongatus*), halfbanded (*S. semicinctus*), pink (*S. eos*), pinkrose (*S. simulator*), redstripe (*S. proriger*), rosethorn (*S. helvomaculatus*), rosy (*S. rosaceus*), speckled (*S. ovalis*), squarespot (*S. hopkinsi*), starry (*S. constellatus*), stripetail (*S. saxicola*), swordspine (*S. ensifer*), tiger (*S. nigrocinctus*), vermilion (*S. miniatus*), yellowtail (*S. flavidus*)

2004 preliminary landings (pounds): 27,369
2004 preliminary ex-vessel value: \$25,837

2003 landings: 10,021
2003 ex-vessel value: \$10,686

1999-2004 average landings: 181,254
1999-2004 average ex-vessel value: \$101,876

Rank of average annual landings in port area 1999-2004: 14
Rank of average annual value in port area 1999-2004: 16

General trend in annual landings 1999-2004:
Landings declined from almost one half million pounds in 1999 to approximately 10,000 pounds in 2003.

Comments: This significant decline in landings was due primarily to the establishment of the Rockfish Conservation Area (RCA), a fishery management closure designed to help rebuild overfished stocks of the following rockfishes: bocaccio, canary, cowcod, darkblotched, Pacific ocean perch, widow, and yelloweye. Many other rockfish species associate with these overfished species, and the relatively small landings for shelf rockfish in general originate from outside of the RCA.

Number of fishermen making landings in 2003 and/or 2004 in port area:
Hook-and-line: 53
Trawl: 22
Gill net: 1

Primary gear type(s): bottom trawl, midwater trawl, longline, hook-and-line, gill net

Primary depth range: 30-200 fathoms

Primary habitat type(s): deep rocky reefs, mixed-bottom substrate including cobble and sand, edges of submarine canyons

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA), the taking of rockfishes, lingcod, California scorpionfish, and ocean whitefish is prohibited. Within the central coast study region (Pigeon Pt. to Pt. Conception), the RCA for commercial fishing is 20 to 150 fathoms for fixed gears (limited entry and open access) and from 75 to 150 fathoms for trawlers.

Trawling for rockfishes is prohibited within 3 miles of shore

Gill netting for rockfishes is prohibited in state waters.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month trip limits are in effect, with a total closure on cowcod by trawl gear and for canary and yelloweye rockfishes and cowcod by fixed gears.

Small footrope trawl gear is required shoreward of the RCA.

Rockfishes landed must be sorted by species or species group prior to weighing.

Log book Required?: Yes for trawling

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major California Halibut Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: California halibut

Species targeted: California halibut (*Paralichthys californicus*)

2004 preliminary landings (pounds): 100,618
2004 preliminary ex-vessel value: \$289,563

2003 landings: 52,313
2003 ex-vessel value: \$133,185

1999-2004 average landings: 87,861
1999-2004 average ex-vessel value: \$201,626

Rank of average annual landings in port area 1999-2004: 15
Rank of average annual value in port area 1999-2004: 10

General trend in annual landings 1999-2004:
Landings have varied by approximately four-fold with no trend.

Comments: Gill netting for halibut in the region has ceased primarily due to increased restrictions on the use of this gear. Market conditions have developed such that trawling for halibut is not as economically feasible as it was in the past, and some of the major trawl vessels have left the fishery.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Trawl: 34
Hook-and-line: 85
Gill or trammel net: 0

Primary gear type(s): trawl, hook-and-line, gill and trammel net

Primary depth range: 2 – 50 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The Fish and Game Commission has authority over state-managed bottom trawl fisheries not managed under federal regulations, which includes regulations pertaining to California halibut.

Trawling for halibut is prohibited within 3 miles of shore, except in the area from Pt. Arguello south to Pt. Mugu greater than 1 nautical mile from shore.

Minimum mesh size for trawls in this area is 7.5 inches, and trawling is closed from March 15 to June 15.

In waters greater than 3 nautical miles from shore, trawling is permitted, and minimum mesh size is 4.5 inches.

Gill and trammel nets are prohibited in waters less than 60 fathoms deep from Pt. Reyes headlands in Marin county south to Pt. Arguello.

Where gill nets and trammel nets are legal, minimum mesh size is 8.5 inches. Gill and trammel nets may not exceed 1,500 fathoms (9,000 feet) in length except that in a portion of southern California south of a line extending due west from Pt. Arguello, gill and trammel nets may not exceed 1,000 fathoms (6,000 feet).

Halibut less than 22 inches may not be taken, possessed, or sold unless it weighs 4 lbs or more in the round, 3.5 lbs or more dressed with head on, or 3 lbs or more dressed with head off.

Log book Required?: Yes for trawlers – when/where fishing is permitted

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort.

**Profile of Major Dungeness Crab Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Dungeness Crab

Species targeted: Dungeness crab (*Cancer magister*)

2004 preliminary landings (pounds): 169,041
2004 preliminary ex-vessel value: \$320,610

2003 landings: 163,020
2003 ex-vessel value: \$341,753

1999-2004 average landings: 85,748
1999-2004 average ex-vessel value: \$192,041

Rank of average annual landings in port area 1999-2004: 16
Rank of average annual value in port area 1999-2004: 11

General trend in annual landings 1999-2004:
Landings were significantly greater during 2002-2004 compared with 1999-2001.

Comments: Landings in northern California have experienced repeated cycles at approximately 10-year intervals. Central California landings have been less cyclical but still highly variable. Due to heavy fishing pressure in the beginning of each season, the majority of the annual landings typically occur during the first two months of the season. The primary fishing grounds are generally considered to be north of the Monterey port area, but this fishery can be relatively important locally in some years.

Number of fishermen making landings in 2003 and/or 2004 in port area: 34

Primary gear type(s): Circular traps, each attached to a separate line and buoy.

Primary depth range: 0-50 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Closed season July 1 through November 14. Open season may be extended as late as July 31 by order of DFG Director.

Minimum carapace width 6.25 inches.

Only males may be harvested.

This is a restricted access fishery with a vessel-based permit system.

There is no limit on the number of traps per vessel which may be used but legislation has been introduced to limit the maximum number of traps .

There are no closed areas other than as specified in particular MPAs.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

Profile of Major Nearshore Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey

Fishery: Nearshore

Species targeted: nearshore rockfishes: black (*Sebastes melanops*), black-and-yellow (*S. chrysomelas*), blue (*S. mystinus*), brown (*S. auriculatus*), China (*S. nebulosus*), copper (*S. caurinus*), gopher (*S. carnatus*), grass (*S. rastrelliger*), kelp (*S. atrovirens*), olive (*S. serranoides*), treefish (*S. serriceps*) cabezon (*Scorpaenichthys marmoratus*), kelp greenling (*Hexagrammos decagrammus*). (Several other species defined as “nearshore” are infrequently landed in this port area, including monkeyface prickleback (*Cebidichthys violaceus*), California sheephead (*Semicossyphus pulcher*), and quillback rockfish (*S. maliger*).

2004 landings (pounds): 40,476

comprised of 26,213 lbs nearshore rockfish, 13,442 lbs cabezon, 821 lbs kelp greenling

2004 ex-vessel value: \$180,596

comprised of \$112,981 nearshore rockfish, \$63,114 cabezon, \$4,501 kelp greenling

2003 landings: 25,823

comprised of 19,280 lb nearshore rockfish, 5,827 lbs cabezon, 716 lbs kelp greenling

2003 ex-vessel value: \$107,438

comprised of \$76,898 nearshore rockfish, \$26,656 cabezon, \$3,884 kelp greenling

1999-2004 average landings: 59,109

comprised of 40,850 lbs nearshore rockfish, 16,117 lbs cabezon, 2,142 lbs kelp greenling

1999-2004 average ex-vessel value: \$245,219

comprised of \$167,822 nearshore rockfish, \$66,552 cabezon, \$10,845 kelp greenling

Rank of average annual landings in port area 1999-2004:

Nearshore rockfish (20)

Cabezon (26)

Kelp greenling (30)

Rank of average annual value in port area 1999-2004:

Nearshore rockfish (12)

Cabezon (19)

Kelp greenling (27)

General trend in annual landings 1999-2004:

A significant decline occurred in 2003 when the fishery became restricted access with regional permits.

Comments: This is primarily a live-fish fishery, and the relatively high price-per-pound generated by these nearshore species resulted in a rapidly expanding fishery beginning in the late 1980's. By the mid to late 1990's landings had peaked and a series of increasingly restrictive regulations were imposed, significantly reducing harvest levels, which included Total Allowable Catch allocations levels and early closure of the cabezon and greenling fisheries starting in 2001 due to the attainment of those allocation amounts. This reduction continued into 2003 when the number of active permits was significantly reduced due to the implementation of a restricted access program.

Number of fishermen making landings in 2003 and/or 2004 in port area: 58

All species hook-and-line: 50

All species trap: 10

Nearshore rockfish hook-and-line: 48

Nearshore rockfish trap: 10

Cabezon hook-and-line: 38

Cabezon trap: 8

Kelp greenling hook-and-line: 34

Kelp greenling trap: 6

Primary gear type(s): hook-and-line, stick gear (hooks attached to short piece of pvc pipe or rebar), handline, trap

Primary depth range: 0 to 20 fathoms

Primary habitat type(s): shallow reefs, kelp beds, other hard bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

A comprehensive Nearshore Fishery Management Plan (FMP) was adopted by the Fish and Game Commission in May 2002. This is one of the few fisheries in California to have a FMP.

The FMP established four management areas for the nearshore fishery; the Monterey area (Pigeon Pt. to Pt. Sur) is entirely contained within the north-central coast management area.

This is a restricted access fishery, and nearshore fishery permits may only be used within the management area for which they were issued. This permit allows the take of only black-and-yellow, China, gopher, grass, and kelp rockfishes, and cabezon, greenlings, California scorpionfish, and California sheephead. To take other nearshore species, one must possess a deeper nearshore fisheries permit, which is not regionally restricted.

Fishing is prohibited within the Rockfish Conservation Area from 30 to 150 fathoms from January to April, from 20 to 150 fathoms from May to August, and from 30 to 150 fathoms from September to December.

There is a closed season which is variable from year to year; in 2005 the closed season is March and April.

Harvest guidelines have been established for black rockfish, other nearshore rockfish, cabezon, and greenlings (kelp and rock, the latter of which is rare in the Monterey area). Cumulative trip limits per permit are in effect, generally on a two-month basis. The season may be closed early if the harvest guidelines are met or exceeded.

Minimum total length limits are as follows:

Black-and-yellow rockfish 10 inches

China rockfish 12 inches

Gopher rockfish 10 inches

Grass rockfish 12 inches

Kelp rockfish 10 inches

Cabezon 15 inches

Greenlings 12 inches

Log book Required?: No, however, a pilot program is underway in several port areas including Monterey in which selected nearshore fishermen are completing experimental logbooks on a daily basis. NOAA Fisheries' Santa Cruz lab has obtained funding from their Economics and Social Research Division for this volunteer program. The program is administered jointly by NOAA Fisheries, CDFG, and Pacific States Marine Fisheries Commission.

Relevant spatially-explicit data concerning location of fishery:
EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major Spot Prawn Trap Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Spot Prawn Trap

Species targeted: Spot prawn (*Pandalus platyceros*)

2004 landings (pounds): 47,804
2004 ex-vessel value: \$519,893

2003 landings: 58,236
2003 ex-vessel value: \$586,299

1999-2004 average landings: 54,423
1999-2004 average ex-vessel value: \$510,812

Rank of average annual landings in port area 1999-2004: 18
Rank of average annual value in port area 1999-2004: 6

General trend in annual landings 1999-2004: Landings in the port area peaked in 2002 when a trawl fishery operated in the same area as the trap fishery.

Comments: The harvest of spot prawns using trawl gear was prohibited beginning in 2003. A relatively small number of trap fishermen operate in the Monterey area with a significant and fairly consistent harvest level. Additional effort is possible beginning in 2005 because the Fish and Game Commission approved up to 11 trawl-to-trap "conversion" permits statewide at the end of 2004 for former spot prawn trawl fishermen (nine were purchased). Spot prawns change sex from male to female at age 3; thus the larger prawns are all female. Spot prawns are maintained in tanks on board until landed and are sold in a live condition for \$10.00 –\$13.50/pound.

Number of fishermen making landings in 2003 and/or 2004 in port area: 7

Primary gear type(s): Plastic or wire mesh traps with a minimum mesh size of 7/8 by 7/8 inches. The traps are set in strings marked with a buoy at each end.

Primary depth range: 100-150 fathoms

Primary habitat type(s): submarine canyon; hard, soft, and mixed bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Restricted access fishery with a 3-tier structure. Total of 29 (17 + 3 + 9) permits statewide with no restrictions on geographical region of fishing.

Tier 1 permits (17) are fully transferable. A permittee may use no more than 500 traps (only 300 in state waters north of Pt. Arguello), and has no restrictions on landings.

Tier 2 permits (3) are not transferable. A permittee may use no more than 150 traps, and may land no more than 5,000 pounds of spot prawns in a calendar year.

Tier 3 (trawl-to-trap conversion) permits (9) are not transferable. A permittee may use no more than 500 traps (only 300 in state waters north of Pt. Arguello), and has no restrictions on landings.

Closed season north of Pt. Arguello is May 1 to July 31. Closed season south of Pt. Arguello is November 1 to January 31.

All species caught incidentally in spot prawn traps must be returned to the water immediately.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

In addition, relative fishing effort by DFG fishing block is available for 1998-99. These years are before the restricted access fishery began and before the trawl closure was established and thus provide a better picture of the distribution of the resource.

**Profile of Major Swordfish Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Swordfish

Species targeted: Swordfish (*Xiphias gladius*)

2004 preliminary landings (pounds): 7,705
2004 preliminary ex-vessel value: \$24,880

2003 landings: 15,242
2003 ex-vessel value: \$41,740

1999-2004 average landings: 49,170
1999-2004 average ex-vessel value: \$126,532

Rank of average annual landings in port area 1999-2004: 19
Rank of average annual value in port area 1999-2004: 14

General trend in annual landings 1999-2004:

Almost a quarter million pounds were landed in 1999. Since then annual landings have fluctuated from approximately 100 pounds to more than 29,000 pounds with no trend.

Comments:

Landings of swordfish off central California in general now are lower than historic landings, in part because one of the fishing areas which contributed to landings in the Monterey area is now closed to drift gill nets during the fall, a prime time for fishing, to protect sea turtles.

Number of fishermen making landings in 2003 and/or 2004 in port area: 6

Gill net: (4)
Hook-and-line: (1)
Harpoon: (1)

Primary gear type(s): drift gill net, hook-and-line, harpoon

Primary depth range: surface and near-surface waters

Primary habitat type(s): open ocean, pelagic waters

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

A highly migratory species permit is required. The drift gill net fishery is a restricted access fishery.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters. Coupled with the high mobility of the species involved, spatially explicit data will be of little value to the MLPA Initiative process.

Profile of Major Shark Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey

Fishery: Shark (this represents multiple fisheries which either target shark or harvest them incidentally)

Species targeted: thresher shark (*Alopias vulpinus*), shortfin mako shark (bonito shark) (*Isurus oxyrinchus*), spiny dogfish (*Squalus acanthias*), soupfin shark (*Galeorhinus zyopterus*)
Other species landed: brown smoothhound (*Mustelus henlei*), leopard shark (*Triakis semifasciata*), Pacific angel shark (*Squatina californica*)

2004 preliminary landings (pounds): 46,142

2004 preliminary ex-vessel value: \$20,640

2003 landings: 10,845

2003 ex-vessel value: \$10,528

1999-2004 average landings: 35,191

1999-2004 average ex-vessel value: \$21,641

Rank of average annual landings in port area 1999-2004: 21

Rank of average annual value in port area 1999-2004: 22

General trend in annual landings 1999-2004:

Landings have varied by approximately one order of magnitude during the period, with no trend.

Comments:

The two years with the highest landings, 1999 and 2004, were due primarily to landings of spiny dogfish, which exceeded 40,000 pounds in each year. With the exception of 2004, thresher shark has been the number one or number two shark species landed. In 1999 and 2000, significant landings (exceeding 9,000 lbs) were categorized as unspecified shark.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Hook-and-line: 18

Gill net: 5

Trawl: 19

Primary gear type(s):

Hook-and-line

Drift gill net (primarily for thresher and shortfin mako sharks)

Set gill net or trammel net (primarily for Pacific angel sharks)

Trawl (primarily for spiny dogfish)

Primary depth range: 0 to 400 fathoms

Primary habitat type(s): open ocean, pelagic waters, nearshore waters, soft bottom, hard bottom, rocky reefs, kelp beds.

Primary area of fishery: State waters__X__ Federal waters__X__

Synopsis of regulations applicable to central coast study region:

A Highly Migratory Species permit is required to take thresher and mako sharks.

Sharks may be taken with drift gill nets of mesh size 14 inches or greater under a revocable permit from DFG.

Longlines may not be used to take thresher and shortfish mako shark.

Pacific angel sharks have a minimum legal size of 42 inches for females and 40 inches for males.

Leopard sharks have a minimum legal size of 36 inches.

Sharkfins may not be landed without a corresponding carcass.

Spears, harpoons, and bow and arrows may not be used to take soupfin shark.

White shark (*Carcharodon carcharias*) may not be taken.

Basking (*Cetorhinus maximus*) and megamouth sharks may not be taken in federal waters.

Log book Required?: Yes, for the drift gill net fishery

Relevant spatially-explicit data concerning location of fishery:

With the exception of a portion of the trawl fishery, the fishery occurs primarily in federal waters. Those species which occur in nearshore waters are taken incidentally in other fisheries. Coupled with the high mobility of most of the targeted species, spatially explicit data other than that from trawl logbooks will be of little value to the MLPA Initiative process. The trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major Jacksmelt Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: Jacksmelt

Species targeted: Jacksmelt (*Atherinopsis californiensis*)

2004 preliminary landings (pounds): 2,190
2004 preliminary ex-vessel value: \$2,244

2003 landings: 8,251
2003 ex-vessel value: \$3,068

1999-2004 average landings: 24,539
1999-2004 average ex-vessel value: \$7,515

Rank of average annual landings in port area 1999-2004: 22
Rank of average annual value in port area 1999-2004: 29

General trend in annual landings 1999-2004:

Landings have shown high variability during the period, ranging from approximately 68,000 lbs in 2002 to less than 1,000 lbs in 1999, with no trend.

Comments:

This is an occasional or incidental fishery, and fluctuations observed in catch records reflect demand, not true abundance.

Number of fishermen making landings in 2003 and/or 2004 in port area: 5

Primary gear type(s): Seine

Primary depth range: 0-30 fathoms

Primary habitat type(s): nearshore, pelagic waters

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

There is no commercial limit on the take of jacksmelt.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major White Seabass Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey
Fishery: White seabass

Species targeted: White seabass (*Atractoscion nobilis*)

2004 preliminary landings (pounds): 180

2004 preliminary ex-vessel value: \$432

2003 landings: 7,685

2003 ex-vessel value: \$15,516

1999-2004 average landings: 19,098

1999-2004 average ex-vessel value: \$38,789

Rank of average annual landings in port area 1999-2004: 24

Rank of average annual value in port area 1999-2004: 21

General trend in annual landings 1999-2004:

Landings have shown extreme variability, ranging from more than 54,000 lbs in 2001 to less than 200 pounds in 2004.

Comments: The distribution and availability of this species is highly influenced by oceanographic conditions and changing water temperature. Much of the fish landed in this port area comes from just above Point Conception, where environmental conditions can be similar to southern California, an area white seabass frequent. However, ocean conditions in the Monterey Bay area in some years will be favorable for white seabass

Number of fishermen making landings in 2003 and/or 2004 in port area: 6

Gill net: 0

Hook-and-line: 6

Primary gear type(s):

Drift gill net

Hook-and-line

Primary depth range: 0 – 40 fathoms

Primary habitat type(s): kelp beds, reefs, offshore banks, open ocean

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

There is a closed season south of Pt. Conception from March 15 to June 15, with an allowance for fish taken incidental to gill and trammel net fishing.

There is a minimum legal size of 28 inches.

Mesh size of gill nets must be not less than 6 inches.

White seabass may not be taken in roundhaul nets.

Log book Required?: Yes for gill net

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

Profile of Major Lingcod Commercial Fisheries in Central Coast Study Region: Monterey Area

Port area: Monterey

Fishery: Lingcod

Species targeted: Lingcod (*Ophiodon elongatus*). Lingcod are generally not specifically targeted but are so widespread that they are caught in most hard-bottom oriented fisheries targeting rockfishes, cabezon, and other species.

2004 preliminary landings (pounds): 26,245

2004 preliminary ex-vessel value: \$37,369

2003 landings: 16,792

2003 ex-vessel value: \$21,855

1999-2004 average landings: 18,327

1999-2004 average ex-vessel value: \$20,606

Rank of average annual landings in port area 1999-2004: 25

Rank of average annual value in port area 1999-2004: 23

General trend in annual landings 1999-2004:

Landings have varied by approximately four-fold with no trend.

Comments:

Prior to 1999, the Acceptable Biological Catch for lingcod set by the National Marine Fisheries Service had undergone a series of significant reductions, and regional and statewide landings are substantially lower in this recent 6-year period compared with the previous two decades. Lingcod is now officially declared to be an overfished species; a rebuilding plan is implemented and allowable harvest levels are relatively low.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Hook-and-line: 95

Trawl: 27

Trap: 5

Gill net: 1

Primary gear type(s):

Hook-and-line

Trawl

Gill net

Trap

Primary depth range: 2- 200 fathoms

Primary habitat type(s): deep and shallow rocky reef, kelp beds, low- to high-relief mixed substrate and hard bottom, submarine canyons.

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA), the taking of rockfishes, lingcod, California scorpionfish, and ocean whitefish is prohibited. Within the central coast study region (Pigeon Pt. to Pt. Conception), the RCA for commercial fishing ranges from 20 to 150 fathoms for limited entry and open access fixed gears, and from 100 to 150 fathoms for trawlers.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month cumulative trip limits are in effect.

Small footrope trawl gear is required shoreward of the RCA.

The minimum legal size for lingcod is 24 inches.

Log book Required?: Yes for trawling

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major Butterfish Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey

Fishery: Butterfish (Pacific pompano)

Species targeted: Butterfish (Pacific pompano) (*Peprilus simillimus*)

2004 preliminary landings (pounds): 12,199

2004 preliminary ex-vessel value: \$16,773

2003 landings: 17,545

2003 ex-vessel value: \$11,376

1999-2004 average landings: 14,169

1999-2004 average ex-vessel value: \$14,731

Rank of average annual landings in port area 1999-2004: 27

Rank of average annual value in port area 1999-2004: 26

General trend in annual landings 1999-2004:

Landings have shown high variability during the period, ranging from approximately 43,000 lbs in 2002 to 300 lbs in 1999, with no trend.

Comments: Generally this species is considered a very minor component in the commercial fisheries. However, it is marketed in the fresh fish markets and in local restaurants as a delicacy item.

Number of fishermen making landings in 2003 and/or 2004 in port area: Seine (4)

Primary gear type(s): Seine

Primary depth range: 5-50 fathoms

Primary habitat type(s): nearshore, pelagic waters

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

There is no commercial limit on the take of butterfish.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major Rock Crab Commercial Fisheries in Central Coast Study Region:
Monterey Area**

Port area: Monterey

Fishery: Rock crab

Species targeted:

Brown rock crab (*Cancer antennarius*)

Red rock crab (*C. productus*)

Other species landed infrequently in port area:

Yellow rock crab (*C. anthonyi*)

2004 preliminary landings (pounds): 2,787

2004 preliminary ex-vessel value: \$3,294

2003 landings: 2,054

2003 ex-vessel value: \$5,701

1999-2004 average landings: 6,545

1999-2004 average ex-vessel value: \$8,870

Rank of average annual landings in port area 1999-2004: 29

Rank of average annual value in port area 1999-2004: 28

General trend in annual landings 1999-2004:

A significant decline occurred from 1999 to 2001; landings have remained relatively low since then.

Comments:

Commercial landing records from 1999 through 2004 show that relatively few commercial fishermen targeted rock crab in the Monterey area; thus the decision of one or several fishermen to not fish in a particular year could have a significant impact on total landings for this port area. In addition, the area from Santa Cruz south to Pt. Conception is not within the range of commercial densities of rock crab, primarily due to the established presence of the southern sea otter. Landings into the port area generally originate from north of the Santa Cruz area.

Number of fishermen making landings in 2003 and/or 2004 in port area: 13

Primary gear type(s): Square traps, which are usually set singly (rarely in pairs) and attached to a line and buoy.

Primary depth range: 15-40 fathoms

Primary habitat type(s): kelp bed areas, rocky reefs, mixed substrate, sand bottom.

Primary area of fishery: State waters Federal waters _____

Synopsis of regulations applicable to central coast study region:

Minimum carapace width of 4.25 inches.

Traps must be made of wire mesh and conform to minimum mesh size and escape port regulations. Each trap must have at least one approved self-destruct device.

A Northern Rock Crab Trap Permit is required north of Lopez Point in Monterey County, and a Southern Rock Crab Trap Permit south of that point. A northern rock crab trap permit may be issued to any licensed commercial fisherman who has a valid general trap permit that has not been suspended or revoked. The northern rock crab trap permit is a non-restrictive permit with no minimum landing requirements. The fee for either permit is \$250, but there is qualifying landing criteria that the applicant must meet to purchase a southern permit.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

SUMMARY OF MORRO BAY PORT AREA FISHERIES

(ranked by average value 1999-2004)

= primarily in
 federal waters

Fishery	Species Targeted	Number of Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters?	2004 volume in pounds	2004 value	1999-2004 average volume in pounds	1999-2004 average value	1999-2004 Average Volume Rank in Port	1999-2004 Average Value Rank in Port
Spot prawn	Spot prawn	2	traps	100-150fms	canyon, hard, soft, mixed bottom	State and Federal	12k	\$120k	75k	605k	14	1
Nearshore finfish	Nearshore rockfish, cabezon, kelp greenling	87	Hook and line, trap, stick gear	0-20fms	rocky reefs, kelp, other hard bottom	State	97k rockfish; 53k cabezon, 2k kelp greenling	\$168k rockfish, \$251k cabezon, \$12k greenling	117k rockfish, 75k cabezon, 5k greenling	\$562k rockfish, \$346k cabezon, \$28k greenling	11,13,26	2,3,22
Albacore / other tuna	Albacore, bigeye, bluefin, yellowfin, skipjack tunas	70	troll hook-and-line, seine	surface and subsurface waters	open ocean, pelagic waters	Federal	37k albacore, 5k other tunas	\$41k albacore, \$7k other tunas	674k albacore, 37k other tuna	\$527k albacore, \$51k other tuna	2,16	4,17
Swordfish	Swordfish	9	gill net	surface and near-surface waters	open ocean, pelagic waters	Federal	21k	\$73k	120k	\$341k	9	5
Salmon	King (chinook) salmon	68	troll hook-and-line	surface to 50 fms	pelagic, open ocean	State and Federal	64k	\$231	118K	\$246K	10	6
Ocean shrimp	Ocean shrimp	2	Trawls with fish excluders	40-125fms	green mud, mud/sand bottom	Federal	582k	\$266k	511k	\$224k	4	7
Dover sole / thornyhead / sablefish	Dover sole, longspine and shortspine thornyheads, sablefish	1-18 permits for 9 distinct gear/species combinations	bottom trawl, longline, gill nets, trap	150-700	soft bottom, low-relief mixed and hard bottom	Federal	687k sole, 314k thornyheads, 178k sablefish	\$233k sole, \$189k thornyheads, \$170k sablefish	641k sole, 303k thornyheads, 139k sablefish	\$219k sole, \$197k thornyheads, \$129k sablefish	3,5,8	8,9,13
Other flatfishes	Soles, sanddab, turbot	21	bottom trawl	30-700fms	low-relief soft bottom	Federal	375k	\$433k	186k	\$170k	7	10
Market squid	market squid	12	seine, brail	5-30fms	sand	State	2 million	\$445k	738k	\$150k	1	11

Fishery	Species Targeted	Fishermen Landing in 2003	Primary Gear	Primary depth	Primary Habitat	State or Federal Waters	2004 volume in pounds	2004 value	1999-2004 average volume	1999-2004 average value	1999-04 Volume Rank	1999-04 Value Rank
Slope rockfish / grenadier	several "slope" rockfish species, grenadier	6-14 permits for four distinct gear/speces combinations	bottom trawl, set longline	200-700fms	soft bottom on continental slope, submarine canyons	Federal	215k slope rockfish, 0.1k grenadier	\$134k slope rockfish, <\$1k grenadier	245k slope rockfish, 8kk grenadier	\$145k slope rockfish, \$1k grenadier	6,25	12,26
Rock crab	Brown, red, and yellow rock crab	19	traps	7-30fms	kelp beds, rocky reefs, mixed substrate, sand	State	48k	\$110k	83k	\$116k	12	14
California halibut	California halibut	Hook-and-line 38, trawl 9, gill net 1	Hook-and-line, trawl, gill net	2-50fms	sand	State and Federal	5k	\$16k	36k	\$93k	17	15
Dungeness crab	Dungeness crab	13	traps	0-50fms	sand	State and Federal	23k	\$83k	17k	\$58k	20	16
White seabass	White seabass	Hook-and-line 17, gill net 2	Hook-and-line, gill net	0-40fms	kelp, reefs, offshore banks, open ocean	State and Federal	2k	\$4k	15k	\$33k	22	18
Surfperch	Surfperch	66	Hook-and-line	0-10fms	sand	State	26k	\$51k	15k	\$30k	21	19
Shelf rockfish	24 species of shelf rockfish	Hook-and-line 76, trawl 4, gill net 1	bottom trawl, midwater trawl, longline, hook-and-line, gill net	30-200fms	deep rocky reefs, cobble and sand, canyon edges	State and Federal	12k	\$20k	45k	\$29k	15	20
Lingcod	Lingcod	Hook-and-line 88, trawl 11, trap 16, gill net 1	Hook-and-line, trawl, gill net, trap	2-200fms	deep and shallow rocky reef, kelp, low- to high-relief mixed substrate, canyons	State and Federal	25k	\$40k	19k	\$29k	19	21
Red urchin	Red urchin	2	hand harvest with scuba or hooka gear	2-15fms	rocky reefs, kelp, hard bottom	State	18k	\$15k	14k	\$11k	23	25

Morro Bay port area landings (pounds)

Year	1999	2000	2001	2002	2003	2004	6-year average
FINFISH						(preliminary)	
Albacore	319,493	871,342	1,884,361	536,568	393,881	36,842	673,748
Dover sole	984,563	506,999	265,381	628,223	775,472	686,769	641,235
Thornyheads	379,996	223,672	92,283	402,152	404,710	313,829	302,774
Rockfish slope	122,061	157,732	139,534	563,540	275,341	214,586	245,466
Other flatfish	130,401	101,631	224,236	90,139	193,203	375,450	185,843
Sablefish	189,201	88,652	63,613	124,201	188,263	178,066	138,666
Swordfish	203,852	292,250	118,975	56,160	27,773	21,284	120,049
King salmon*	26,665	428,811	32,356	133,004	21,488	63,778	117,684
Rockfish nearshore	167,257	110,826	131,610	102,419	91,259	96,931	116,717
Cabazon	129,423	95,512	72,968	50,854	50,277	52,698	75,289
Rockfish shelf	157,790	66,968	15,663	8,661	9,502	12,238	45,137
Other tuna	19,287	43,950	129,178	2,971	22,828	4,600	37,136
California halibut	77,533	40,035	63,123	17,509	10,514	5,086	35,633
Shark	33,960	26,395	30,974	15,076	16,249	19,114	23,628
Lingcod	28,499	5,986	13,300	18,484	20,714	25,041	18,671
Surfperch	9,192	9,860	11,209	11,611	24,039	25,565	15,246
White seabass	16,887	3,600	34,559	20,096	10,139	1,774	14,509
Rockfish other	47,757	6,920	4,321	2,297	1,241	1,899	10,739
Grenadier	28,915	2,521	4,738	7,229	4,717	158	8,046
Kelp greenling	3,229	8,340	4,989	5,255	3,772	1,949	4,589

*From DFG Ocean Salmon Project records

INVERTEBRATES

Market squid	39,512	9	174,994	785,177	1,433,503	1,996,713	738,318
Ocean shrimp	278,024	303,273	247,412	743,999	913,116	581,646	511,245
Rock crab	93,045	75,885	102,358	119,177	56,831	48,331	82,605
Spot prawn	126,000	130,047	77,839	98,222	5,225	11,551	74,814
Dungeness crab	1,521	5,375	8,660	31,894	30,357	23,064	16,812
Red urchin	6,274	0	9,122	16,922	31,586	18,349	13,709

Morro Bay port area ex-vessel value (dollars)

Year	1999	2000	2001	2002	2003	2004	6-year average
FINFISH							(preliminary)
Rockfish nearshore	616,245	523,373	598,234	520,988	494,608	618,339	561,965
Albacore	197,946	794,970	1,424,069	382,827	319,213	40,662	526,615
Cabazon	516,529	449,717	351,218	252,914	252,395	251,119	345,649
Swordfish	604,489	759,259	346,421	176,591	87,858	72,926	341,257
King salmon*	72,167	785,425	68,150	254,982	62,585	230,602	245,652
Dover sole	329,140	174,329	90,524	217,327	268,549	232,987	218,809
Thornyheads	68,033	204,472	85,814	374,032	258,010	189,152	196,586
Other flatfish	76,195	71,010	193,857	87,289	157,221	433,395	169,828
Rockfish slope	37,134	88,016	91,794	304,019	217,621	133,694	145,380
Sablefish	129,057	92,411	62,875	127,631	192,534	169,746	129,042
California halibut	187,792	109,108	168,649	46,363	29,384	16,369	92,944
Other tuna	51,062	66,650	143,988	5,907	30,115	7,314	50,839
White seabass	38,349	8,153	77,277	43,225	23,934	4,224	32,527
Surfperch	15,742	18,540	22,208	22,281	48,254	51,286	29,719
Rockfish shelf	70,428	49,865	10,927	12,056	12,342	19,802	29,237
Lingcod	37,933	8,778	20,327	29,668	35,218	39,883	28,635
Kelp greenling	16,785	48,712	30,333	32,364	24,401	12,411	27,501
Shark	33,856	23,276	26,606	14,596	17,998	18,308	22,440
Rockfish other	64,385	13,660	9,872	3,848	2,413	2,858	16,173
Grenadier	3,163	387	759	1,256	818	32	1,069

*From DFG Ocean Salmon Project records

INVERTEBRATES							
Spot prawn	882,126	1,084,094	664,720	824,576	51,530	120,245	604,549
Ocean shrimp	195,521	187,861	86,190	305,929	302,177	265,816	223,916
Market squid	5,330	6	15,594	75,928	357,252	444,752	149,810
Rock crab	117,238	108,508	134,590	148,710	73,931	110,342	115,553
Dungeness crab	4,268	18,858	36,031	121,464	91,670	72,854	57,524
Red urchin	7,944	0	8,083	12,908	24,332	14,660	11,321

Profile of Major Dover Sole/ Thornyhead/Sablefish Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Dover sole/thornyhead/sablefish

Species targeted: Dover sole (*Microstomus pacificus*), longspine thornyhead (*Sebastolobus altivelis*), shortspine thornyhead (*S. alascanus*), sablefish (*Anoplopoma fimbria*)

2004 preliminary landings (pounds): 1,178,664

comprised of 686,769 lbs Dover sole, 313,829 lbs thornyheads, 178,066 lbs sablefish

2004 preliminary ex-vessel value: \$591,885

comprised of \$232,987 Dover sole, \$189,152 thornyheads, \$169,746 sablefish

2003 landings: 1,368,445

comprised of 775,472 lbs Dover sole, 404,710 lbs thornyheads, 188,263 lbs sablefish

2003 ex-vessel value: \$719,093

comprised of \$268,549 Dover sole, \$258,010 thornyheads, \$192,534 sablefish

1999-2004 average landings: 1,082,765

comprised of 641,235 lbs Dover sole, 302,774 lbs thornyheads, 138,666 lbs sablefish

1999-2004 average ex-vessel value: \$544,437

comprised of \$218,809 Dover sole, \$196,586 thornyheads, \$129,042 sablefish

Rank of average annual landings in port area 1999-2004:

Dover sole (3)

Thornyheads (5)

Sablefish (8)

Rank of average annual value in port area 1999-2004:

Dover sole (8)

Thornyheads (9)

Sablefish (13)

General trend in annual landings 1999-2004:

Landings for each group have varied by approximately three- to four-fold with no trend, although 2001 was the lowest year of landings for all groups within the period.

Comments:

Unlike the Monterey area, the establishment of the Rockfish Conservation Area (RCA) in continental shelf waters did not appear to have any negative impact of landings of the DTS complex in this area. Although statewide trawl effort has been reduced recently due to a federal groundfish buyback program which has retired some trawl vessels, this also seems to have had a minimal impact on Morro Bay area landings for these species. Thornyheads caught by longline gear are retained on board and sold in a live condition, increasing their market value in recent years.

Number of fishermen making landings in 2003 and/or 2004 in port area:

All species trawl: 18
Thornyheads and/or sablefish hook-and-line: 9
Dover sole trawl: 15
Thornyheads hook-and-line: 2
Thornyheads trawl: 18
Sablefish hook-and-line: 9
Sablefish trap: 1
Sablefish trawl: 18
Sablefish gill net: 3

Primary gear type(s): bottom trawl, longline (thornyheads and sablefish), gill nets (sablefish), trap (sablefish)

Primary depth range: 150-700 fathoms

Primary habitat type(s): soft bottom, low-relief mixed and hard bottom

Primary area of fishery: State waters _____ Federal waters X

Synopsis of regulations applicable to central coast study region:

Trawling is prohibited within 3 miles of shore.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Trawl limited entry:

Dover sole: two-month harvest limits.
Thornyheads: two-month harvest limits.
Sablefish: two-month harvest limits.

Trawl open access:

Dover sole: monthly harvest limits.
Thornyheads: may not be taken.
Sablefish: daily, weekly, and two-month harvest limits.

Fixed gear limited entry:

Dover sole: monthly harvest limits.
Thornyheads: two-month harvest limits.
Sablefish: daily, weekly, and two-month harvest limits.

Non-trawl open access:

Dover sole: monthly harvest limits.
Thornyheads: may not be taken
Sablefish: daily, weekly, and two-month harvest limits.

All trawl gear is permitted seaward of the RCA.

Log book Required?: Yes for trawl and sablefish trap

Relevant spatially-explicit data concerning location of fishery:

Although the fishery occurs primarily in federal waters, a small amount of trap effort occurs within state waters in submarine canyon areas. Although all trawling occurs outside state waters in this portion of the study region, trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer. EcoTrust will provide information on the distribution of non-trawl sablefish fishing effort.

**Profile of Major Market Squid Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay

Name of fishery: Market squid

Species targeted: Market squid (*Loligo opalescens*)

2004 landings (pounds): 1,996,713

2004 ex-vessel value: \$444,752

2003 landings: 1,433,503

2003 ex-vessel value: \$357,252

1999-2004 average landings: 738,318

1999-2004 average ex-vessel value: \$149,810

Rank of average annual landings in port area 1999-2004: 1

Rank of average annual value in port area 1999-2004: 11

General trend in annual landings 1999-2004:

Squid landings in this area experienced extreme variability, with virtually zero landings in 2000 and almost 2 million pounds in 2004.

Comments:

The availability of squid is highly variable and is negatively correlated with El Niño events. International market conditions further influence annual catch. The life span of individual squid is less than 1 year, and squid are generally harvested during aggregations on known spawning grounds. There are three major fishing fleets; these are based out of Monterey, Ventura (this includes many out-of-state vessels), and San Pedro, and boats will travel between the spring-autumn fishery in the Monterey area and the autumn-spring fishery in southern California.

Number of fishermen making landings in 2003 and/or 2004 in port area: 12

Primary gear type(s): purse seine, drum seine, brail

Primary depth range: 5-30 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The Fish and Game Commission adopted a comprehensive Squid Fishery Management Plan (FMP) in August 2004. This is one of the few fisheries in California to have a FMP.

This is a restricted access fishery as of April 1, 2005. Between 1997 and 2000 there was a moratorium on new vessels entering the fishery. During this period separate vessel-based permit systems were established for squid vessels and for light boat owners.

Weekend closures are in effect year-round and state-wide. Squid may not be harvested from 1200 hours (noon) on Friday and 1200 hours (noon) on Sunday.

Vessels are limited to a 30,000-watt maximum for attracting lights and required light shields must cover the entire filament and be parallel to the deck of the vessel.

A harvest guideline of 118,000 tons statewide is established for the April 1 to March 31 fishing year.

There are no closed areas other than as specified in particular MPAs. Attracting lights from light boats may not be used north of Pigeon Point. No attracting light may be used within the Gulf of the Farallons NMS.

Logbook Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

Logbook data containing specific set locations and catch have been aggregated by microblock (approx. 1 x 1 square miles) from 1999 to 2005 and will be available.

**Profile of Major Albacore and other Tuna Commercial Fisheries in Central Coast Study
Region: Morro Bay Area**

Port area: Morro Bay

Fishery: Albacore/other tuna

Species targeted: albacore (*Thunnus alalunga*)

Other species harvested: bigeye tuna (*Thunnus obesus*), bluefin tuna (*T. thynnus*), yellowfin tuna (*T. albacares*), skipjack (*Euthynnus pelamis*)

2004 preliminary landings (pounds): 41,422

comprised of 36,842 lbs albacore, 4,600 other tuna

2004 preliminary ex-vessel value: \$47,976

comprised of \$40,662 albacore, \$7,314 other tuna

2003 landings: 398,481

comprised of 393,881 lbs albacore, 4,600 lbs other tuna

2003 ex-vessel value: \$326,527

comprised of \$319,213 albacore, \$7,314 other tuna

1999-2004 average landings: 710,884

comprised of 673,748 lbs albacore, 37,136 lbs other tuna

1999-2004 average ex-vessel value: \$577,454

comprised of \$526,615 albacore, \$50,839 other tuna

Rank of average annual landings in port area 1999-2004:

Albacore (2)

Other tuna (16)

Rank of average annual value in port area 1999-2004:

Albacore (3)

Other tuna (17)

General trend in annual landings 1999-2004:

Albacore landings have declined steadily since 2001 from approximately 1.9 million lbs to less than 40,000 lbs. Landings of other tuna exceeded 125,000 lbs in 2001, primarily due to bluefin tuna, and have ranged from 3,000 to 23,000 lbs since then.

Comments:

The abundance of that portion of the Pacific Ocean's albacore stocks available to the local fleet has fluctuated considerably over the last several decades, with strong and weak periods occurring intermittently.

Number of fishermen making landings in 2003 and/or 2004 in port area: 70

Primary gear type(s): troll hook-and-line, purse seine

Primary depth range: surface and subsurface waters

Primary habitat type(s): open ocean, pelagic waters

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

Must possess a federal Highly Migratory Species fishery permit

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters. Coupled with the high mobility of the species involved, spatially explicit data will be of little value to the MLPA Initiative process.

**Profile of Major Ocean Shrimp Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: Ocean shrimp

Species targeted: Ocean shrimp (pink shrimp) (*Pandalus jordani*)

2004 preliminary landings (pounds): 581,646
2004 preliminary ex-vessel value: \$265,816

2003 landings: 913,116
2003 ex-vessel value: \$302,177

1999-2004 average landings: 511,245
1999-2004 average ex-vessel value: \$223,916

Rank of average annual landings in port area 1999-2004: 4
Rank of average annual value in port area 1999-2004: 7

General trend in annual landings 1999-2004:

Landings were almost three times higher from 2002 to 2004 compared with 1999 to 2001.

Comments: Ocean shrimp population abundance off California is determined by environmental conditions, which cause natural fluctuations in recruitment that are apparently unrelated or minimally related to commercial fishing effort. Concentrations of shrimp generally remain in well defined areas or beds in northern California from year-to-year. South of Pigeon Point there are not established beds. There are no longer any processors in California purchasing ocean shrimp and ex-vessel prices in Oregon are at an all time low. Small amounts of ocean shrimp may be sold directly to the public at harbor fish markets.

Number of fishermen making landings in 2003 and/or 2004 in port area: 2

Primary gear type(s): Double- and single-rigged otter trawls with fish excluders.

Primary depth range: 40 -125 fathoms

Primary habitat type(s): green mud, mud/sand bottom

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

This is a restricted access fishery and a regional permit is required.

The season is closed November 1 through March 31

A maximum count per pound of 160 is required (equivalent to an average minimum size)

The minimum mesh size for a trawl net is 1 and 3/8 inches.

An approved Bycatch Reduction Device (fish excluder) is required on all nets.

Trawling is prohibited within three miles of shore in this region.

Limits are in effect for the maximum amount of fish which may be landed incidental to ocean shrimp.

Spot prawns shall not be landed as incidental catch.

Log book Required?: Yes

Location-specific catch data available from logbooks? Standard block data.

Years of data included here: Logbook data for 2004-2005 have been entered in a database. Previous years has never been entered into a database.

**Profile of Major Slope Rockfish/Grenadier Commercial Fisheries in Central Coast Study
Region: Morro Bay Area**

Port area: Morro Bay

Fishery: Slope rockfish/grenadier

Species targeted: slope rockfishes: splitnose (*Sebastes diploproa*), darkblotched (*S. crameri*)
Grenadiers (Pacific rattail- *Coryphaenoides acrolepis*)

Other rockfish species landed: aurora (*S. aurora*), bank (*S. rufus*), blackgill (*S. melanostomus*), Pacific ocean perch (*S. alutus*), redbanded (*S. babcocki*), sharpchin (*S. zacentrus*)

2004 preliminary landings (pounds): 214,744
comprised of 214,586 lbs slope rockfish, 158 lbs grenadier

2004 preliminary ex-vessel value: \$133,726
comprised of \$133,694 slope rockfish, \$32 grenadier

2003 landings: 280,058
comprised of 275,341 lbs slope rockfish, 4,717 lbs grenadier

2003 ex-vessel value: \$218,439
comprised of \$217,621 slope rockfish, \$818 grenadier

1999-2004 average landings: 253,511
comprised of 245,466 lbs slope rockfish, 8,046 lbs grenadier

1999-2004 average ex-vessel value: \$146,449
comprised of \$145,380 slope rockfish, \$1,069 grenadier

Rank of average annual landings in port area 1999-2004:

Slope rockfish (6)

Grenadier (25)

Rank of average annual value in port area 1999-2004:

Slope rockfish (12)

Grenadier (26)

General trend in annual landings 1999-2004:

Slope rockfish landings increased dramatically from 1999 through 2002. Landings in 2002 and 2003 were 2-3 times those of 2001. Landings of grenadier, although historically not at high levels, declined significantly after 1999 and in 2004 were insignificant.

Comments:

It is likely that the increased landings of slope rockfish were in part due to a shift in trawl fishing effort to deeper water with the establishment of the Rockfish Conservation Area (RCA) in continental shelf waters. The RCA is a long-term fishery closure to all bottom gear targeting rockfish. The slope rockfish/grenadier fishery occurs in the same general area as the Dover sole/sablefish/thornyhead fishery.

Number of fishermen making landings in 2003 and/or 2004 in port area:

All species trawl: 15
Rockfish trawl: 14
Rockfish longline: 14
Grenadier trawl: 6
Grenadier longline: 0

Primary gear type(s): bottom trawl, set longline

Primary depth range: 200-700 fathoms

Primary habitat type(s): soft bottom of continental slope and submarine canyons

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

Trawling for rockfishes is prohibited within 3 miles of shore

Gill netting for rockfishes is prohibited in state waters.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month trip limits are in effect.

All trawl gear is permitted seaward of the RCA.

Rockfishes landed must be sorted by species or species group prior to weighing.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

Profile of Major Nearshore Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Nearshore

Species targeted: nearshore rockfishes: black (*Sebastes melanops*), black-and-yellow (*S. chrysomelas*), blue (*S. mystinus*), brown (*S. auriculatus*), China (*S. nebulosus*), copper (*S. caurinus*), gopher (*S. carnatus*), grass (*S. rastrelliger*), kelp (*S. atrovirens*), olive (*S. serranoides*), treefish (*S. serriceps*) cabezon (*Scorpaenichthys marmoratus*), kelp greenling (*Hexagrammos decagrammus*) (Several other species defined as “nearshore” are infrequently landed in this port area, including calico rockfish (*Sebastes dalli*) monkeyface prickleback (*Cebidichthys violaceus*), California sheephead (*Semicossyphus pulcher*), and quillback rockfish (*S. maliger*).

2004 landings (pounds): 151,578

comprised of 96,931 lbs nearshore rockfish, 52,698 lbs cabezon, 1,949 lbs kelp greenling

2004 ex-vessel value: \$ 881,869

comprised of \$618,339 nearshore rockfish, \$251,119 cabezon, \$12,411 kelp greenling

2003 landings: 145,308

comprised of 91,259 lb nearshore rockfish, 50,277 lbs cabezon, 3,772 lbs kelp greenling

2003 ex-vessel value: \$771,404

comprised of \$494,608 nearshore rockfish, \$252,395 cabezon, \$24,401 kelp greenling

1999-2004 average landings: 196,595

comprised of 116,717 lbs nearshore rockfish, 75,289 lbs cabezon, 4,589 lbs kelp greenling

1999-2004 average ex-vessel value: \$935,115

comprised of \$561,965 nearshore rockfish, \$345,649 cabezon, \$27,501 kelp greenling

Rank of average annual landings in port area 1999-2004:

Nearshore rockfish (11)

Cabezon (13)

Kelp greenling (26)

Rank of average annual value in port area 1999-2004:

Nearshore rockfish (2)

Cabezon (3)

Kelp greenling (22)

General trend in annual landings 1999-2004:

Landings in 2004 were 50 to 60% of those in 1999.

Comments: This is primarily a live-fish fishery, and the relatively high price-per-pound generated by these nearshore species resulted in a rapidly expanding fishery beginning in the late 1980's. By the mid to late 1990's landings had peaked and a series of increasingly restrictive regulations were imposed, significantly reducing harvest levels which included Total Allowable Catch allocations levels and early closure of the cabezon and greenling fisheries starting in 2001 due to the attainment of those allocation amounts. This reduction continued into 2003 when the number of active permits was reduced due to the implementation of a restricted access program.

Number of fishermen making landings in 2003 and/or 2004 in port area: 87

All species hook-and-line: 87

All species trap: 27

Nearshore rockfish hook-and-line: 87

Nearshore rockfish trap: 26

Cabezon hook-and-line: 58

Cabezon trap: 26

Kelp greenling hook-and-line: 49

Kelp greenling trap: 23

Primary gear type(s): hook-and-line, stick gear (hooks attached to short piece of pvc pipe or rebar), handline, trap

Primary depth range: 0 to 20 fathoms

Primary habitat type(s): shallow reefs, kelp beds, other hard bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

A comprehensive Nearshore Fishery Management Plan (FMP) was adopted by the Fish and Game Commission in May 2002. This is one of the few fisheries in California to have a FMP.

The FMP established four management areas for the nearshore fishery; the Morro Bay area (Pt. Sur to Pt. Conception) includes one entire regional management area (south-central, from Lopez Pt. to Pt. Conception), and part of another, the north-central.

This is a restricted access fishery, and nearshore fishery permits may only be used within the management area for which they were issued. This permit allows the take of only black-and-yellow, China, gopher, grass, and kelp rockfishes, and cabezon, greenlings, California scorpionfish, and California sheephead. To take other nearshore species, one must possess a deeper nearshore fisheries permit, which is not regionally restricted.

Fishing is prohibited within the Rockfish Conservation Area from 30 to 150 fathoms from January to April, from 20 to 150 fathoms from May to August, and from 30 to 150 fathoms from September to December.

There is a closed season which is variable from year to year; in 2005 the closed season is March and April.

Harvest guidelines have been established for black rockfish, other nearshore rockfish, cabezon, and greenlings (kelp and rock, the latter of which is rare in the Morro Bay area). Cumulative trip limits per permit are in effect, generally on a two-month basis.

The season may be closed early if the harvest guidelines are met or exceeded.

Minimum total length limits are as follows:

Black-and-yellow rockfish 10 inches

China rockfish 12 inches

Gopher rockfish 10 inches

Grass rockfish 12 inches

Kelp rockfish 10 inches

Cabezon 15 inches

Greenlings 12 inches

Log book Required?: No, however, a pilot program is underway in several port areas including Morro Bay in which selected nearshore fishermen are completing experimental logbooks on a daily basis. NOAA Fisheries' Santa Cruz lab has obtained funding from their Economics and Social Research Division for this volunteer program. The program is administered jointly by NOAA Fisheries, CDFG, and Pacific States Marine Fisheries Commission.

Relevant spatially-explicit data concerning location of fishery:
EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major other Flatfish Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: Other flatfishes

Species targeted: Petrale sole (*Eopsetta jordani*)

Other species landed: English sole (*Parophrys vetulus*), rock sole (*Lepidopsetta bilineata*), Pacific sanddab (*Citharichthys sordidus*), rex sole (*Glyptocephalus zachirus*), sand sole (*Psettichthys melanostictus*), slender sole (*Lyopsetta exilis*), starry flounder (*Platichthys stellatus*), turbot (*Pleuronichthys* spp.).

2004 preliminary landings (pounds): 375,450

2004 preliminary ex-vessel value: \$433,395

2003 landings: 193,203

2003 ex-vessel value: \$157,221

1999-2004 average landings: 185,843

1999-2004 average ex-vessel value: \$169,828

Rank of average annual landings in port area 1999-2004: 7

Rank of average annual value in port area 1999-2004: 10

General trend in annual landings 1999-2004:

Other flatfish landings increased by more than four-fold from 2002 to 2004; Petrale, English, and rex sole comprised 87% of the 2004 landings. Unlike the Monterey area, sanddabs are of minor importance in the flatfish fishery.

Comments:

With the establishment of the Rockfish Conservation Area in 2002, trawling was prohibited in 75-150 fathoms or 100-150 fathoms, depending on time of year. However, in trawlable areas outside of the RCA, bimonthly trip limits were increased for flatfishes in 2004.

Number of fishermen making landings in 2003 and/or 2004 in port area: 21

Primary gear type(s): bottom trawl

Primary depth range: 30-700 fathoms

Primary habitat type(s): low-relief soft bottom

Primary area of fishery: State waters _____ Federal waters __X__

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA) along the central coast, trawling is prohibited between 75 and 150 fathoms from November through February, and from 100 and 150 fathoms the rest of the year.

Trawling is prohibited within 3 miles of shore.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Two-month harvest limits are in effect for “other flatfish” which, under the definition of the Pacific Fishery Management Council, includes sanddabs. Within these limits, Petrale sole has its own limit.

Small footrope trawl gear is required shoreward of the RCA.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters; however, some flatfish other than halibut are taken incidentally in non-trawl fisheries. Although all trawling occurs outside state waters in this portion of the study region, trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

Profile of Major Swordfish Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay
Fishery: Swordfish

Species targeted: Swordfish (*Xiphias gladius*)

2004 preliminary landings (pounds): 21,284
2004 preliminary ex-vessel value: \$72,926

2003 landings: 27,773
2003 ex-vessel value: \$87,858

1999-2004 average landings: 120,049
1999-2004 average ex-vessel value: \$341,257

Rank of average annual landings in port area 1999-2004: 9
Rank of average annual value in port area 1999-2004: 5

General trend in annual landings 1999-2004:

Landings reached a high of more than 292,000 lbs in 2000 during this period and declined steadily to approximately 21,000 lbs in 2004.

Comments:

Landings of swordfish off central California in general now are lower than historic landings, in part because one of the fishing areas which contributed to landings in the Morro Bay area is now closed to drift gill nets during the fall, a prime time for fishing, to protect sea turtles.

Number of fishermen making landings in 2003 and/or 2004 in port area: 9

Gill net: (9)
Hook-and-line: (0)
Harpoon: (0)

Primary gear type(s): drift gill net, hook-and-line, harpoon

Primary depth range: surface and near-surface waters

Primary habitat type(s): open ocean, pelagic waters

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

A highly migratory species permit is required. This is a restricted access fishery.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters. Coupled with the high mobility of the species involved, spatially explicit data will be of little value to the MLPA Initiative process.

Profile of Major Salmon Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Salmon

Species targeted: king salmon (Chinook) (*Oncorhynchus tshawytscha*)

2004 preliminary landings (pounds): 63,778

2004 preliminary ex-vessel value: \$230,602

2003 landings: 21,488

2003 ex-vessel value: \$62,585

1999-2004 average landings: 117,684

1999-2004 average ex-vessel value: \$245,652

Rank of average annual landings in port area 1999-2004: 10

Rank of average annual value in port area 1999-2004: 6

General trend in annual landings 1999-2004:

Landings have varied by more than 10-fold during the period with no trend.

Comments:

Landings are influenced by several important factors: 1) the availability of 3- and 4-year old fish from the Sacramento and San Joaquin River system runs; and 2) the length of the fishing season, which may be shortened to protect salmon from the Klamath River system, (Klamath River salmon may mix with stocks from central California). When the Klamath River stocks are relatively low, the commercial season is shorter statewide. When ocean salmon are more abundant in general, they may be more available in the Morro Bay area and occasionally will be found in southern California as well.

Number of fishermen making landings in 2003 and/or 2004 in port area: 68

Primary gear type(s): troll hook-and-line

Primary depth range: fishery occurs from the surface to 50 fathoms although the bottom depth may greatly exceed that.

Primary habitat type(s): pelagic, open ocean

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The Morro Bay sub-region of the central coast study area lies entirely within one of the Pacific Fishery Management Council's (PFMC) salmon management areas (Pt. Sur to US/Mexican border).

The fishing season varies each year, and is set by National Marine Fisheries Service under recommendation of the PFMC. Considerations in shaping the chinook fisheries in this area include the protection of Endangered Species Act-listed Sacramento River winter and California coastal chinook, and achievement of fall chinook spawning escapement goals for the Klamath, Sacramento, and Oregon coastal rivers. California commercial seasons are based on preseason forecasts of ocean abundances of Klamath fall chinook by age and estimates of total California Central Valley fall chinook adult abundance. The commercial season may not open in this area earlier than May 1 and closes no later than September 30. In 2005, the season is open May 1-31, July 4- August 29, and September 1-30.

In 2005 minimum legal length is 27 inches in May and September, and 28 inches in July and August.

Single point, barbless hooks are required. No more than six fishing lines are allowed per vessel.

There are no closed areas within the study region other than existing State Marine Reserves.

Coho salmon may not be taken.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

Due to the combination of the high mobility of salmon, its widespread range, and its inter- and intra-annual variability in distribution, spatially explicit data will be less important to the MLPA Initiative process than that from other fisheries.

Profile of Major Rock Crab Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Rock crab

Species targeted:

Brown rock crab (*Cancer antennarius*)

Red rock crab (*C. productus*)

Other species landed infrequently in port area:

Yellow rock crab (*C. anthonyi*)

2004 preliminary landings (pounds): 48,331

2004 preliminary ex-vessel value: \$110,342

2003 landings: 56,831

2003 ex-vessel value: \$73,931

1999-2004 average landings: 82,605

1999-2004 average ex-vessel value: \$115,553

Rank of average annual landings in port area 1999-2004: 12

Rank of average annual value in port area 1999-2004: 14

General trend in annual landings 1999-2004:

Landings were fairly stable through 2002 but have declined by more than 50% since then.

Comments:

Most of the rock crab landed in the Morro Bay port area originate from south of the central coast study region, primarily the northern Santa Barbara Channel Islands and the mainland coastal waters of Santa Barbara County. The established presence of the southern sea otter effectively precludes a commercial or recreational fishery in the Morro Bay port area. The decline in recent landings is due primarily to a decrease in fishing effort.

Number of fishermen making landings in 2003 and/or 2004 in port area: 19

Primary gear type(s): Rectangular traps, which are usually set individually (rarely in pairs), with a line and marker buoy.

Primary depth range: 7- 30 fathoms

Primary habitat type(s): kelp bed areas, rocky reefs, mixed substrate, sand bottom.

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Minimum carapace width of 4.25 inches.

Rectangular traps of 2" X 4" or 2" X 2" wire mesh, with 1 or 2 escape port(s) (depending on mesh size) and at least one approved self-destruct device are predominantly used. Molded plastic traps are used by some fishermen.

Permit system: A permit system and a control date were initiated in the 2005-2006 fishing season. A Northern Rock Crab Trap Permit is required north of Lopez Point in Monterey County, and a Southern Rock Crab Trap Permit south of that point. The fee for either permit is \$250, but there is qualifying landing criteria that the applicant must meet to purchase a southern permit.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:
EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major Spot Prawn Trap Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: Spot Prawn Trap

Species targeted: Spot prawn (*Pandalus platyceros*)

2004 landings (pounds): 11,551
2004 ex-vessel value: \$120,245

2003 landings: 5,225
2003 ex-vessel value: \$51,530

1999-2004 average landings: 74,814
1999-2004 average ex-vessel value: \$604,549

Rank of average annual landings in port area 1999-2004: 14
Rank of average annual value in port area 1999-2004: 1

General trend in annual landings 1999-2004: Landings in the port area peaked in 2000 when a trawl fishery operated in the same area as the trap fishery.

Comments: The harvest of spot prawns using trawl gear was prohibited beginning in 2003. A relatively small number of trap fishermen operate in the Morro Bay area, but with a significant harvest. Additional effort is possible beginning in 2005 because the Fish and Game Commission approved up to 11 trawl-to-trap "conversion" permits statewide at the end of 2004 for former spot prawn trawl fishermen (nine were purchased). Spot prawns change sex from male to female at age 3; thus the larger prawns are all female. Spot prawns are maintained in tanks on board before landing and sold in a live condition for \$10.00 –\$13.50/pound.

Number of fishermen making landings in 2003 and/or 2004 in port area: 2

Primary gear type(s): Plastic or wire mesh traps with a minimum mesh size of 7/8 by 7/8 inches. The traps are set in strings marked with a buoy at each end.

Primary depth range: 100 -150 fathoms

Primary habitat type(s): submarine canyon; hard, soft, and mixed bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Restricted access fishery with a 3-tier structure. Total of 29 (17 + 3 + 9) permits statewide with no restrictions on geographical region of fishing.

Tier 1 permits (17) are fully transferable. A permittee may use no more than 500 traps (only 300 in state waters north of Pt. Arguello), and has no restrictions on landings.

Tier 2 permits (3) are not transferable. A permittee may use no more than 150 traps, and may land no more than 5,000 pounds of spot prawns in a calendar year.

Tier 3 (trawl-to-trap conversion) permits (9) are not transferable. A permittee may use no more than 500 traps (only 300 in state waters north of Pt. Arguello), and has no restrictions on landings.

Closed season north of Pt. Arguello is May 1 to July 31. Closed season south of Pt. Arguello is November 1 to January 31.

All species caught incidentally in spot prawn traps must be returned to the water immediately.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

In addition, relative fishing effort by DFG fishing block is available for 1998-99. These years are before the restricted access fishery began and before the trawl closure was established and thus provide a better picture of the distribution of the resource.

Profile of Major Shelf Rockfish Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay
Fishery: Shelf rockfish

Species targeted: shelf rockfishes: bocaccio (*Sebastes paucispinis*), canary (*S. pinniger*), chilipepper (*S. goodei*), shortbelly (*S. jordani*), widow (*S. entomelas*), and yelloweye (*S. ruberrimus*)
Other species landed: shelf rockfishes: bronzespotted (*S. gilli*), cowcod (*S. levis*), flag (*S. rubrivinctus*), greenblotched (*S. rosenblatti*), greenspotted (*S. chlorostictus*), greenstriped (*S. elongatus*), halfbanded (*S. semicinctus*), pink (*S. eos*), pinkrose (*S. simulator*), redstripe (*S. proriger*), rosethorn (*S. helvomaculatus*), rosy (*S. rosaceus*), speckled (*S. ovalis*), squarespot (*S. hopkinsi*), starry (*S. constellatus*), stripetail (*S. saxicola*), swordspine (*S. ensifer*), tiger (*S. nigrocinctus*), vermilion (*S. miniatus*), yellowtail (*S. flavidus*)

2004 preliminary landings (pounds): 12,238
2004 preliminary ex-vessel value: \$19,802

2003 landings: 9,502
2003 ex-vessel value: \$12,342

1999-2004 average landings: 45,137
1999-2004 average ex-vessel value: \$29,237

Rank of average annual landings in port area 1999-2004: 15
Rank of average annual value in port area 1999-2004: 20

General trend in annual landings 1999-2004:
Beginning in 2001 landings have been only 15 to 30% of those in 1999.

Comments: This significant decline in landings was due primarily to the establishment of the Rockfish Conservation Area (RCA), a fishery management closure designed to help rebuild overfished stocks of the following rockfishes: bocaccio, canary, cowcod, darkblotched, Pacific ocean perch, widow, and yelloweye. Many other rockfish species associated with these overfished species, and the relatively small landings for shelf rockfish in general originate from outside of the RCA. However, the average ex-vessel value increased significantly in 2003-2004 compared with earlier years due to the higher market value of hook-and-line caught fish.

Number of fishermen making landings in 2003 and/or 2004 in port area:
Hook-and-line: 76
Trawl: 4
Gill net: 1

Primary gear type(s): bottom trawl, midwater trawl, longline, hook-and-line, gill net

Primary depth range: 30-200 fathoms

Primary habitat type(s): deep rocky reefs, mixed-bottom substrate including cobble and sand, edges of submarine canyons

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA), the taking of rockfishes, lingcod, California scorpionfish, and ocean whitefish is prohibited. Within the central coast study region (Pigeon Pt. to Pt. Conception), the RCA for commercial fishing is 20 to 150 fathoms for fixed gears (limited entry and open access) and from 75 to 150 fathoms for trawlers.

Trawling for rockfishes is prohibited within 3 miles of shore

Gill netting for rockfishes is prohibited in state waters.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month trip limits are in effect, with a total closure on cowcod by trawl gear and for canary and yelloweye rockfishes and cowcod by fixed gears.

Small footrope trawl gear is required shoreward of the RCA.

Rockfishes landed must be sorted by species or species group prior to weighing.

Log book Required?: Yes for trawling

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major California Halibut Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: California halibut

Species targeted: California halibut (*Paralichthys californicus*)

2004 preliminary landings (pounds): 5,086
2004 preliminary ex-vessel value: \$16,369

2003 landings: 10,514
2003 ex-vessel value: \$29,384

1999-2004 average landings: 35,633
1999-2004 average ex-vessel value: \$92,944

Rank of average annual landings in port area 1999-2004: 17
Rank of average annual value in port area 1999-2004: 15

General trend in annual landings 1999-2004:

Landings have declined steadily from approximately 63,000 lbs in 2001 to approximately 5,000 lbs in 2004.

Comments: The number of gillnet boats making at least one halibut landing in the Morro Bay area decreased from a high of 13 in 2001 to only one in 2003 and 2004, primarily due to increased restrictions on the use of this gear. This, coupled along with a reduction of trawlers (17 in 1999 to a low of four in 2004), accounts for the substantial decrease. Market conditions have developed such that trawling for halibut is not as economically feasible as it was in the past, and some of the major trawl vessels have left the fishery.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Trawl: 9
Hook-and-line: 38
Gill or trammel net: 1

Primary gear type(s): trawl, hook-and-line, gill and trammel net

Primary depth range: 2 – 50 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

The Fish and Game Commission has authority over state-managed bottom trawl fisheries not managed under federal regulations, which includes regulations pertaining to California halibut.

Trawling for halibut is prohibited within 3 miles of shore, except in the area from Pt. Arguello south to Pt. Mugu greater than 1 nautical mile from shore.

Minimum mesh size for trawls in this area is 7.5 inches, and trawling is closed from March 15 to June 15.

In waters greater than 3 nautical miles from shore, trawling is permitted, and minimum mesh size is 4.5 inches.

Gill and trammel nets are prohibited in waters less than 60 fathoms deep from Pt. Reyes headlands in Marin county south to Pt. Arguello.

Where gill nets and trammel nets are legal, minimum mesh size is 8.5 inches. Gill and trammel nets may not exceed 1,500 fathoms (9,000 feet) in length, except that in a portion of southern California south of a line extending due west from Pt. Arguello, gill and trammel nets may not exceed 1,000 fathoms (6,000 feet).

Halibut less than 22 inches may not be taken, possessed, or sold unless it weighs 4 lbs or more in the round, 3.5 lbs or more dressed with head on, or 3 lbs or more dressed with head off.

Log book Required?: Yes for trawlers – when/where fishing is permitted

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort.

Profile of Major Shark Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Shark (this represents multiple fisheries which either target shark or harvest them incidentally)

Species targeted: thresher shark (*Alopias vulpinus*), shortfin mako shark (bonito shark) (*Isurus oxyrinchus*), spiny dogfish (*Squalus acanthias*), soupfin shark (*Galeorhinus zyopterus*)

Other species landed: brown smoothhound (*Mustelus henlei*), leopard shark (*Triakis semifasciata*), Pacific angel shark (*Squatina californica*)

2004 preliminary landings (pounds): 19,144

2004 preliminary ex-vessel value: \$18,308

2003 landings: 16,249

2003 ex-vessel value: \$17,998

1999-2004 average landings: 23,628

1999-2004 average ex-vessel value: \$22,440

Rank of average annual landings in port area 1999-2004: 18

Rank of average annual value in port area 1999-2004: 23

General trend in annual landings 1999-2004:

Landings have varied by approximately two-fold during the period, with the latter 3 years showing lower landings.

Comments:

Thresher shark has consistently been the number one species landed. Mako shark landings have declined steadily from more than 8,000 lbs in 1999 to less than 1,500 lbs in 2004. Soupfin shark landings have declined significantly from almost 8,000 lbs in 2001 to 400 pounds in 2004. Pacific angel shark has followed a similar trend. Spiny dogfish are a much less important component of shark landings compared with the Monterey area.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Hook-and-line: 14

Gill net: 11

Trawl: 5

Primary gear type(s):

Hook-and-line

Drift gill net (primarily for thresher and shortfin mako sharks)

Set gill net or trammel net (primarily for Pacific angel sharks)

Trawl (primarily for spiny dogfish)

Primary depth range: 0 to 400 fathoms

Primary habitat type(s): open ocean, pelagic waters, nearshore waters, soft bottom, hard bottom, rocky reefs, kelp beds.

Primary area of fishery: State waters _____ Federal waters _____

Synopsis of regulations applicable to central coast study region:

A Highly Migratory Species permit is required to take thresher sharks.

Sharks may be taken with drift gill nets of mesh size 8 inches or greater under a revocable permit from DFG.

Longlines may not be used to take thresher and shortfin mako shark.

Pacific angel sharks have a minimum legal size of 42 inches for females and 40 inches for males.

Leopard sharks have a minimum legal size of 36 inches

Sharkfins may not be landed without a corresponding carcass.

Spears, harpoons, and bow and arrows may not be used to take soupfin shark

White shark (*Carcharodon carcharias*) may not be taken.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs primarily in federal waters. Those species which occur in nearshore waters are taken incidentally in other fisheries. Coupled with the high mobility of most of the targeted species, spatially explicit data will be of little value to the MLPA Initiative process.

Profile of Major Lingcod Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Lingcod

Species targeted: Lingcod (*Ophiodon elongatus*). Lingcod are generally not specifically targeted but are so widespread that they are caught in most hard-bottom oriented fisheries targeting rockfishes, cabezon, and other species.

2004 preliminary landings (pounds): 25,041

2004 preliminary ex-vessel value: \$39,883

2003 landings: 20,714

2003 ex-vessel value: \$35,218

1999-2004 average landings: 18,671

1999-2004 average ex-vessel value: \$28,635

Rank of average annual landings in port area 1999-2004: 19

Rank of average annual value in port area 1999-2004: 21

General trend in annual landings 1999-2004:

Landings have varied by approximately four- to five-fold with no trend.

Comments:

Prior to 1999, the Acceptable Biological Catch for lingcod set by the National Marine Fisheries Service had undergone a series of significant reductions, and regional and statewide landings are substantially lower in this recent 6-year period compared with the previous two decades. Lingcod is now officially declared to be an overfished species; a rebuilding plan is implemented and allowable harvest levels are relatively low.

Number of fishermen making landings in 2003 and/or 2004 in port area:

Hook-and-line: 88

Trawl: 11

Trap: 16

Gill net: 1

Primary gear type(s):

Hook-and-line

Trawl

Gill net

Trap

Primary depth range: 2- 200 fathoms

Primary habitat type(s): deep and shallow rocky reef, kelp beds, low- to high-relief mixed substrate and hard bottom, submarine canyons.

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Within the Rockfish Conservation Area (RCA), the taking of rockfishes, lingcod, California scorpionfish, and ocean whitefish is prohibited. Within the central coast study region (Pigeon Pt. to Pt. Conception), the RCA for commercial fishing is from 20 to 150 fathoms for fixed gears (limited entry and open access) and from 75 to 150 fathoms for trawlers.

A federal permit is required to fish outside of the RCA. There are four types of federal permits: trawl limited entry, trawl open access, fixed gear limited entry, non-trawl open access.

Annual harvest limits and two-month trip limits are in effect.

Small footrope trawl gear is required shoreward of the RCA.

The minimum legal size for lingcod is 24 inches.

Log book Required?: Yes for trawling

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of non-trawl fishing effort. Trawl tows recorded on logbooks have been compiled (assuming straight-line tows between start and end points) from 1997 to 2003 and will be available as a GIS data layer.

**Profile of Major Dungeness Crab Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: Dungeness Crab

Species targeted: Dungeness crab (*Cancer magister*)

2004 preliminary landings (pounds): 23,064
2004 preliminary ex-vessel value: \$72,854

2003 landings: 30,357
2003 ex-vessel value: \$91,670

1999-2004 average landings: 16,812
1999-2004 average ex-vessel value: \$57,524

Rank of average annual landings in port area 1999-2004: 20
Rank of average annual value in port area 1999-2004: 16

General trend in annual landings 1999-2004:
Landings increased dramatically from 1999 to 2002 then declined by more than 50%.

Comments: Landings in northern California have experienced repeated cycles at approximately 10-year intervals. Central California landings have been less cyclical but still highly variable. Due to heavy fishing pressure in the beginning of each season, the majority of the annual landings typically occur during the first two months of the season. The primary fishing grounds are generally considered to be north of the Monterey port area, but this fishery can be relatively important locally in some years.

Number of fishermen making landings in 2003 and/or 2004 in port area: 13

Primary gear type(s): Circular traps, each attached to a separate line and buoy.

Primary depth range: 0-50 fathoms

Primary habitat type(s): sand bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Closed season July 1 through November 14. Open season may be extended as late as July 31 by order of DFG Director.

Minimum carapace width 6.25 inches.

Only males may be harvested.

This is a restricted access fishery with a vessel-based permit system.

There is no limit on the number of traps per vessel which may be used but legislation has been introduced to limit the maximum number of traps .

There are no closed areas other than as specified in particular MPAs.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

Profile of Major Surfperch Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay

Fishery: Surfperch

Species targeted: Barred surfperch (*Amphistichus argenteus*)

Other species landed: Calico surfperch (*Amphistichus koelzi*); shiner surfperch (*Cymatogaster aggregata*)

2004 preliminary landings (pounds): 25,565

2004 preliminary ex-vessel value: \$51,286

2003 landings: 24,039

2003 ex-vessel value: \$48,254

1999-2004 average landings: 15,246

1999-2004 average ex-vessel value: \$29,719

Rank of average annual landings in port area 1999-2004: 21

Rank of average annual value in port area 1999-2004: 19

General trend in annual landings 1999-2004:

Landings have increased steadily from approximately 9,000 lbs in 1999 to more than 25,000 lbs in 2004.

Comments:

With an average ex-vessel value of approximately \$2.00 per pound, this fishery has seen an increase in effort in recent years in the Morro Bay area.

Number of fishermen making landings in 2003 and/or 2004 in port area: 66

Primary gear type(s): hook-and-line

Primary depth range: 0 – 10 fathoms

Primary habitat type(s): sand bottom, exposed beaches

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Fishing season is closed May 1 through July 31 for all species except shiner surfperch, which may be taken year-round.

South of Pt. Arguello, barred, redbtail (*Amphistichus rhodoterus*) (not found in Morro Bay area), and calico surfperch may not be taken.

Log book Required?: No

Relevant spatially-explicit data concerning location of fishery:
EcoTrust will provide information on the distribution of fishing effort.

**Profile of Major White Seabass Commercial Fisheries in Central Coast Study Region:
Morro Bay Area**

Port area: Morro Bay
Fishery: White seabass

Species targeted: White seabass (*Atractoscion nobilis*)

2004 preliminary landings (pounds): 1,774
2004 preliminary ex-vessel value: \$4,224

2003 landings: 10,139
2003 ex-vessel value: \$23,934

1999-2004 average landings: 14,509
1999-2004 average ex-vessel value: \$32,527

Rank of average annual landings in port area 1999-2004: 22
Rank of average annual value in port area 1999-2004: 18

General trend in annual landings 1999-2004:

Landings have shown high variability, ranging from more than 34,000 lbs in 2001 to less than 1,800 pounds in 2004.

Comments: The distribution and availability of this species is highly influenced by oceanographic conditions and changing water temperature.

Number of fishermen making landings in 2003 and/or 2004 in port area: 19

Gill net: 2
Hook-and-line: 17

Primary gear type(s):

Drift gill net
Hook-and-line

Primary depth range: 0 – 40 fathoms

Primary habitat type(s): kelp beds, reefs, offshore banks, open ocean

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

There is a closed season south of Pt. Conception from March 15 to June 15, with an allowance for fish taken incidental to gill and trammel net fishing.

There is a minimum legal size of 28 inches.

Mesh size of gill nets must be not less than 6 inches.

White seabass may not be taken in roundhaul nets.

Log book Required?: Yes for gill net

Relevant spatially-explicit data concerning location of fishery:

EcoTrust will provide information on the distribution of fishing effort.

Profile of Major Red Urchin Commercial Fisheries in Central Coast Study Region: Morro Bay Area

Port area: Morro Bay
Fishery: red urchin

Species targeted: red urchin (*Strongylocentrotus franciscanus*)

2004 preliminary landings (pounds): 18,349
2004 preliminary ex-vessel value: \$14,660

2003 landings: 31,586
2003 ex-vessel value: \$24,332

1999-2004 average landings: 13,709
1999-2004 average ex-vessel value: \$11,321

Rank of average annual landings in port area 1999-2004: 23
Rank of average annual value in port area 1999-2004: 25

General trend in annual landings 1999-2004:

Landings have been highly variable, from 0 lbs to more than 31,000 pounds, and have been above average for the last three years of this six-year period.

Comments: The red urchins landed in the Morro Bay port area are harvested outside of the central coast study region, primarily from the northern Channel Islands. Southern California landings in general declined steadily from 1990 to 1999; urchin abundance and availability are influenced by El Niño events and a weakening Japanese currency.

Number of fishermen making landings in 2003 and/or 2004 in port area: 2

Primary gear type(s): hand harvest using rakes, with scuba or hookah gear

Primary depth range: 2 -15 fathoms

Primary habitat type(s): shallow rocky reefs, kelp beds, hard bottom

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

This is a restricted access fishery with an urchin diving permit required. There are no landing requirements to renew the permit.

The season is open 7 days per week from November 1 through March 31. The season is open 4 days a week in April, May, September and October, 3 days a week in June and August, and 2 days a week in July.

Urchins harvested south of the Monterey-San Luis Obispo County line may not have a test diameter between 1_ and 3_ inches, except that not more than 30 may be landed incidentally within this size range. (Urchins less than 1_ inches in diameter are not targeted, but are often landed incidentally as they typically use the spine canopies of larger urchins as shelter.

Log book Required?: Yes

Relevant spatially-explicit data concerning location of fishery:

The fishery occurs outside of the central coast study region. Thus there are no spatial data relevant to the MLPA Initiative process.

Appendix III: Profile of Major Recreational Fisheries in the Central Coast Study Region

Contents

1. Profile of Major Recreational Fisheries in the Central Coast Study Region: By Commercial Passenger Fishing Vessel
4. Profile of Major Recreational Fisheries in the Central Coast Study Region: Private and Rental Skiff Fishing
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Profile of Major Recreational Fisheries in the Central Coast Study Region: Fishing via Commercial Passenger Fishing Vessel

Fishing mode: commercial passenger fishing vessel (CPFV)

Port area: Monterey and Morro Bay

Species targeted: King salmon (chinook) (*Oncorhynchus tshawytscha*), rockfishes (*Sebastes* sp.), lingcod (*Ophiodon elongatus*), California halibut (*Paralichthys californicus*), albacore (*Thunnus alalunga*), Pacific sanddab (*Citharichthys sordidus*)

Estimated number of angler trips in 2004 in study region by target species:

King salmon: 21,000

Rockfishes: 34,000

California halibut: 3,000

Albacore: 0

Other (sanddabs): 1,000

2004 estimated catch (number of fish):

King salmon: (22,000)

Rockfishes: 298,000

Lingcod: 1,000

Cabezon: 0

Kelp greenling: 2,000

California halibut: 1,000

Albacore: 0

Pacific sanddabs: 37,000

2004 estimated catch (pounds of fish):

King salmon: (not available)

Rockfishes: 360,600

Lingcod: 13,400

Cabezon: 0

Kelp greenling: 2,200

California halibut: 9,000

Albacore: 0

Pacific sanddabs: 13,400

Comments: Seasonal restrictions are in effect to keep the catch of nearshore groundfish species within harvest guidelines. Depth restrictions are in place primarily to reduce the incidental take of canary rockfish. In part due to these restrictions, relatively more effort was directed towards sanddabs in 2004. Annual catch of albacore fluctuates widely due to the availability of fish within a reasonable distance from harbors and launch ramps. Significant effort occurred for albacore in 2003 but not in 2004.

Primary fishing depth range: 0 – 20 fathoms (Monterey area) or 0-40 fathoms (Morro Bay area) for rockfishes, lingcod, cabezon, kelp greenling, California halibut, Pacific sanddabs, king salmon (rockfish, lingcod, and cabezon fishing could occur at greater depths if permitted)
0 – 5 fathoms for albacore

Primary habitat type(s): Rockfishes, lingcod, cabezon, kelp greenling: kelp beds, rocky reef, hard bottom

California halibut, Pacific sanddabs: sand, other soft bottom

King salmon: nearshore surface waters

Albacore: offshore surface waters

Primary area of fishery: State waters X (all but albacore)

Federal waters X (albacore)

Synopsis of regulations applicable to central coast study region:

Rockfishes, cabezon, kelp greenling, and lingcod: In 2005, north of Lopez Point, the season for rockfishes, cabezon, and kelp greenling is closed January 1 through June 30; the season for lingcod is closed January 1 through June 30 and December 1-31.

South of Lopez Point, the season is closed January 1 through April 30 and October 1 through December 31.

Season may be closed early if harvest guidelines are reached.

North of Lopez Point, fishing is prohibited in depths greater than 20 fathoms.

South of Lopez Point, fishing is prohibited in depths greater than 40 fathoms.

The following rockfishes may not be taken: canary, cowcod, yelloweye.

The bag limit for rockfishes, cabezon, and kelp greenling is 10 fish in combination, all of which may be the same species, except no more than 1 cabezon, 1 kelp greenling, and 1 bocaccio may be taken within this overall bag limit.

The bag limit for lingcod is 2 fish.

On CPFVs there is a bag limit for the boat, excluding the vessel operator and crew. The boat bag limit is the number of anglers on board multiplied by the individual bag limit.

Minimum legal size: rockfish: none, except bocaccio 10 inches; cabezon 15 inches; kelp greenling 12 inches; lingcod 24 inches.

Not more than two hooks and one line may be used.

Salmon: Two salmon per day of any species except silver (coho). Steelhead trout may not be taken or possessed.

In 2005, season is closed January 1 through April 1 and September 26 through December 31.

The bag limit is 2 fish.

On CPFVs there is a bag limit for the boat, excluding the vessel operator and crew. The boat bag limit is the number of anglers on board multiplied by the individual bag limit.

Minimum legal size: 20 inches

No sinkers or weights exceeding 4 pounds may be used, except that a fishing line may be attached to a sinker or weight of any size if such sinker or weight is suspended by a separate line and the fishing line is released automatically by a mechanical device from the sinker or weight when any fish is hooked.

No more than 2 single-point, single-shank barbless hooks and no more than 1 rod per angler may be

used when trolling. No more than 2 single-point, single-shank barbless circle hooks and no more than 1 rod per angler may be used when mooching.

California halibut: The bag limit in waters north of Point Sur is 3 fish. The bag limit in waters south of Point Sur is 5 fish.

On CPFVs there is a bag limit for the boat, excluding the vessel operator and crew. The boat bag limit is the number of anglers on board multiplied by the individual bag limit.

Minimum legal size: 22 inches

Pacific sanddabs: There is no bag limit.

Up to 12 No. 2 or smaller hooks and up to 2 pounds of weight may be used.

Albacore: There is no bag limit.

Relevant spatially-explicit data concerning location of fishery:

The Department has compiled spatially-explicit data within the MLPA Initiative central coast study region from an 11-year onboard observer program involving the CPFV industry from 1987 to 1988. These data will be presented on microblock (one minute of latitude by one minute of longitude) maps with colors representing the total number of sampled trips to each microblock. This will provide an estimate of the relative amount of fishing effort in discrete locations, which is in turn an estimate of the relative value of particular locations to the CPFV industry. An accompanying data base will be available on the MLPA IMS web site, and will be available at Regional Stakeholder Group meetings through our GIS technician. This data base will contain estimates of overall average catch per hour of the most frequently observed species in each microblock.

Profile of Major Recreational Fisheries in the Central Coast Study Region: Private and Rental Skiff Fishing

Fishing mode: private and rental skiff

Port area: Monterey and Morro Bay

Species targeted: King salmon (chinook) (*Oncorhynchus tshawytscha*), rockfishes (*Sebastes* sp.), lingcod (*Ophiodon elongatus*), California halibut (*Paralichthys californicus*), albacore (*Thunnus alalunga*), Pacific sanddab (*Citharichthys sordidus*)

Estimated number of fishing trips in 2004 in study region by target species:

King salmon: 32,000

Rockfishes: 18,000

Lingcod: 3,000

California halibut: 8,000

Albacore: 1,000

Other: 5,000

Anything: 3,000

2004 estimated catch (number of fish):

King salmon: (22,000)

Rockfishes: 110,000

Lingcod: 3,000

Cabazon: 1,000

Kelp greenling: 1,000

California halibut: 2,000

Albacore: 1,000

Pacific sanddabs: 100,000

2004 estimated catch (pounds of fish):

King salmon: (not available)

Rockfishes: 170,200

Lingcod: 29,100

Cabazon: 4,500

Kelp greenling: 1,500

California halibut: 26,9000

Albacore: 24,600

Pacific sanddabs: 33,600

Comments: Seasonal restrictions are in effect to keep the catch of nearshore groundfish species within harvest guidelines. Depth restrictions are in place primarily to reduce the incidental take of canary rockfish. In part due to these restrictions, relatively more effort was directed towards sanddabs in 2004. Annual catch of albacore fluctuates widely due to the availability of fish within a reasonable distance from harbors and launch ramps. The 2004 albacore catch was much lower than that in 2003.

Primary fishing depth range: 0 – 20 fathoms (Monterey area) or 0-40 fathoms (Morro Bay area) for rockfishes, lingcod, cabezon, kelp greenling, California halibut, Pacific sanddabs, king salmon (rockfish, lingcod, and cabezon fishing could occur at greater depths if permitted)

0 – 5 fathoms for albacore

Primary habitat type(s): Rockfishes, lingcod, cabezon, kelp greenling: kelp beds, rocky reef, hard bottom

California halibut, Pacific sanddabs: sand, other soft bottom

King salmon: nearshore surface waters

Albacore: offshore surface waters

Primary area of fishery: State waters (all but albacore)

Federal waters (albacore)

Synopsis of regulations applicable to central coast study region:

Rockfishes, cabezon, kelp greenling, and lingcod: In 2005, north of Lopez Point, the season for rockfishes, cabezon, and kelp greenling is closed January 1 through June 30; the season for lingcod is closed January 1 through June 30 and December 1-31.

South of Lopez Point, the season is closed January 1 through April 30 and October 1 through December 31.

Season may be closed early if harvest guidelines are reached.

North of Lopez Point, fishing is prohibited in depths greater than 20 fathoms.

South of Lopez Point, fishing is prohibited in depths greater than 40 fathoms.

The following rockfishes may not be taken: canary, cowcod, yelloweye.

The bag limit for rockfishes, cabezon, and kelp greenling is 10 fish in combination, all of which may be the same species, except no more than 1 cabezon, 1 kelp greenling, and 1 bocaccio may be taken within this overall bag limit.

The bag limit for lingcod is 2 fish.

Minimum legal size: rockfish: none, except bocaccio 10 inches; cabezon 15 inches; kelp greenling 12 inches; lingcod 24 inches.

Not more than two hooks and one line may be used.

Salmon: Two salmon per day of any species except silver (coho). Steelhead trout may not be taken or possessed.

In 2005, season is closed January 1 through April 1 and September 26 through December 31.

The bag limit is 2 fish.

Minimum legal size: 20 inches

No sinkers or weights exceeding 4 pounds may be used, except that a fishing line may be attached to a sinker or weight of any size if such sinker or weight is suspended by a separate line and the fishing line is released automatically by a mechanical device from the sinker or weight when any fish is hooked. No more than 2 single-point, single-shank barbless hooks and no more than 1 rod per angler may be used when trolling. No more than 2 single-point, single-shank barbless circle hooks and no more than 1 rod per angler may be used when mooching.

California halibut: The bag limit in waters north of Point Sur is 3 fish. The bag limit in waters south of Point Sur is 5 fish.

Minimum legal size: 22 inches

Pacific sanddabs: There is no bag limit.

Up to 12 No. 2 or smaller hooks and up to 2 pounds of weight may be used.

Albacore: There is no bag limit.

Relevant spatially-explicit data concerning location of fishery:

The Department has compiled spatially-explicit data within the MLPA Initiative central coast study region from 2004, the first year of the California Recreational Fisheries Survey program. While these data are depth-limited in scope for bottom-oriented fishes due to regulations, they are the only data available with this degree of resolution for private and rental boat fishing. These data will be presented on microblock (one minute of latitude by one minute of longitude) maps with colors representing the total number of sampled trips to each microblock. A composite will be presented with all targeted trips combined, and separate map sets will be available for the following target groups: king salmon, rockfish/lingcod, California halibut, sanddabs, and albacore. It is important to note that these data include fishing trips in which no catch occurred. The microblocks compiled in this data set are those reported by the fishermen to the samplers.

Profile of Major Recreational Fisheries in the Central Coast Study Region: Bank and Beach Fishing

Fishing mode: beach and bank (shore-based)

Port area: Monterey and Morro Bay

Primary species harvested: barred surfperch (*Amphistichus argenteus*), jacksmelt (*Atherinopsis californiensis*), striped surfperch (*Embiotoca lateralis*), black surfperch (*E. jacksoni*), walleye surfperch (*Hyperprosopon argenteum*), grass rockfish (*Sebastes rastrelliger*)

Estimated number of angler trips in 2004 in study region: 39,000

2004 estimated catch of most frequently observed species (number of fish):

Barred surfperch: 59,000

Jacksmelt: 4,000

Striped surfperch: 4,000

Black surfperch: 2,000

Walleye surfperch: 2,000

Grass rockfish: 1,000

2004 estimated catch of most frequently observed species (pounds of fish):

Barred surfperch: 44,800

Jacksmelt: 2,200

Striped surfperch: 4,500

Black surfperch: 4,500

Walleye surfperch: 900

Grass rockfish: 2,200

Comments: There are no seasonal restrictions on fishing from shore, except as related to the take of lingcod (see below). The majority of the catch is reported under the target species classifications of "surfperches", "anything" or "other". Catches are often opportunistic and may also reflect seasonal availability of some species.

Primary fishing depth range: 0 – 2 fathoms

Primary habitat type(s): Intertidal and shallow subtidal areas of sandy beaches and rocky shoreline.

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Rockfishes, cabezon, kelp greenling, and lingcod: When rockfish or lingcod are in possession, only one line with not more than two hooks may be used.

Fishing for lingcod from shore is prohibited in January, February, March, and December.

The bag limit for rockfishes, cabezon, and kelp greenling is 10 fish in combination, all of which may be the same species, except no more than 1 cabezon, 1 kelp greenling, and 1 bocaccio may be taken within this overall bag limit.

The bag limit for lingcod is 2 fish.

Minimum legal size: rockfish: none, except bocaccio 10 inches; cabezon 15 inches; kelp greenling 12 inches; lingcod 24 inches.

Not more than two hooks and one line may be used.

Surfperch: The bag limit is 5 in any combination of species, except that the daily bag limit for shiner surfperch is 20.

California halibut: The bag limit in waters north of Point Sur is 3 fish. The bag limit in waters south of Point Sur is 5 fish.

Minimum legal size: 22 inches

Pacific sanddabs: There is no bag limit.

Up to 12 No. 2 or smaller hooks and up to 2 pounds of weight may be used.

Jacksmelt: There is no bag limit.

Relevant spatially-explicit data concerning location of fishery:

Beach and bank fishing locations will be depicted on maps as predetermined sampling areas in 2004 by the CRFS program, with the shoreline color-coded by relative angler effort (average number of anglers encountered per sampling day).

Profile of Major Recreational Fisheries in the Central Coast Study Region: Fishing from Manmade Structures

Fishing mode: manmade structures (piers and jetties)

Port area: Monterey and Morro Bay

Primary species harvested: jacksmelt (*Atherinopsis californiensis*), northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), shiner surfperch (*Cymatogaster aggregata*), barred surfperch (*Amphistichus argenteus*), walleye surfperch (*Hyperprosopon argenteum*), white croaker (*Genyonemus lineatus*), rockfishes (*Sebastes* sp.), Pacific sanddab (*Citharichthys sordidus*), blue rockfish (*Sebastes mystinus*), gopher rockfish (*S. carnatus*)

Estimated number of angler trips in 2004 in study region: 260,000

2004 estimated catch of most frequently observed species (number of fish):

Anchovy: 111,000
Jacksmelt: 95,000
Shiner surfperch: 32,000
Pacific sardine: 29,000
Barred surfperch: 29,000
White croaker: 23,000
Walleye surfperch: 17,000
Surfperch sp.: 15,000
Pacific sanddab: 8,000
Blue rockfish: 4,000
Gopher rockfish: 4,000

2004 estimated catch of most frequently observed species (pounds of fish):

Anchovy: 2,200
Jacksmelt: 42,600
Shiner surfperch: 2,200
Pacific sardine: 2,200
Barred surfperch: 15,700
White croaker: 9,000
Walleye surfperch: 4,500
Surfperch sp.: 6,600
Pacific sanddab: 1,800
Blue rockfish: 900
Gopher rockfish: 2,600

Comments: There are no seasonal restrictions on fishing from manmade structures, except as related to the take of lingcod and salmon(see below). The majority of the catch is reported under the target species classifications of “anything” or “other”. Catches are often opportunistic and may also reflect seasonal availability of some species. More than 50% of effort occurs during May through August.

Primary fishing depth range: 0 – 2 fathoms

Primary habitat type(s): sand, other soft bottom around piers and breakwaters, and the microhabitats of the structures themselves.

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

A license is not required to fish from a public pier, public jetty, or a public breakwater in ocean or bay waters. On public piers no person shall use more than two rods and lines or two hand lines.

Rockfishes, cabezon, kelp greenling, and lingcod: Fishing for rockfishes, cabezon, and kelp greenling is permitted year-round from manmade structures. When rockfish or lingcod are in possession, only one line with not more than two hooks may be used.

Fishing for lingcod from shore is prohibited in January, February, March, and December.

The bag limit for rockfishes, cabezon, and kelp greenling is 10 fish in combination, all of which may be the same species, except no more than 1 cabezon, 1 kelp greenling, and 1 bocaccio may be taken within this overall bag limit.

The bag limit for lingcod is 2 fish.

Minimum legal size: rockfish: none, except bocaccio 10 inches; cabezon 15 inches; kelp greenling 12 inches; lingcod 24 inches.

Not more than two hooks and one line may be used.

Surfperch: The bag limit is 5 in any combination of species, except that the daily bag limit for shiner surfperch is 20.

Salmon: Two salmon per day of any species except silver (coho). Steelhead trout may not be taken or possessed.

In 2005, season is closed January 1 through April 1 and September 26 through December 31.

The bag limit is 2 fish.

Minimum legal size: 20 inches

Salmon may not be taken by snagging.

California halibut: The bag limit in waters north of Point Sur is 3 fish. The bag limit in waters south of Point Sur is 5 fish.

Minimum legal size: 22 inches

Pacific sanddabs: There is no bag limit.

Up to 12 No. 2 or smaller hooks and up to 2 pounds of weight may be used.

Other species: There is no bag limit on the following species which are likely to be taken from manmade structures in central California: anchovy, jacksmelt, topsmelt, jack mackerel, Pacific mackerel, Pacific staghorn sculpin, and Pacific sardine.

The bag limit for white croaker is 10 fish.

Relevant spatially-explicit data concerning location of fishery:

Manmade structures used for fishing within the MLPA Initiative central coast study region will be indicated on the same maps which summarize beach and bank recreational fishing effort from 2004.

Profile of Major Recreational Fisheries in the Central Coast Study Region: Fishing via Scuba Diving/Free Diving

Fishing mode: scuba diving and free diving

Port area: Monterey and Morro Bay

Species targeted: rockfishes (*Sebastes* sp.), lingcod (*Ophiodon elongatus*), California halibut (*Paralichthys californicus*), cabezon (*Scorpaenichthys marmoratus*), kelp greenling (*Hexagrammos decagrammus*), rubberlip surfperch (*Rhacochilus toxotes*), striped surfperch (*Embiotoca lateralis*), black surfperch (*E. jacksoni*), California halibut (*Paralichthys californicus*)

Estimated number of diver trips in 2004 in study region: (not available at present)

2004 estimated catch of most frequently observed species (number of fish): (not available at present)

Comments:

Primary depth range: 0 – 15 fathoms

Primary habitat type(s): kelp beds and nearshore rocky reefs, nearshore sand bottom (for halibut)

Primary area of fishery: State waters Federal waters

Synopsis of regulations applicable to central coast study region:

Rockfishes, cabezon, kelp greenling, and lingcod: Diving and spearfishing are permitted during seasonal closures to hook-and-line gear. Except for spearfishing gear, all other types of fishing gear are prohibited to be aboard the vessel or non-motorized watercraft while spearfishing for the purpose of retaining groundfish and associated species.

Fishing for lingcod is prohibited in January, February, March, and December.

The bag limit for rockfishes, cabezon, and kelp greenling is 10 fish in combination, all of which may be the same species, except no more than 1 cabezon, 1 kelp greenling, and 1 bocaccio may be taken within this overall bag limit.

The bag limit for lingcod is 2 fish.

Minimum legal size: rockfish: none, except bocaccio 10 inches; cabezon 15 inches; kelp greenling 12 inches; lingcod 24 inches.

Surfperch: The bag limit is 5 in any combination of species, except that the daily bag limit for shiner surfperch is 20.

California halibut: The bag limit in waters north of Point Sur is 3 fish. The bag limit in waters south of Point Sur is 5 fish.

Minimum legal size: 22 inches

Relevant spatially-explicit data concerning location of fishery:

A small data base from the CRFS program interviews of private and rental boat fishermen (the interviews included divers using spears) will be available using the microblock maps within the MLPA Initiative central coast study region. Another set of maps will be provided showing locations of Central California Council of Divers competitive free-diving meets, which the Department has monitored since the late 1950's. These maps will depict access points for the meets and the approximate area in which fishing effort occurred from each access point. Additional sources of data concerning consumptive diving will be provided by diver representatives.

Appendix IV: Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Contents

Monterey County

1. Elkhorn Slough State Marine Reserve
3. Hopkins State Marine Reserve
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9. Julia Pfeiffer Burns State Marine Conservation Area
11. Big Creek State Marine Reserve

San Luis Obispo County

13. Atascadero Beach State Marine Conservation Area
14. Morro Beach State Marine Conservation Area
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Santa Barbara County

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Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

MONTEREY COUNTY

Site name: Elkhorn Slough State Marine Reserve

Year established: 1980

Approximate Area: 1.7 nm²

Approximate Shoreline length: 2.7 nm

Approximate Depth range (feet): 0 to 10

Habitat types: Estuary with soft bottom

Surrounding habitat types: Similar estuarine soft bottom habitat.

Summary of existing regulations: No take is allowed both through State regulations and designation as a Federal National Estuarine Research Reserve.

Primary objectives: This area was originally designated as an ecological reserve. Fish and Game Code Section 1580 (ecological reserves) states that "the policy of the state is to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves." Although the language does not specifically refer to ecological reserves in marine areas, the Fish and Game Commission has extended this policy to those areas. The Elkhorn Slough Ecological Reserve was established to protect sensitive salt marsh, mudflat, and open water habitats, and to provide a quality, undisturbed estuarine site for education, restoration, research and monitoring.

Existing enforcement: The area is easily-observed, well-known, almost surrounded by land, and has a Department of Fish and Game facility on site.

Baseline and ongoing monitoring and research studies: Monthly volunteer water quality monitoring since 1988 at 24 sites around the Slough, including the Reserve. Continuous water quality monitoring, using four sites (two on the Reserve), to measure temperature, salinity, turbidity, dissolved oxygen and pH. Hyperspectral images are being used to map the distribution of plant communities of interest (nuisance algae, eelgrass, pickleweed, native grasses, and noxious weeds). Tidal erosion rates at about 40 intertidal stations along the main channel and in the MPA are monitored annually. Abundance, feeding rates, and reproductive success of herons, egrets, and cormorants in rookeries are assessed by volunteers. Caspian Tern breeding success is being monitored. Distribution, abundance, and diversity of shorebirds and waterbirds at seven ponds and tidal lagoons in the MPA are monitored to detect long-term changes or short-term anomalies. Native and invasive crabs are monitored along the estuarine gradient, in areas of different land use. Tracking of shark and ray abundances occurs at one site in the MPA.

Current research includes: 1) Investigation of use of mudflats and other intertidal habitats by shorebirds, and the influence of tidal and seasonal dynamics. 2) Comparison of invertebrate communities associated with native oyster beds vs. invasive tubeworm beds. 3) Experiments and time series analysis to determine whether invasive upland plants are invading the ecotone and high marsh

Basic Evaluation: With on-site presence of Department staff, and with a history of baseline monitoring and research studies, the site functions well as one of the few fully-protected estuarine areas in the state.

Published references related to effectiveness of this MPA: 214, 217

Unpublished references related to effectiveness of this MPA: 21

Published references related to use of this MPA as a research tool: 20, 67, 188, 202

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Hopkins State Marine Reserve

Year established: 1984

Approximate Area: 0.15 nm²

Approximate Shoreline length: 0.95 nm

Approximate Depth range (feet): 0 to 60

Habitat types: Mostly granite reef; smaller portions of sand, especially on outside edge

Surrounding Habitat types: Similar

Summary of existing regulations: No take is allowed.

Primary objectives: The primary purpose is to allow for research in an area that is free of disturbance due to exploitation.

Existing enforcement: The area is easily-observed from shore, well-known, marked on the seaward boundary by buoys, and staff from the Hopkins Marine Station is on site every day.

Baseline and ongoing monitoring and research studies: Numerous studies of algae, invertebrates, and fish have taken place. Long-term monitoring of the intertidal zone dates back to the 1930=s. The Department carried out relatively intensive fish counts, and some re-monitoring of those counts has taken place. A recent study was completed comparing counts and sizes of benthic fishes in and adjacent to the MPA. In addition, the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) has had permanent intertidal and subtidal monitoring sites here for several years.

Basic Evaluation: The area contains one of the oldest fully-protected marine research sites in the state and contains a variety of shallow habitat types within a relatively small area. It is a classic example of how a small but fully protected MPA can function well by providing a multitude of research opportunities with populations of marine organisms occurring at natural densities and size frequencies. While it is relatively small, studies have documented significantly greater biomass and size frequencies of nearshore fishes compared with adjacent fished areas. This site is overlapped by a State Water Quality Protection Area designation.

Published references related to effectiveness of this MPA: 31, 112, 117, 137, 141, 171, 174, 22

Unpublished references related to effectiveness of this MPA: 136

Published references related to use of this MPA as a research tool: 16, 40, 53, 75, 113, 170, 177, 183, 191, 192, 203, 209

Unpublished references related to use of this MPA as a research tool: 4, 52, 76

The Hopkins Marine Station web site presently lists more than 150 student papers dating back to 1964, most of which involved at least some field work or collection of organisms with HMLR. The web site address is: <http://www.marine.stanford.edu/HMSweb/marine-indexes.html>

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Pacific Grove State Marine Conservation Area

Year established: 1984

Approximate Area: 1.2 nm²

Approximate Shoreline length: 2.5 nm

Approximate Depth range (feet): 0 to 60

Habitat types: Mostly granite reef; smaller portions of sand, especially on outside edge. Rock reefs in deeper water have been surveyed by submersibles.

Surrounding habitat types: Similar, except higher proportion of sand bottom offshore.

Summary of existing regulations:

Only the following species may be taken recreationally: finfish, and invertebrates other than mollusks or crustaceans.

Only the following species may be taken commercially by ring net, lampara net, or bait net: sardines, mackerel, anchovies, squid, and herring.

Primary objectives: Established by legislative action, the primary objective is to provide protection from exploitation for certain fishes and invertebrates.

Existing enforcement: The area is easily-observed from shore by law enforcement personnel as well as private citizens, is well-known, and benefits from an increased community awareness of the need to protect marine resources. During daylight hours thousands of people pass by or visit the area on a daily basis.

Baseline and ongoing monitoring and research studies: Many researchers from Department and several academic institutions have conducted life-history studies, recruitment studies, and tagging studies in this region. Tenera Environmental completed a study in 2003 which investigated the effects of visitor use on the intertidal area and established baseline levels of the more common intertidal species. Submersible studies of deeper-water fishes have also been carried out offshore of this site.

Basic Evaluation: The area presently offers some resource protection since regulations prohibit commercial finfishing (except for pelagic species) and allow the harvest of only certain invertebrates. Among the invertebrate species permitted for take, the presence of the sea otter precludes most harvest by man for some of these (e.g. urchin). However, the area does function well as an MPA by providing recreational opportunities, allowing a low but sustainable level of kelp and recreational finfish harvest, and providing a safe and local site for scientific collecting for research and public education. This area contains extensive intertidal and subtidal reef habitat and provides easy access to intertidal areas from shore. It also provides a source of kelp for local aquaculture businesses. Part of this site is overlapped by a State Water Quality Protection Area designation.

Unpublished references related to effectiveness of this MPA: 99, 100, 101, 118, 142, 195

Published references related to use of this MPA as a research tool: 130

Unpublished references related to use of this MPA as a research tool: 196

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Carmel Bay State Marine Conservation Area

Year established: 1976

Approximate Area: 1.9 nm²

Approximate Shoreline length: 5.8 nm

Approximate Depth range (feet): 0 to 465

Habitat types: Granite reef along rocky shores; extensive areas of sand offshore; some granite pinnacles; head of Carmel submarine canyon

Surrounding habitat types: Similar except for the submarine canyon, which has greater depths than in the MPA.

Summary of existing regulations: Take of all living marine resources is prohibited except the recreational take of finfish by hook-and-line or spear and the commercial take of kelp under specific conditions.

Primary objectives: This area was originally designated as an ecological reserve. Fish and Game Code Section 1580 (ecological reserves) states that "the policy of the state is to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves." Although the language does not specifically refer to ecological reserves in marine areas, the Fish and Game Commission has extended this policy to those areas.

Existing enforcement: The area is adjacent to population centers, and is therefore easily observed from shore. Pleasure boats, dive boats, and party boats frequent the area. Department provides enforcement presence on the water as well as from land.

Baseline and ongoing monitoring and research studies: The area near Pescadero Point, Stillwater Cove, and Arrowhead Point is the focus of a number of marine ecological studies, mostly through Moss Landing Marine Labs. San Francisco State University has conducted life-history and recruitment studies of fish in this area. A high school class carries out an ongoing monitoring program. There have also been submersible studies in the surrounding area. In addition, the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) has had permanent intertidal and subtidal monitoring sites here for several years.

Basic Evaluation: This area contains reef and sand habitat, a kelp bed, and includes the head of a submarine canyon. It provides opportunities for recreational angling and diving as well as limited commercial kelp harvest but is adjacent to the fully-protected area at Point Lobos. The existing degree of protection is probably consistent with its uses, and the site appears to function well as an MPA with limited harvest. The Department has documented its long term use as a fishing area for recreational anglers on Commercial Passenger Fishing Vessels and in skiffs as well as from extractive free divers (CenCal competitive free-diving competitions). This level of use appears to be sustainable in the absence of commercial fishing for finfish and invertebrates. The presence of the submarine canyon head provides a source of spot prawn recruitment to the commercial trap fishery in the adjacent area. This site is overlapped by a State Water Quality Protection Area designation.

Published references related to effectiveness of this MPA: 57, 175

Unpublished references related to effectiveness of this MPA: 43, 99, 100, 101, 104, 105, 115, 118, 175, 195

Published references related to use of this MPA as a research tool: 36, 66, 69, 70, 71, 74, 86, 90, 151, 181, 194, 204, 207

Unpublished references related to use of this MPA as a research tool: 4, 6, 23, 129, 180

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Point Lobos State Marine Reserve

Year established: 1973

Approximate Area: 0.8 nm² **Approximate Shoreline length:** 6.7 nm

Approximate Depth range (feet): 0 to 195

Habitat types: Mostly granite reef dropping from shore to sand bottom. Reef habitat with many crevices and pinnacles. Extensive kelp beds

Surrounding habitat types: Carmel submarine canyon is nearby. Extensive hard bottom offshore, as determined from submersible studies.

Summary of existing regulations: No take is allowed.

Primary objectives: This area was originally designated as an ecological reserve. Fish and Game Code Section 1580 (ecological reserves) states that "the policy of the state is to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves." Although the language does not specifically refer to ecological reserves in marine areas, the Fish and Game Commission has extended this policy to those areas.

Existing enforcement: State Park rangers within the adjacent terrestrial reserve monitor access from shore, and monitor approaches by boats. The presence of visitors every day of the year in the adjacent terrestrial reserve provides an additional deterrent to potential violators of regulations.

Baseline and ongoing monitoring and research studies: UC Santa Cruz students found slightly greater abundances of benthic fish in the MPA than in adjacent areas. Department has conducted habitat-based surveys of fish abundance within the MPA. Submersible surveys have been carried out offshore of the MPA. In addition, the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) has had permanent intertidal and subtidal monitoring sites here for several years.

Basic Evaluation: This site contains a complex variety of habitats, primarily hard bottom, and contains high densities of large, adult bottom fishes such as rockfishes and lingcod. Although relatively small, the MPA functions well as a fully protected area because of its high species diversity and variety of habitat, and it is effectively enforced. Studies by the Department and others have documented high population densities and large sizes of economically important nearshore fish species, in particular rockfishes, lingcod, cabezon, and greenlings, with population densities and size frequencies significantly greater than in adjacent and more distant fished areas. In addition, the site is a prime destination for non-extractive scuba divers, and use is limited by local policy. This site is overlapped by a State Water Quality Protection Area designation.

Published references related to effectiveness of this MPA: 12, 72, 111, 137, 167, 198

Unpublished references related to effectiveness of MPAs: 25, 44, 46, 99, 100, 101, 102, 103, 131, 136, 152, 154, 190

Published references related to use of this MPA as a research tool: 58, 59, 78

Unpublished references related to use of this MPA as a research tool: 24

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Julia Pfeiffer Burns State Marine Conservation Area

Year established: 1970

Approximate Area: 2.1 nm²

Approximate Shoreline length: 4.0 nm

Approximate Depth range (feet): 0 to 710 for MPA boundary, which extends 6000 feet offshore, but site-specific regulations apply to the harvest of invertebrates only within 1000 feet from shore, which is approximately 60 feet deep.

Habitat types: Hard and soft bottom. Five sub-categories of habitat: 1) Giant kelp beds; 2) pinnacles and underwater cliffs; 3) Diopatra (worm) tube beds; 4) unstable gravel and boulder fields; 5) surge channels; Some pinnacles have up to 75 ft of vertical relief in over 50 ft horizontally.

Surrounding habitat types: Similar habitats are found to south. To the north, Partington Canyon extends close to shore. Offshore is a mixture of hard and soft bottom, with some depths exceeding 300 fathoms (1,800 ft) within 3 miles of shore.

Summary of existing regulations:

Only the following species may be taken recreationally: finfish, chiones, clams, cockles, rock scallops, native oysters, crabs, lobsters, ghost shrimp, sea urchins, mussels and marine worms except that no worms may be taken in any mussel bed unless taken incidentally to the take of mussels.

Only the following species may be taken commercially: finfish, crabs, ghost shrimp, jackknife clams, sea urchins, squid, kelp and worms except that no worms may be taken in any mussel bed, nor may any person pick up, remove, detach from the substrate any other organisms, or break up, move or destroy any rocks or other substrate or surfaces to which organisms are attached.

Primary objectives: This site was established to protect unique habitat primarily due to prevalence of outstanding wall and pinnacle communities. It contains the most extensive series of pinnacles and underwater cliffs along the Big Sur Coast.

Existing enforcement: Enforcement is aided by the lack of access to intertidal and subtidal area from shore (although fishing from shore occurs at Partington Point) due to park requirements to stay on trails. Department of Park and recreation staff provide on site presence. Department of Fish and Game provides on-water presence. Commercial and recreational harvest restrictions pertain to invertebrates only, and for those which might be taken illegally, access is difficult at best.

Baseline and ongoing monitoring and research studies: Moss Landing Marine Laboratories-extensive diving surveys from 1987 to 1989 with some follow-up in mid 1990's, related to impacts of the massive landslide and subsequent manipulations by Caltrans in 1983-84. Extensive qualitative surveys of plant, invertebrate, and fish communities in five sub-habitat types have been completed. Contacts: John Oliver, MLML, and Jim Barry, Department of Parks and Recreation. Side-scan sonar maps and data are available from the Department of Fish and Game. Surveys were completed by Rick Kvitek in 1994, 1995, 1997, and 1998.

Basic Evaluation: The area presently offers little in the way of resource protection since only certain invertebrates are protected from harvest. Among the allowable species, the presence of the sea otter precludes most harvest by man for some of these (e.g. crab, urchin) or the species is not found here (lobster). However, the area does function well by providing recreational opportunities. The Department of Parks and Recreation has a long-term data base here, including information on habitat, fishes, invertebrates, and algae. At present, except for Big Creek State Marine Reserve, there are no other complete no-take areas between Pt. Lobos State Marine Reserve, and Vandenberg State Marine Reserve. The northern Boundary of Big Creek State Marine Reserve is about 5 miles from southern boundary of Julia Pfeiffer Burns State Marine Conservation Area. This site is overlapped by a State Water Quality Protection Area designation.

Unpublished references related to effectiveness of this MPA: 18, 100, 101, 104, 178

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Big Creek State Marine Reserve

Year established: 1994

Approximate Area: 1.9 nm² **Approximate Shoreline length:** 2.7 nm

Approximate Depth range (feet): 0 to 300

Habitat types: Soft intertidal: est. 10%; Hard intertidal: est. 90%; Soft subtidal: est. 18%; Hard subtidal: est. 82%; Soft shelf: est. 88%; Hard shelf: 12%; Kelp beds; many wash rocks and pinnacles.

Surrounding habitat types: To the north and south a mixture of hard and soft bottom with scattered kelp beds . Several heads of submarine canyons adjacent on seaward side.

Summary of existing regulations: No take is allowed. No disturbance of the bottom; no boats, diving or other use (boat transit only); public entry restricted.

Primary objectives: To satisfy requirements of the Marine Resources Protection Act of 1990 the Fish and Game Commission was required to establish four ecological reserves along the mainland coast. The Big Creek State Marine Reserve (originally named the Big Creek Marine Resources Protection Act Ecological Reserve) was one of the reserves established pursuant to the Act. The Act specified that the specific purpose of these reserves was "to provide for scientific research related to the management and enhancement of marine resources".

Existing enforcement: Full-time reserve manager provides on-site presence. Local users of adjacent areas (skiff fishermen), who are allowed access through the MPA, assist in insuring compliance with regulations. Department provides on-water enforcement presence.

Baseline and ongoing monitoring and research studies: Benthic habitat mapping and characterization: baseline information for entire reserve (Yoklavich, VenTresca). Mapping ocean currents and related hydrographic studies: ongoing research (C. Collins, F. Schwing). Benthic fish surveys: baseline research; deep (Yoklavich), subtidal (VenTresca, Paddock). Benthic Invertebrates; some baseline; intertidal (Pearse); subtidal (Mira Parks). Local Fishery (social aspects; Pomeroy, Smiley). PISCO long-term subtidal monitoring site (Carr)

Basic Evaluation: This site contains a variety of habitats with hard and soft substrates, including kelp beds, and is one of the few existing MPAs which extend to 50 fm depth. This site functions well as a completely protected area while allowing research, particularly the documentation of population densities of nearshore and offshore fishes. Studies by the Department, National Marine Fisheries Service, and others have quantified density and size frequency of populations of rockfishes, lingcod, cabezon, and other economically important finfishes within and outside the MPA boundaries, and have found significant numbers of large, reproductively mature fishes within as well as adjacent to this site. Populations of fishes in adjacent areas are of higher density than within fished areas closer to ports, primarily due to the remoteness of the areas and their difficult access from shore. If fishing pressure increases in the future in adjacent areas, the MPA will continue to serve as a baseline for indices of natural populations. The MPA benefits from the presence of an on-site manager and has excellent enforcement.

Published references related to effectiveness of this MPA: 54, 137, 144, 145, 198, 201, 215, 216

Unpublished references related to effectiveness of this MPA: 58, 59, 60, 64, 102, 103, 106, 115, 136, 139, 143, 152, 153, 154, 155, 156, 157, 158, 182, 196, 197, 210, 216

Published references related to use of this MPA as a research tool: 145, 146

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

SAN LUIS OBISPO COUNTY

Site name: Atascadero Beach State Marine Conservation Area

Year established: 1985

Approximate Area: 3.9 nm²

Approximate Shoreline length: 1.5 nm

Approximate Depth range (feet): 0 to 115

Habitat types: 100% soft bottom

Surrounding Habitat types: similar

Summary of existing regulations: Take of clams is prohibited. Take of other living marine resources is allowed.

Primary objectives: Protect Pismo clams from over harvest

Existing enforcement: Department provides enforcement from shore. The primary purpose of enforcement would be to prevent harvest of sub-legal size clams.

Baseline and ongoing monitoring and research studies: Transects sampled in winter by The Department to monitor recruitment of young.

Basic Evaluation: Between 1990 and 1994, sea otters established themselves within the area containing the three Pismo clam state marine conservation areas (SMCA) in San Luis Obispo County. Foraging on the larger clams by otters reduced the availability of legal-sized clams (minimum 4.5 inches greatest shell diameter) to recreational harvesters. Department clam transects and interviews of recreational clam harvesters, conducted annually in the Pismo Beach to Morro Bay area, documented this event. For example, in 1990, 32 of 224 clammers interviewed on Pismo Beach harvested 204 legal-sized clams (6.4 per person). In 1994 and subsequent years, department transects yielded virtually no clams over 3 inches in diameter.

For these reasons, the three state marine conservation areas designed to protect and augment the population of legal-sized Pismo clams no longer meet their original objective.

Published references related to effectiveness of this MPA: 140

Unpublished references related to effectiveness of this MPA: 138

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Morro Beach State Marine Conservation Area

Year established: 1985

Approximate Area: 4.9 nm²

Approximate Shoreline length: 1.9 nm

Approximate Depth range (feet): 0 to 115

Habitat types: 100% soft bottom

Surrounding habitat types: similar

Summary of existing regulations: Take of clams is prohibited. Take of other living marine resources is allowed.

Primary objectives: Protect Pismo clams from over harvest

Existing enforcement: Department provides enforcement from shore. The primary purpose of enforcement would be to prevent harvest of sub-legal size clams.

Baseline and ongoing monitoring and research studies: Transects sampled in winter by The Department to monitor recruitment of young.

Basic Evaluation: Between 1990 and 1994, sea otters established themselves within the area containing the three Pismo clam state marine conservation areas (SMCA) in San Luis Obispo County. Foraging on the larger clams by otters reduced the availability of legal-sized clams (minimum 4.5 inches greatest shell diameter) to recreational harvesters. Department clam transects and interviews of recreational clam harvesters, conducted annually in the Pismo Beach to Morro Bay area, documented this event. For example, in 1990, 32 of 224 clammers interviewed on Pismo Beach harvested 204 legal-sized clams (6.4 per person). In 1994 and subsequent years, department transects yielded virtually no clams over 3 inches in diameter.

For these reasons, the three state marine conservation areas designed to protect and augment the population of legal-sized Pismo clams no longer meet their original objective.

Published references related to effectiveness of this MPA: 140

Unpublished references related to effectiveness of this MPA: 138

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Pismo State Marine Conservation Area

Year established: 1977

Approximate Area: 0.05 nm²

Approximate Shoreline length: 0.3 nm

Approximate Depth range (feet): 0 to 16

Habitat types: 100% soft bottom

Surrounding habitat types: similar

Summary of existing regulations: Take of all invertebrates and marine aquatic plants is prohibited except the commercial take of algae other than giant kelp and bull kelp. Take of finfish is allowed.

Primary objectives: To establish baseline for sea otter impact to clam population

Existing enforcement: Department provides enforcement from shore. The primary purpose of enforcement would be to prevent harvest of sub-legal size clams.

Baseline and ongoing monitoring and research studies: Transects sampled by The Department in winter to monitor recruitment of young.

Basic Evaluation: Between 1990 and 1994, sea otters established themselves within the area containing the three Pismo clam state marine conservation areas (SMCA) and the one invertebrate SMCA in San Luis Obispo County. Foraging on the larger clams by otters reduced the availability of legal-sized clams (minimum 4.5 inches greatest shell diameter) to recreational harvesters. Department clam transects and interviews of recreational clam harvesters, conducted annually in the Pismo Beach to Morro Bay area, documented this event. For example, in 1990, 32 of 224 clammers interviewed on Pismo Beach harvested 204 legal-sized clams (6.4 per person). In 1994 and subsequent years, department transects yielded virtually no clams over 3 inches in diameter.

While the primary purpose of this invertebrate conservation area was to protect and enhance populations of Pismo clams, the general objective was to provide protection from human harvest to all invertebrates. While this SMCA no longer meets its objective related to Pismo clams, it does provide a long-term index of intertidal and shallow subtidal soft-bottom invertebrate populations in the absence of fishing. For this reason it would be useful to retain this small MPA to continue this long-term index.

Published references related to effectiveness of this MPA: 140

Unpublished references related to effectiveness of this MPA: 138

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

Site name: Pismo-Oceano State Marine Conservation Area

Year established: 1985

Approximate Area: 11.9 nm²

Approximate Shoreline length: 4.6 nm

Approximate Depth range (feet): 0 to 115

Habitat types: 100% soft bottom

Surrounding habitat types: similar

Summary of existing regulations: Take of clams is prohibited. Commercial take of giant kelp and bull kelp is prohibited. Take of other living marine resources is allowed.

Primary objectives: Protect Pismo clams from over harvest

Existing enforcement: Department provides enforcement from shore. The primary purpose of enforcement would be to prevent harvest of sub-legal size clams.

Baseline and ongoing monitoring and research studies: Transects sampled in winter by The Department to monitor recruitment of young.

Basic Evaluation: Between 1990 and 1994, sea otters established themselves within the area containing the three Pismo clam state marine conservation areas (SMCA) in San Luis Obispo County. Foraging on the larger clams by otters reduced the availability of legal-sized clams (minimum 4.5 inches greatest shell diameter) to recreational harvesters. Department clam transects and interviews of recreational clam harvesters, conducted annually in the Pismo Beach to Morro Bay area, documented this event. For example, in 1990, 32 of 224 clammers interviewed on Pismo Beach harvested 204 legal-sized clams (6.4 per person). In 1994 and subsequent years, department transects yielded virtually no clams over 3 inches in diameter.

For these reasons, the three state marine conservation areas designed to protect and augment the population of legal-sized Pismo clams no longer meet their original objective.

Published references related to effectiveness of this MPA: 140

Unpublished references related to effectiveness of this MPA: 138

Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the Central Coast (Department of Fish and Game, 2005)

SANTA BARBARA COUNTY

Site name: Vandenberg State Marine Reserve

Year established: 1994

Approximate Area: 2.0 nm²

Approximate Shoreline length: 4.5 nm

Approximate Depth range (feet): 0 to 60

Habitat types: The area contains a mixture of hard and soft bottom. This is a high energy area that is likely heavily scoured.

Surrounding habitat types: Fairly similar to the north, south, and offshore, although a higher percentage of soft bottom to the north.

Summary of existing regulations: No take is allowed. No disturbance of bottom; no boats, diving or other use (boat transit only); public entry restricted. In offshore area outside boundaries a recent ban on gill nets was enacted legislatively.

Primary objectives: To satisfy requirements of the Marine Resources Protection Act of 1990 the Fish and Game Commission was required to establish four ecological reserves along the mainland coast. The Vandenberg State Marine Reserve (originally named the Vandenberg Marine Resources Protection Act Ecological Reserve) was one of the reserves established pursuant to the Act. The Act specified that the specific purpose of these reserves was "to provide for scientific research related to the management and enhancement of marine resources".

Existing enforcement: Access from land is restricted via Vandenberg Air Force Base security restrictions. This is a very remote location that is publicly inaccessible from land and sea.

Baseline and ongoing monitoring and research studies:

Benthic habitat mapping (Cochrane USGS). Mapping ocean currents and related hydrographic studies: ongoing research (Russ Vetter, NMFS). Eggs and larval fish surveys: research (Vetter, NMFS). Abalone enhancement, growth studies (Friedman, Haaker). Intertidal invertebrate surveys (PISCO-Pete Raimondi, UCSC; Steve Murray). Evaluation of effects of oil spill on intertidal (Pete Raimondi, UCSC; Andy Lisner, MMS). Some baseline data on fish abundance in the adjacent Purisima Point area exists from a Department research cruise in 1998.

Basic Evaluation: This site contains primarily shallow soft-bottom substrate but includes some low-relief subtidal reef. Based on Department surveys in the late 1990s, the site and the immediately adjacent area appear to function well in protecting high population densities of black abalone. The adjacent area, while not within an MPA, benefits from military-imposed restricted access. No other sites along the southern California mainland contain high densities of black abalone. An existing military closure near the area (Safety Zone 4) is enforced as a no-stopping area by the Air Force.

Unpublished references related to effectiveness of this MPA: 55

Published references related to use of this MPA as a research tool: 56, 205