

California Marine Life Protection Act Initiative North Central Coast Project

[PHOTO to be INSERTED]

**Draft Regional Profile of the
MLPA North Central Coast Study Region
(Alder Creek in Mendocino County to
Pigeon Point in San Mateo County)**

DRAFT

***March 16, 2007
(version 1.0)***

Contents

Executive Summary	
1.0 Introduction	
2.0 Description of the North Central Coast Study Region.....	
3.0 Ecological Setting	
3.1 Ecosystems and Habitats	
3.1.1 Depth Categories	
3.1.2 Intertidal Zones	
3.1.3 Estuaries and Lagoons	
3.1.4 Seagrass Beds.....	
3.1.5 Kelp Forests.....	
3.1.6 Sandy/Soft Bottoms	
3.1.7 Hard Bottom / Rocky Reefs	
3.1.8 Underwater Pinnacles.....	
3.1.9 Submarine Canyons	
3.1.10 Oceanographic Habitats	
3.1.11 Rocks and Islands.....	
3.2 Important Regional Species.....	
3.2.1 Species likely to benefit from MPAs.....	
3.2.2 Depleted and Overfished Species	
3.2.3 Special Status Species	
3.3 Areas of Biodiversity Significance.....	
4.0 Land-Sea Interactions.....	
4.1 Ecological linkages	
4.2 Coastal Watersheds and Land Use in Study Region.....	
4.3 Coastal Water Quality.....	
4.3.1 Impaired Water Bodies in the North Central Coast Study Region	
4.3.2 Beach Closures.....	
4.4 Effects of Land Use on Coastal Waters	
4.4.1 Impacts of Local Geology on Water Quality.....	
4.4.2 Nonpoint Sources	
4.4.3 Point Sources.....	
4.5 Some Water-Quality Projects in the North Central Coast Study Region	
4.5.1 Water Quality Monitoring Programs in the Monterey Bay National Marine Sanctuary and the Gulf of the Farallones National Marine Sanctuary	
4.5.2. U.S. Environmental Protection Agency Projects.....	
4.5.3 Other Water Quality and Monitoring Programs	
5.0 Socioeconomic Setting	
5.1 Coastal Counties.....	
5.1.1 Mendocino County	
5.1.2 Sonoma County	
5.1.3 Marin County.....	
5.1.4 San Francisco County.....	
5.1.5 San Mateo County	
5.2 Coastal Communities.....	
5.3 Population Projections	

- 5.4 Commercial Fisheries
- 5.5 Kelp and Aquaculture Leases
- 5.5.1 Synopsis of Kelp Bed Lease Status and Kelp Harvest Regulations
- 5.5.2 Aquaculture Leases
- 5.6 Recreational Fisheries
- 5.7 Scientific Collecting
- 5.8 Coastal Tourism
- 5.9 Non-consumptive Uses
- 5.9.1 Recreational Beach Use
- 5.9.2 Boating
- 5.9.3 Recreational SCUBA Diving
- 5.9.4 Other Recreational Activities
- 5.9.5 Tidepool Visitors and Wildlife Watching From Shore
- 5.10 Navigation
- 5.10.1 Lighthouses
- 5.10.2 Vessel Traffic
- 6.0 Academic Institutions, Research, Public Outreach, and Education
- 6.1 Major Marine Institutions in the North Central Coast Study Region. **Error! Bookmark not defined.**
- 6.2 Scientific Research and Collecting
- 6.3 Public Education and Outreach
- 7.0 Jurisdiction & Management
- 7.1 Federal, State, Local & Native American Jurisdiction and Programs
- 7.1.1 Federal Agencies and Programs
- 7.1.2 State Agencies and Programs
- 7.1.3 Local Government Programs
- 7.1.4 Native American jurisdiction/treaty rights
- 7.2 Non-governmental Organizations and Programs
- 8.0 Existing MPAs & Coastal Protected Areas
- 8.1 Existing State Marine Protected Areas in the Study Region
- 8.2 Marine Managed Areas and Other Fishery Closures
- 8.2.1 National Marine Sanctuaries
- 8.2.2 Fishery Closures
- 8.3 Military and Powerplant Closures
- 8.4 Terrestrial Protected Areas in Coastal Watersheds
- 9.0 Evaluation of Existing MPAs
- 9.1 Protection Levels of Existing MPAs
- 9.2 Habitat Protection of Existing MPAs (Goals 1 and 4)
- 9.3 Size and Spacing of Existing MPAs (Goals 2 and 6)
- 9.4 Recreational, Educational, and Study Opportunities (Goal 3)
- 9.5 Summary Evaluation of Existing MPAs
- 10.0 Summary by Subregion
- 10.1 Alder Creek/Point Arena to Horseshoe Point (Subregion 1)
- 10.1.1 Ecological Setting
- 10.1.2 Land-Sea Interactions
- 10.1.3 Socioeconomic Setting
- 10.1.4 Research and Monitoring
- 10.1.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas
- 10.1.6 Other Issues
- 10.2 Horseshoe Point to Bodega Head (Subregion 2)
- 10.2.1 Ecological Setting

10.2.2 Land-Sea Interactions
10.2.3 Socioeconomic Setting
10.2.4 Research and Monitoring
10.2.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas.....
10.2.6 Other Issues.....
10.3 Bodega Head to Double Point (Subregion 3).....
10.3.1 Ecological Setting
10.3.2 Land-Sea Interactions.....
10.3.3 Socioeconomic Setting
10.3.4 Research and Monitoring.....
10.3.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas
10.3.6 Other Issues.....
10.4 Double Point to Point San Pedro (Subregion 4)
10.4.1 Ecological Setting
10.4.2 Land-Sea Interactions.....
10.4.3 Socioeconomic Setting
10.4.4 Research and Monitoring.....
10.4.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas.....
10.4.6 Other Issues.....
10.5 Point San Pedro to Pigeon Point (Subregion 5).....
10.5.1 Ecological Setting
10.5.2 Land-Sea Interactions.....
10.5.3 Socioeconomic Setting
10.5.4 Research and Monitoring.....
10.5.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas.....
10.5.6 Other Issues.....
10.6 Farallon Islands (Subregion 6).....
10.6.1 Ecological Setting
10.6.2 Land-Sea Interactions.....
10.6.3 Socioeconomic Setting
10.6.4 Research and Monitoring.....
10.6.5 Existing MPAs, Marine Managed Areas, and Coastal Protected Areas.....
10.6.6 Other Issues.....
11.0 Conclusion
12.0 References Cited

Tables

Table 1: Approximate Amount of Each Habitat in North Central Coast Study Region, Bioregion, and Statewide in State Waters
Table 2: Depth Zone as Percent of North Central Coast Study Region.....
Table 3: Summary of the Linear Length and Percentage of Total Shoreline
Table 4: Approximate Amount of Hard and Soft Bottom Habitats by Depth Zone in Study Region.....
Table 5: Oceanic Seasons in North Central California
Table 6: Major Watersheds in the Study Region
Table 7: SWQPA's in the North Central Coast Study Region.....
Table 8: Critical Coastal Areas in the Study Region.....

Table 9: Impaired Water Bodies in Region 1

Table 10: Impaired Water Bodies in Region 2

Table 11: Beach Closings/Advisories by County: Year-to-Year Comparison

Table 12: Beach Closures in 2005 in the Study Region by County

Table 13: Point Sources in the North Central Coast Study Region

Table 14: Population, Unemployment, Per-Capita Income, Median Household Income, and % of Population Below Poverty Line for Some Communities Within the Study Region (U.S. Census Bureau 2006).....

Table 15: Total Population, Population Change, and Projected Growth in Coastal Counties in the Study Region (California Department of Finance 2004; U.S. Census Bureau 2006)

Table 16: Kelp Bed Location and Lease Status in the North Central Coast Study Region (as of October 19, 2006).

Table 17: Summary of Active Tomales Bay, Drakes Estero, and Pillar Point Harbor Aquaculture Lessees, Lease Acreage, Acreage in Use, Approved Species, and Approved Culture Methods.....

Table 18: Ten Most Frequently Visited California State Parks Adjacent to the Shore in Study Region (California Department of Parks and Recreation 2006).....

Table 19: Participation in Coastal Recreation in CA.....

Table 20: California State Park Revenue for Parks Located Adjacent to Shore in North Coast Study Region 2004/2005 (California Department of Parks and Recreation 2006)

Table 21: Surfing Spots in the Study Region (Locations taken from maps located on the www.surflife.com).

Table 22: Facilities at Beaches in the North Central Coast Study Region (Point Arena to Pigeon Point)

Table 23: Number of Trailored Private and Rental Boats (CRFS).

Table 24: Number of registered recreational marine or aquatic vessels in the North Central Coast Study Region as of December 31, 2005 (California Department of Motor Vehicles 2006).....

Table 25: Marinas in or Adjacent to the Study Region (Charternet.com; Marina Recreational Association; Boatharbors.com).....

Table 26: Boat Launch Locations within the Study Region (www.boatrampslocator.com).

Table 27: Some SCUBA Diving Sites in the Study Region (<http://www.jawsclub.org/coast.html>).

Table 28: Partial List of Popular Kayak Sites in the Study Region

Table 29: Tidepooling Sites

Table 30: Active Lighthouses in Study Region

Table 31: Research and Monitoring Programs in the Study Region.....

Table 32: Academic, research, and education institutions with a focus on coastal and marine ecosystems in north central California.....

Table 33: National Parks Adjacent to the Study Region.....

Table 34: California State Parks Located Adjacent to Shore in Study Region 2004/2005 (California Department of Parks and Recreation 2006).

Table 35: Existing State MPAs in North Central Coast Study Region

Table 36: Summary of Terrestrial Protected Areas.....

Table 37: Subregional Summary of Habitats [square miles (% of total in study region)]

Figures

Figure 1: Mendocino County Ocean Economy Wages by Sector (Note: All dollar values are converted to year 2000 equivalents) (National Ocean Economics Program 2006).....

Figure 2: Sonoma County Ocean Economy Wages by Sector (Note: All dollar values are converted to year 2000 equivalents) (National Ocean Economics Program 2006).....

Figure 3: Marin County Ocean Economy Wages by Sector (Note: All dollar values are converted to year 2000 equivalents) (National Ocean Economics Program 2006).....

Figure 4: San Francisco County Ocean Economy Wages by Sector (Note: All dollar values are converted to year 2000 equivalents) (National Ocean Economics Program 2006).

Figure 5: San Mateo County Ocean Economy Wages by Sector (Note: All dollar values are converted to year 2000 equivalents) (National Ocean Economics Program 2006).

Figure 6: Employment by Sector of the Economy for Some Communities Within the Study Region (U.S. Census Bureau 2006).....

Figure 7: Total and Projected Population for Mendocino, Sonoma, Marin, San Francisco, and San Mateo Counties for 2000, 2010, and 2050 (California Department of Finance 2004).

Figure 8: Total Travel Spending by County, 1994-2004 (California Travel and Tourism Commission 2006).

Figure 9: Legal jurisdictions offshore California (California Resources Agency 1997).

Maps

Map 1: North Central Coast Study Region and Existing State Marine Protected Areas

Map 2a: Intertidal and Nearshore Habitats – Subregion 1

Map 2b: Intertidal and Nearshore Habitats – Subregion 2

Map 2c: Intertidal and Nearshore Habitats – Subregion 3

Map 2d: Intertidal and Nearshore Habitats – Subregion 4

Map 2e: Intertidal and Nearshore Habitats – Subregion 5

Map 2f: Intertidal and Nearshore Habitats – Subregion 6

Map 3a: Soft and Hard Bottom and Canyon Habitats – Subregion 1

Map 3b: Soft and Hard Bottom and Canyon Habitats – Subregion 2

Map 3c: Soft and Hard Bottom and Canyon Habitats – Subregion 3

Map 3d: Soft and Hard Bottom and Canyon Habitats – Subregion 4

Map 3e: Soft and Hard Bottom and Canyon Habitats – Subregion 5

Map 3f: Soft and Hard Bottom and Canyon Habitats – Subregion 6

Map 4a: Oceanographic Patterns, Typical Year

Map 4b: Oceanographic Patterns, El Nino Year

Map 5a: Seabird and Marine Mammal Biodiversity – North portion of study region

Map 5b: Seabird and Marine Mammal Biodiversity – South portion of study region

Map 6a: Fish Biodiversity – North portion of study region

Map 6b: Fish Biodiversity – South portion of study region

Map 7a: Rockfish Hotspots – Canary Rockfish

Map 7b: Rockfish Hotspots – Black Rockfish

Map 7c: Rockfish Hotspots – Yelloweye Rockfish

Map 7d: Rockfish Hotspots – Boccacio

Map 7e: Rockfish Hotspots – Lingcod

Map 8a: Coastal Watershed Impacts – Percent Urban

Map 8b: Coastal Watershed Impacts – Percent Agricultural

Map 8c: Coastal Watershed Impacts – Road Density

Map 9a: Areas of Water Quality Concern – North portion of study region

Map 9b: Areas of Water Quality Concern – South portion of study region

Map 10a: California Recreational Fisheries Survey – Rockfish
Map 10b: California Recreational Fisheries Survey – Salmon
Map 10c: California Recreational Fisheries Survey – Halibut
Map 11a: Commercial Passenger Fishing Vessel Survey: Target Species Rockfish and Lingcod
Map 11b: Commercial Passenger Fishing Vessel Survey: Target Species Salmon
Map 12: Commercial Logbook Data
Map 13a: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 1
Map 13b: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 2
Map 13c: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 3
Map 13d: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 4
Map 13e: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 5
Map 13f: Coastal Communities, Coastal Access, and Recreational Use Areas – Subregion 6
Map 14a: Research, Education and Monitoring sites – North portion of study region
Map 14b: Research, Education and Monitoring sites – South portion of study region
Map 15a: Existing Marine and Coastal Managed Areas – Subregion 1
Map 15b: Existing Marine and Coastal Managed Areas – Subregion 2
Map 15c: Existing Marine and Coastal Managed Areas – Subregion 3
Map 15d: Existing Marine and Coastal Managed Areas – Subregion 4
Map 15e: Existing Marine and Coastal Managed Areas – Subregion 5
Map 15f: Existing Marine and Coastal Managed Areas – Subregion 6
Map 16: Groundfish Closures

Appendices

Appendix I: Spatial Data Layers Available for MPA Planning on the North Central Coast
Appendix II (a): List of Fishes Likely to Benefit from the Establishment of Marine Protected Areas in Central California (to be updated by SAT for North Central Coast)
Appendix II (b): List of Invertebrates and Plants Likely to Benefit from the Establishment of Marine Protected Areas in Central California (to be updated by SAT for North Central Coast)
Appendix II (c): Special Status Species in the North Central Coast
Appendix III: Profile of Commercial Fisheries for the North Central Coast Study Region
Appendix IV: Profile of Major Recreational Fisheries in the North Central Coast Study Region
Appendix V: Descriptions and Preliminary Evaluations of Existing California Marine Protected Areas in the North Central Coast