

**Monitoring Framework for Central Coast MPA Objectives from the  
MLPA Baseline Science-Management Panel**

**Excerpted from the draft  
*California Marine Life Protection Act Master Plan for  
Marine Protected Areas (April 2007), pages 147-155***

Table 5. Central coast MPA objectives that will be met (or mostly met) by adoption and implementation of the MPA. For full objectives see section 8.4.1 above.

MLPA Goal By Number	MPAs	General Objective	Overarching Question	Monitoring Activity
2	Soquel Canyon SMCA Portuguese Ledge SMCA Point Lobos SMCA Point Buchon SMCA	Protect rockfishes and other components of a deep benthic community, while allowing some harvest	Is take of rockfish prohibited while other harvest is allowed?	Completed by adoption of MPA; will require monitoring of use to confirm
2	Elkhorn Slough SMP	Provide for traditional recreational consumptive and nonconsumptive uses while offering some protection due to the prohibition of commercial fishing.	Does the MPA allow for recreational and nonconsumptive uses and prohibit commercial ones?	Completed by adoption of MPA; will require monitoring of use to confirm
2	Carmel Bay SMCA	Allow continued recreational harvest of finfish and commercial harvest of kelp by hand in an area of historic recreational use value near Monterey harbor while protecting invertebrates.	Does the MPA allow continued uses and prohibit take of invertebrates?	Completed by adoption of MPA; will require monitoring of use to confirm
3	Elkhorn Slough SMR Soquel Canyon SMCA Portuguese Ledge SMCA Ed Ricketts SMCA Lovers Point SMR Pacific Grove Marine Gardens SMCA Carmel Bay SMCA Point Lobos SMR Point Lobos SMCA Big Creek SMCA Big Creek SMR Cambria SMR Morro Bay SMRMA Morro Bay SMR Point Buchon SMR Vandenbergh SMR	Provide increased research, education and study opportunities	Is MPA adjacent or near to research facilities or sites and do research and education activities increase over time?	Partially completed by adoption of MPA, track research and education activities.
3	Big Creek SMCA Big Creek SMR	Provide opportunities afforded by a nearby terrestrial reserve...to link classroom curricula.	Does MPA provide opportunity to link to classroom curricula?	Completed by adoption of MPA; will require monitoring of use to confirm
3	Big Creek SMCA Big Creek SMR	Provide opportunities for collaborative research projects involving commercial fishermen, including a possible study on the impact of salmon fishing.	Does MPA provide opportunities for collaborative research?	Completed by adoption of MPA; will require monitoring of use to confirm
3	Ed Ricketts SMCA Pacific Grove Marine Gardens SMCA	Promote opportunity for use of volunteer scuba divers in research and monitoring projects by establishing a state marine conservation area in a location heavily used by scuba divers where volunteer monitoring ...already takes place.	Is the MPA in an area where volunteer monitoring takes place?	Completed by adoption of MPA; will require monitoring of use to confirm

MLPA Goal By Number	MPAs	General Objective	Overarching Question	Monitoring Activity
3	Pacific Grove Marine Gardens SMCA Carmel Bay SMCA	Maintain an existing state marine conservation area located near a population center that is accessible for recreational opportunities, both consumptive and non-consumptive. Allow for the comparison of a recreational fishing area adjacent to a no-take area.	Is the MPA near the population center and accessible to recreational opportunities?  Does the MPA allow for take/no-take comparison?	Completed by adoption of MPA  Completed by adoption of MPA
3	Año Nuevo SMR Point Lobos SMR Point Sur SMR Pt. Buchon SMR	Site a marine protected area adjacent to a terrestrial state park or state reserve ...	Is MPA adjacent to a State Park or Reserve?	Año Nuevo State Reserve, Point Lobos State Reserve, Point Sur State Historic Park, and Montaña de Oro  Completed by adoption of MPA
5	Point Lobos SMR Point Lobos SMCA Big Creek SMCA Big Creek SMR Point Buchon SMR Point Buchon SMCA	Establish marine protected area complexes that meet Master Plan Framework scientific guidelines for minimum size	Does complex meet minimum guidelines?	Completed by adoption of MPA
5	Soquel Canyon SMCA Portuguese Ledge SMCA Point Sur SMR Point Sur SMCA Piedras Blancas SMR Piedras Blancas SMCA Vandenberg SMR	Establish marine protected areas or complexes that meet Master Plan Framework scientific guidelines regarding preferred size.	Does the MPA meet the preferred size guidelines?	Completed by adoption of MPA
5	Ed Ricketts SMCA	Minimize negative socio-economic impacts by establishing a state marine conservation area which allows recreational fishing and hand harvest of kelp by local aquaculturists, while affording protection to invertebrates and prohibiting all other commercial take.	Does MPA allow recreational fishing and hand harvest of kelp and prohibit other take?	Completed by adoption of MPA
5	Pacific Grove Marine Gardens SMCA	Allow continued recreational fishing in traditional use area and hand harvest of kelp close to abalone aquaculture facilities.	Are recreational fishing and kelp harvest allowed in the area?	Completed by adoption of MPA
5	Morro Bay SMRMA	Minimize negative socio-economic impacts by establishing a state marine recreational management area in a location that has experienced relatively little fishing effort but has been a traditional waterfowl hunting area.	Does the area allow waterfowl hunting while prohibiting other take?	Completed by adoption of MPA

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5	Morro Bay SMR	Minimize negative socio-economic impacts by establishing a state marine reserve in a location that is already closed to fishing...	Is the area already closed to fishing?	Completed by adoption of MPA

Table 6. Central coast MPA monitoring activities based upon MLPA Goals and general individual MPA objectives. For full objectives see section 8.4.1 above.

<b>MLPA Goal By Number</b>	<b>MPAs</b>	<b>General Objective</b>	<b>Overarching Question</b>	<b>Potential Monitoring Activity and Frequency</b>
1	Año Nuevo SMR Greyhound Rock SMCA Soquel Canyon SMCA Portuguese Ledge SMCA Point Lobos SMR Point Sur SMR Point Sur SMCA Big Creek SMCA Big Creek SMR Piedras Blancas SMR Piedras Blancas SMCA Cambria SMR Morro Bay SMRMA Morro Bay SMR Point Buchon SMR Vandenberg SMR	Protect area of high species diversity...and maintain species diversity and abundance...	Do species richness and/or diversity stay the same or increase in MPAs relative to areas of similar habitat adjacent to and distant from MPAs?	Measure community structure and species composition including habitat forming species within and outside MPAs over time  Monitoring frequency should occur annually to every other year, except Morro Bay SMRMA and Morro Bay SMR bird diversity should be monitored upon implementation and every 3 <sup>rd</sup> year thereafter
1	Año Nuevo SMR Soquel Canyon SMCA Portuguese Ledge SMCA Carmel Pinnacles SMR Point Lobos SMR Point Lobos SMCA Point Sur SMR Point Sur SMCA Big Creek SMCA Big Creek SMR Piedras Blancas SMR Piedras Blancas SMCA Cambria SMR Morro Bay SMRMA Morro Bay SMR Point Buchon SMR Vandenberg SMR	Protect marine communities associated with various diverse habitats	Is the habitat present and does it persist in a viable state within the MPA?	Monitor habitat presence, composition, and status over time  Monitoring frequency should occur upon implementation and every 3 <sup>rd</sup> year thereafter,

MLPA Goal By Number	MPAs	General Objective	Overarching Question	Potential Monitoring Activity and Frequency
1	<p>Año Nuevo SMR            Greyhound Rock SMCA            Elkhorn Slough SMR            Elkhorn Slough SMP            Point Lobos SMR            Point Sur SMR            Point Sur SMCA            Big Creek SMCA            Big Creek SMR            Piedras Blancas SMR            Piedras Blancas SMCA            Cambria SMR            Morro Bay SMRMA            Morro Bay SMR            Point Buchon SMR            Vandenberg SMR</p>	<p>Protect natural size and age structure and genetic diversity of various marine species populations</p>	<p>Do focal species inside marine reserves increase in size, numbers, and biomass relative to areas of similar habitat adjacent to and distant from MPAs?</p>	<p>Measure size range, density, and makeup of focal species assemblages within, adjacent to and far from MPAs</p> <p>Monitoring frequency should occur annually to every other year</p>
1	<p>Año Nuevo SMR            Point Lobos SMR            Point Sur SMR            Point Sur SMCA            Piedras Blancas SMR            Piedras Blancas SMCA            Cambria SMR            Morro Bay SMRMA            Morro Bay SMR            Point Buchon SMR            Vandenberg SMR</p>	<p>Protect natural trophic structure and food web including forage base ...for listed marine birds and marine mammals as well as higher trophic level fish...</p>	<p>Is the food web integrity greater within the MPA than outside: Do the abundance and size/age structure of key predator and prey species differ inside and outside MPAs in areas of comparable habitat?</p>	<p>Map trophic relationships then estimate biomass for different trophic levels and measure average weight of higher trophic level species where possible</p> <p>Monitoring frequency should occur every 3<sup>rd</sup>-5<sup>th</sup> year</p>
1	<p>Año Nuevo SMR            Point Lobos SMR            Big Creek SMR            Point Buchon SMR            Vandenberg SMR</p>	<p>Protect ecosystem structure and functions associated with various habitats</p>	<p>Is the proportion of area within which focal species are restored to or maintained at self replenishing levels greater within the MPA than in similar habitats outside?</p>	<p>Use community structure and focal species size range and density data to model ability to replenish</p> <p>Monitoring frequency should occur every 3<sup>rd</sup>-5<sup>th</sup> year</p>
1	<p>Elkhorn Slough SMR            Elkhorn Slough SMP</p>	<p>Protect estuarine area with high bird diversity.</p>	<p>Does MPA contain high bird diversity and is this diversity maintained?</p>	<p>Monitor bird diversity within and outside the area over time.</p> <p>Monitoring frequency should occur upon implementation and every 3<sup>rd</sup> year thereafter</p>

MLPA Goal By Number	MPAs	General Objective	Overarching Question	Potential Monitoring Activity and Frequency
1	Elkhorn Slough SMR Elkhorn Slough SMP	Protect area with diversity of estuarine habitats...	Is the habitat present and does it persist in a viable state within the MPA?	Monitor habitat presence, composition, and status over time  Monitoring frequency should occur upon implementation and every 3 <sup>rd</sup> year thereafter
1	Elkhorn Slough SMR Morro Bay SMRMA Morro Bay SMR	Protect natural structure and food web of estuarine system...	Is the food web integrity greater within the MPA than outside: Do the abundance and size/age structure of key predator and prey species differ inside and outside MPAs in areas of comparable habitat?	Map trophic relationships then estimate biomass for different trophic levels and measure average weight of higher trophic level species where possible  Monitoring frequency should occur upon implementation and every 3 <sup>rd</sup> year thereafter
1	Soquel Canyon SMCA Portuguese Ledge SMCA	Help restore overfished species by maintaining large individuals	Do focal species inside MPAs increase in size, numbers, and biomass relative to areas of similar habitat adjacent to and distant from MPAs?	Measure size range, density, and makeup of focal species assemblage within, near and distant from MPA over time  Monitoring frequency should occur annually to every other year
1	Point Sur SMR Point Sur SMCA	Provide protection to species associated with an area that contains a persistent upwelling plume and generally southerly flow, well-suited to provide larval dispersal to other areas.	Proportion of area within which focal species are restored to or maintained at self replenishing levels	Use community structure and focal species size range and density data to model ability to replenish  Monitoring frequency should occur every 3 <sup>rd</sup> -5 <sup>th</sup> year in the Point Sur SMR and once upon implementation in the Point Sur SMCA

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2	Ed Ricketts SMCA	Protect invertebrates and the habitats on which they depend while allowing the harvest of finfish and kelp.	Do species richness and/or diversity stay the same or increase in MPAs relative to areas of similar habitat adjacent to and distant from MPAs?	Measure community structure and species composition including habitat forming species within and outside MPAs over time  Monitoring frequency should occur annually to every other year
2	Año Nuevo SMR Greyhound Rock SMCA Elkhorn Slough SMR Soquel Canyon SMCA Portuguese Ledge SMCA Point Lobos SMR Point Lobos SMCA Point Sur SMR Point Sur SMCA Big Creek SMCA Big Creek SMR Piedras Blancas SMR Piedras Blancas SMCA Cambria SMR Point Buchon SMR Vandenberg SMR	Protect larval source and enhance reproductive capacity of various species including overfished species	Do reserves retain large, mature, fecund individuals of selected species and do recruitment rates of selected species change over time inside marine reserves versus areas outside?	Measure size range, density, and makeup of focal species assemblage and relative recruitment <sup>23</sup> rates of selected species inside and outside MPAs  Monitoring frequency should occur annually to every other year
2	Lovers Point SMR Cambria SMR Morro Bay SMRMA Morro Bay SMR	Protect large individuals of resident marine species in known nursery area.	Do focal species inside MPAs increase in size, numbers, and biomass relative to areas of similar habitat adjacent to and distant from MPAs?	Measure size range, density, and makeup of focal species assemblage within, near and distant from MPA over time  Monitoring frequency should occur annually to every other year

<sup>23</sup> **Recruitment:** The amount of fish added to the exploitable stock each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to the fishing gear in one year would be the recruitment to the fishable population that year. This term is also used in referring to the number of fish from a year class reaching a certain age. For example, all fish reaching their second year would be age 2 recruits. (Source: "Technical Terms" **NOAA's National Marine Fisheries Service Northeast Fisheries Science Center** [http://www.nefsc.noaa.gov/techniques/tech\\_terms.html](http://www.nefsc.noaa.gov/techniques/tech_terms.html))

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2	<p>Año Nuevo SMR            Greyhound Rock SMCA            Elkhorn Slough SMR            Moro Cojo Lagoon SMR            Point Lobos SMR            Point Sur SMR            Point Sur SMCA            Big Creek SMCA            Big Creek SMR            Morro Bay SMIRMA            Morro Bay SMR            Vandenberg SMR</p>	<p>Help protect various marine birds and mammals by protecting feeding, roosting, and nesting habitat...</p>	<p>Are foraging, roosting, and nesting behaviors different inside MPA versus outside and is disturbance greater in fished areas?</p>	<p>Use visual surveys of area before and after implementation to measure frequency of disturbance from sea and shore-based activities</p> <p>Monitoring should occur prior to implementation and three-times per year for the first 5 years</p> <p>Survey of students in the program</p>
3	<p>Piedras Blancas SMR</p>	<p>Enhance classroom component of research and monitoring as related to the Friends of the Elephant Seal organization.</p>	<p>Relative measure of ability to convey conservation message using local examples</p>	<p>Monitoring should occur prior to implementation then once per year for 5 years</p> <p>Monitor habitat presence, composition, and status over time</p>
3	<p>Elkhorn Slough SMR            Moro Cojo Lagoon SMR            Carmel Pinnacles SMR            Point Lobos SMR            Point Sur SMR            Big Creek SMR            Piedras Blancas SMR            Cambria SMR            Morro Bay SMRMA<sup>24</sup>            Morro Bay SMR            Point Buchon SMR            Vandenberg SMR</p>	<p>Replicate representative habitats within state marine reserves</p>	<p>Is the habitat present and does it persist in a viable state within the MPA?</p>	<p>Monitoring frequency should occur upon implementation and every 3<sup>rd</sup> year thereafter</p> <p>Surveys of divers to determine relative satisfaction</p>
3	<p>Lovers Point SMR            Pacific Grove Marine Gardens SMCA            Carmel Pinnacles SMR            Point Lobos SMR</p>	<p>Enhance recreational non-consumptive diving experience at site of traditional high diving use...</p>	<p>Are non-consumptive recreational experiences in areas subject to minimal disturbance improving? What are the attitudes and perceptions of users and their recreational experience and how has that changed over time?</p>	<p>Frequency of surveys should occur prior to implementation then 2-3 times per year for the first 5 years</p>

<sup>24</sup> Though not a true SMR, the Morro Bay SMRMA includes a component of no-take area equivalent in protection to an SMR



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3	Pacific Grove Marine Gardens SMCA	Enhance recreational fishing within the state marine conservation area through a prohibition on commercial take and by providing for a natural size and age structure of resident finfish species in an adjacent state marine reserve.	Is recreational fishing success (catch per unit of effort) improving along with changes in focal species size range, abundance and population structure	Surveys of fishermen and fishery dependent data from CRFS program combined with measuring size range, density, and makeup of focal species assemblage  Monitoring frequency should occur annually to every other year
4	Año Nuevo SMR Elkhorn Slough SMR Moro Cojo Estuary SMR Carmel Pinnacles SMR Point Lobos SMR Point Sur SMR Big Creek SMR Piedras Blancas SMR Cambria SMR Morro Bay SMR Point Buchon SMR Vandenberg SMR	Include and replicate various habitats in state marine reserves	Is the habitat present and does it persist in a viable state within the MPA?	Monitor habitat presence, composition, and status over time  Monitoring frequency should occur upon implementation and every 3 <sup>rd</sup> year thereafter
5	Soquel Canyon SMCA Portuguese Ledge SMCA Point Lobos SMCA	Minimize negative socio-economic impacts to the various fisheries while protecting benthic finfishes	Is take of benthic fishes prohibited while take of other species allowed and is catch per unit of effort in these fisheries maintained?	Partially completed by adoption of MPA. Track catch and effort in subject fisheries.  Monitoring should occur annually
5	Point Lobos SMR Piedras Blancas SMR	Optimize positive socio-economic benefits by improving protection in area that has particularly high non-consumptive use patterns...	Are non-consumptive recreational experiences in areas subject to minimal disturbance improving? What are the attitudes and perceptions of users and their recreational experience and how has that changed over time?	Surveys of non-consumptive users  Frequency of surveys should occur prior to implementation then 2-3 times per year for the first 5 years

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5	Point Lobos SMCA Point Sur SMR Point Sur SMCA Big Creek SMCA Big Creek SMR Point Buchon SMCA	Minimize negative socio-economic impacts by incorporating a portion of the Rockfish Conservation Area ...and considering other fisheries	Is take of rockfish prohibited while take of other species continues?	Partially completed by adoption of MPA. Track catch and effort in subject fishery.  Monitoring should occur annually