

REVISED* Request for Proposals

South Coast Marine Protected Areas (MPA) Baseline Program

(* changes indicated in red)

I. Funding Opportunity Description

The South Coast Marine Protected Areas (MPA) Baseline Program (Baseline Program) is a collaborative effort among the State Coastal Conservancy, Ocean Protection Council (OPC), Department of Fish and Game (DFG), MPA Monitoring Enterprise (Monitoring Enterprise), a program of the Ocean Science Trust, and California Sea Grant. The OPC has authorized \$4,000,000 to support the Baseline Program. Proposals are requested for projects that contribute to meeting the purposes of the Baseline Program, which are:

1. To provide a summary description, assessment and understanding of ecological and socioeconomic conditions in the South Coast region, inside and outside MPAs designated under the Marine Life Protection Act (MLPA), at or near the time of MPA implementation; and
2. To measure initial ecological changes and the short-run net benefits or costs to consumptive and non-consumptive user groups following MPA implementation.

Project proposals are due no later than 5:00 pm PDT April 7, 2011. Awards are expected to be made in early July 2011. Proposals will be accepted for projects of any duration, but to be completed no later than March 31, 2014. Selected projects may begin any time after award contracts have been fully executed, but must commence within one year of the date of adoption of new MPA regulations by the California Fish and Game Commission (FGC) and preferably near the time of implementation of the MPA regulations. MPAs in the South Coast region are expected to take effect in mid-2011.

Proposals will be evaluated using a two-step independent peer review process, and considering multiple criteria including alignment with program purposes, technical merit, partnerships, costs and funding leveraging. All proposals will be sent out for independent, external, mail-in reviews by subject-matter experts selected by California Sea Grant in collaboration with staff of DFG, OPC, and the Monitoring Enterprise. Following the mail-in review process, a Baseline Panel, composed of additional subject-matter experts, will be convened to review all proposals and recommend the specific proposals or proposal elements to fund (and the level of funding for each) based on the mail-in reviews, their own reviews and the Panel deliberations. Final decisions will be made jointly by staff of DFG, OPC and the Monitoring Enterprise. Additional information and proposal requirements are provided below.

In association with the release of this Request for Proposals (RFP), the Monitoring Enterprise will host an informational webinar to provide additional information and answer questions. The webinar will be held on March 1, 2011 and further details will be available soon on the Sea Grant website at <http://www.csgc.ucsd.edu/>. In addition, a bidders conference will be held on March 8, 2011 at the Radisson Hotel Los Angeles Westside to provide more information to potential applicants, and to facilitate partnerships and information exchange among applicants and collaborators, including those involved in ongoing monitoring in the region. RSVPs for the bidders conference should be made to tlarson@ucsd.edu and are requested no later than 5:00pm on March 2, 2011. Sea Grant will also host an on-line bulletin board to facilitate information exchange among potential proposers, collaborators and resource-holders in the region. Questions relating to proposal requirements should be directed to Sea Grant, Monitoring Enterprise or DFG (see page 15 for guidance and contact information). The bulletin board, answers to frequently asked questions, additional details regarding the bidders conference, and any updates relating to this RFP will be available on the California Sea Grant website. Persons intending to submit proposals in response to this RFP should consult this website frequently for updates and additional information.

A. Background

The 1999 Marine Life Protection Act (Chapter 10.5 of the California Fish and Game Code, §2850-2863) directs the state to reevaluate and redesign California's system of MPAs to meet the following goals:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.
2. Help sustain, conserve and protect marine life populations, including those of economic value, and rebuild those that are depleted.
3. Improve recreational, educational and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and manage these uses in a manner consistent with protecting biodiversity.
4. Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values.
5. Ensure California's MPAs have clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines.
6. Ensure the State's MPAs are designed and managed, to the extent possible, as a network.

The MLPA further requires monitoring of MPAs, specifically "monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the [MPA] system meets the goals stated in this chapter."¹ The MPA Monitoring Enterprise has been established under the auspices of the California Ocean Science Trust to lead development of MPA monitoring that will meet MLPA requirements efficiently and cost-effectively. The Monitoring Enterprise works closely with DFG, the agency with statutory authority for implementing the MLPA. The 'Marine Life Protection Act Master Plan for Marine Protected Areas' directs that MPA monitoring programs be developed sequentially as planning is completed for each of five regions.² MPAs in the South Coast region were adopted by the FGC on December 15, 2010 and are anticipated to take effect in mid-2011. Accordingly, the Monitoring Enterprise, in collaboration with DFG and in consultation with stakeholders, scientists and others, is leading the design and implementation of MPA monitoring in the South Coast region.

The Monitoring Enterprise has developed a scientific framework for MPA monitoring that is designed to meet MLPA requirements efficiently and cost-effectively. The framework will guide MPA monitoring in each MLPA region, allowing tailoring of monitoring to reflect the unique characteristics of each region while ensuring sufficient consistency to make comparisons among regions and assess the performance of the MPAs statewide. The framework has been adopted by the FGC. The MPA monitoring framework, as applied to the South Coast region, has guided the design of this South Coast MPA Baseline Program, and will form the core of the South Coast MPA Monitoring Plan, which provides guidance for long-term MPA monitoring in the region.

B. Program Purposes

The South Coast MPA Baseline Program has two purposes:

¹ California Marine Life Protection Act, Fish and Game Code section 2853(c)(3). See also sections 2852(a), and 2856(a)(2)(H).

² California Marine Life Protection Act Master Plan for Marine Protected Areas. California Department of Fish and Game. Revised Draft. January 2008, <http://www.dfg.ca.gov/mlpa/masterplan.asp>.

- 1. Baseline Characterization** - A summary description, assessment and understanding of ecological and socioeconomic conditions in the South Coast region, inside and outside MPAs established under the MLPA, at or near the time of their implementation. Baseline characterization provides a frame of reference to support subsequent assessment of MPA network performance against MLPA goals and facilitate future adaptive management.
- 2. Assessment of Initial Ecological and Socioeconomic Changes** - Measurement of initial ecological changes and the short-run net benefits or costs to consumptive and non-consumptive user groups following MPA implementation.

Priorities for data collection and/or analyses to achieve each program purpose are described below in Section D.

C. Program Scope

Alignment with the MPA Monitoring Framework

In order to provide a robust foundation for long-term MPA monitoring, proposed projects should align with the MPA monitoring framework as it applies to the South Coast region. The framework is anchored by the South Coast Ecosystem Features, chosen to collectively represent and encompass the region's ecosystems, including humans, for the purposes of MPA monitoring.

Ten Ecosystem Features have been identified for the South Coast region. These are:

- Rocky Intertidal Ecosystems
- Kelp & Shallow (0-30m depth) Rock Ecosystems
- Mid-depth (30-100m depth) Rock Ecosystems
- Estuarine & Wetland Ecosystems
- Soft-bottom Intertidal & Beach Ecosystems
- Soft-bottom Subtidal (0-100m depth) Ecosystems
- Deep (>100m) Ecosystems, including Canyons
- Nearshore Pelagic Ecosystems (the water column habitat within state waters deeper than 30m)
- Consumptive Uses
- Non-consumptive Uses

Proposed projects should identify one or more Ecosystem Features on which to focus data collection and/or analyses. The Baseline Program accords all Ecosystem Features equal priority. Note that this does not mean that funding will be distributed equally among Ecosystem Features as some are more resource-intensive for data collection, but rather that the Baseline Program seeks to provide the most comprehensive coverage possible across all Ecosystem Features.

A core long-term monitoring element includes assessing the condition and trends of each Ecosystem Feature. Two approaches or options for monitoring Ecosystem Features are being developed: Ecosystem Feature Checkups and Ecosystem Feature Assessments. Draft metrics to implement each option have been identified and are included in Appendix 1. It is not intended that Baseline Program be limited only to focusing on the draft metrics. Rather, the intent is that the Baseline Program will include these metrics and others, in order both to provide a comprehensive foundation for long-term monitoring and to help test and refine these metrics for use in long-term monitoring. Thus, for each Ecosystem Feature, data collection and/or analyses should incorporate but extend beyond the corresponding draft monitoring metrics listed in Appendix 1. Projects including initial testing of the draft long-term monitoring metrics are encouraged and should articulate how this testing will be accomplished.

Geographic Scope

The Baseline Program encompasses the South Coast region, which extends along the California coastline from Point Conception in Santa Barbara County to the California border with Mexico and includes all state waters within this region, including the Channel Islands.

A network of MPAs was established in the northern Channel Islands in 2003. Baseline monitoring of these MPAs was conducted between 2003 and 2008, and a five-year review performed in 2008.³ These MPAs are included, unaltered, in the South Coast regional MPA network adopted by the FGC, and are therefore within the geographic scope of the Baseline Program. Proposals that include new data collection at the northern Channel Islands will be considered. However, given that significant baseline data were collected for northern Channel Islands MPAs following their implementation, proposals should clearly articulate the need for new data collection to meet the purposes of the Baseline Program and to incorporate the northern Channel Islands into an integrated regional picture of ecological and socioeconomic conditions. In addition, such proposals should also demonstrate that new data collection in the existing northern Channel Islands MPAs will be cost-efficient through resource leveraging, economies-of-scale and/or partnerships.

The MPA network for the South Coast region currently includes MPAs of two different types (state marine reserves and state marine conservation areas; see Supporting Information, South Coast Final Environmental Impact Report for definitions and more information). Some of these areas may later be converted into state marine parks. All of these are included within the Baseline Program.

During the planning process for the South Coast regional MPA network particular locations (e.g., Rocky Point and other waters around the Palos Verdes Peninsula) and individual MPA proposals were the subject of significant analysis and discussion. The Baseline Program considers all MPAs in the region to be important and does not prioritize specific locations or MPAs for data collection and/or analysis. Rather, for each Ecosystem Feature within the scope of the proposed project, applicants should clearly articulate how the MPAs selected for data collection and/or analysis best contribute towards meeting the Baseline Program purposes. Proposals should clearly articulate how data collection and/or analyses will result in MPA- or site-specific assessments and how results from individual MPAs will be integrated to provide a robust characterization of regional implementation conditions and/or assessment of initial socioeconomic changes.

Temporal Scope

Proposals will be accepted for projects of any duration, but to be completed no later than March 31, 2014. However, applicants should carefully consider the project duration necessary to achieve stated project goals and should articulate the need for, and benefits of, multi-year approaches, where proposed.

Analysis of Existing Data

Numerous on-going monitoring programs, as well as extensive historical data sets, exist in the South Coast region, including programs and data sets associated with water quality programs. Projects should incorporate analysis and interpretation of

³ Report of the First 5 Years of Monitoring in the northern Channel Islands: 2003-2008. Available on-line at: http://www.dfg.ca.gov/marine/channel_islands/fiveyears.asp.

existing data. Proposals should highlight the way in which these programs and data will be incorporated into analyses to achieve one or both purposes of the Baseline Program.

D. Program Priorities

Project Goals & Objectives

The Baseline Program seeks to implement the projects that will, collectively, best address the program purposes in the most cost-effective, efficient, and scientifically rigorous way. Proposed projects should include project goals that are explicitly linked to one or both of the Baseline Program purposes and will be evaluated on their individual and collective contribution towards these program purposes. Proposals addressing multiple purposes and/or Ecosystem Features are encouraged. Priorities to achieve the two purposes of the Baseline Program are described below.

1. Priorities for Baseline Characterization

A proposal submitted to contribute to Baseline Characterization should be structured to address the following priorities for each South Coast Ecosystem Feature included in the scope of the proposed project:

a. *Description of the Ecosystem Feature(s) inside and outside MPAs*

Collection and/or analysis of data on the metrics in Appendix 1 together with additional metrics as needed to describe the Ecosystem Feature, including description of habitats, species assemblages, trophic structure, key ecosystem processes, consumptive and non-consumptive activities as appropriate for the selected Ecosystem Feature inside and outside MPAs, and across the South Coast region.

b. *Assessment and interpretation of the condition of the Ecosystem Feature(s) at the time of MPA implementation*

Analysis and interpretation of data and results using:

- i. Historical data (i.e., any data collected prior to MPA implementation) and/or data from other locations to illuminate trends prior to MPA implementation; and
- ii. Contextual information such as oceanographic data (e.g., the location and strength of upwelling events; the status of oceanographic cycles such as the El Niño Southern Oscillation and the Pacific Decadal Oscillation), water quality data, and economic data to understand the drivers and correlates of ecosystem condition.

2. Priorities for Assessment of Initial Ecological and Socioeconomic Changes

A proposal submitted to contribute to assessment of initial ecological and socioeconomic changes in the 2-3 years following MPA implementation should address one or more of the following priorities:

a. *Assessment of initial ecological changes*

Description of changes (or lack of changes) observed inside and outside MPAs in selected habitats, species or other ecosystem components, emphasizing those that may be expected to be sensitive and rapid in responding to MPA implementation. Ecosystem components for data collection and/or analysis should be drawn from the draft metrics identified in Appendix 1. Proposals extending beyond these metrics will be considered but applicants should clearly articulate the rationale for selection of ecosystem components. Assessments should include interpretation of observed initial ecological changes incorporating historical data and contextual information (e.g., oceanographic or water quality information) to evaluate the extent to which the observed changes may be attributable to MPA implementation.

b. *Assessment of initial effects of MPA implementation on consumptive and non-consumptive user groups*

Identification and measurement of the short-run net benefits or costs of MPA implementation to consumptive and non-consumptive user groups likely to be most affected by the establishment of the MPAs, paying careful attention to controlling for potential confounding factors. User groups selected for assessment should be drawn from those listed in Appendix 1. A project need not consider all user groups but the proposed research should employ quantitative methods and address how the project outputs and data may be used in a broader analysis that considers the net benefits or costs across multiple user groups. Assessments should also analyze and describe the degree to which any observed changes are attributable to MPA implementation.

Project Characteristics & Components

To address the priorities identified above and to provide a foundation for a subsequent synthesis of results across all projects and topic areas, all proposed projects should include the following elements:

1. *Inclusion of multiple MPAs and, where appropriate, reference or control sites outside MPAs to provide generalized regional results and conclusions in addition to MPA- or location-specific analyses and conclusions*
For some Ecosystem Features and/or ecosystem components it may be feasible to collect and/or analyze data inside and outside all MPAs in the South Coast region. If this is not feasible, proposals should include rationale for selected MPAs (and reference or control sites) that contribute to a region-wide baseline characterization or assessment of initial changes.
2. *Interpretation of results through incorporation of historical trend data and contextual information*
3. *Details of how the project's data and analyses will be amenable to inclusion in long-term MPA monitoring*
When applicable, standardized or established methods should be employed to provide a robust foundation for long-term monitoring. In all cases, applicants should describe how the proposed approach, methods and analytical tools facilitate implementation of long-term monitoring.
4. *Details of long-term monitoring recommendations that can be provided on the basis of the project findings*
Recommendations to inform long-term monitoring planning and implementation, for example through:
 - a. *Testing the draft metrics for long-term monitoring*
Initial evaluation of the draft monitoring metrics developed to focus long-term monitoring (Appendix 1) and recommendations for refinements or alternatives to these metrics; this may include recommendations to prioritize among metrics (e.g., attributes, indicators, vital signs, specific user groups).
 - b. *Providing recommendations for long-term monitoring methods and sampling design*
Recommendations for efficient long-term monitoring methods, including spatial and temporal sampling designs that are amenable to synthesis and analysis over long time periods; this may include recommendations for appropriate test and reference, or control, sites for long-term ecological monitoring, and/or an efficient sampling design for long-term monitoring of consumptive or non-consumptive user groups. Recommendations will be most useful if they contribute to the development of standardized methods and protocols for long-term MPA monitoring.

Partnerships

To have the selected projects be as cost-effective as possible and contribute as much as possible to achieving overall Baseline Program purposes, partnerships are encouraged to leverage and take best advantage of existing resources (including physical resources such as boats and survey equipment) and on-going programs in the region (e.g., water quality monitoring programs). Proposals that include partnerships should describe the rationale for the partnership, the intended benefits of the partnership and, if appropriate, how existing data will be used.

Integrative Multi-project Proposals

Proposals to integrate analyses and results across two or more individual Baseline Program projects are also encouraged. Integrative multi-project proposals should link individual projects that focus on different disciplines, Ecosystem Features or ecosystem components, and/or different geographic areas of the South Coast region with the goal of providing a more comprehensive assessment of socioeconomic and ecological conditions in the region at the time of MPA implementation or more robust exploration of initial changes following MPA implementation. Integrative multi-project proposals should clearly describe the activities to achieve the integration and the benefits of the additional integration project, including how results integrated across the specified individual projects will be more informative and a greater contribution to achieving Baseline Program purposes than the individual projects alone.

An integrative multi-project proposal should be submitted as an additional, separate, full proposal with clearly identified Project Leader(s). The unifying proposal should describe the benefits of integration and clearly identify the individual projects to be integrated.

E. Project Deliverables

Primary Investigators are responsible for the production and delivery of the following project products: 1) data and metadata; 2) annual progress report(s) for projects exceeding 16 months duration; and 3) final report.

Data and Metadata

Data and associated metadata must be delivered to DFG, OPC and the Monitoring Enterprise before or as part of the completion of the project. Final project payment will not be made until data and metadata have been received.

All projects should employ a standardized reporting protocol. Data deliverables may include still or video images, text reports, databases, spreadsheets, maps and GIS layers. We anticipate that projects may develop multiple data deliverables; each should be clearly identified in the proposal. Sufficient metadata should also be provided to fully describe the data, collection methods and data reporting structure. Ecological Metadata Language (EML) is adopted here as a minimum metadata reporting standard. Projects not employing this standard should include justification and description of how their alternative standard meets the minimum requirements.

Upon delivery to DFG, OPC and the Monitoring Enterprise and thereafter, all data and metadata will be widely available to the public and other researchers. Investigators, however, will retain the right to publish results before and after project completion. Project data may be used to support additional analyses, and may be included or summarized in subsequent reports and other materials, in print and/or electronically.

Where privacy issues or other sensitivities will or may arise, these must be noted explicitly in project proposals, and a remedy proposed to enable delivery of data with appropriate accommodations to account for the sensitivity. This may include, for example, delivering data only to DFG and under protection of a signed non-disclosure agreement, or developing a protocol to anonymize observations as needed to enable sharing collected data with researchers and government agencies.

Annual Progress Reports

For projects exceeding 16 months duration, progress reports are required at 12-month intervals following the contract start date. Annual progress reports should briefly describe progress towards specified project goals, and provide timelines (progress in meeting milestones) for work completed and remaining. They should also provide updated financial

information including budgeted costs and actual expenditures and justifications for variances. Incurred or anticipated budget (positive or negative) variances in excess of 10% of the budgeted amount must be approved by the Sea Grant Office.

Final Reports

Each project is required to produce and deliver a final report to California Sea Grant. Final reports must include the following sections:

1. A narrative accounting of the project's progress towards Baseline Program purposes and project goals.
2. A financial report showing budgeted and actual costs and variances, with explanations of any positive or negative variances of greater than 10% of the budgeted amount.
3. For projects including baseline characterization components, a technical report, which should include appropriate descriptions of methods, data summaries, analyses and interpretation to describe, assess and understand implementation conditions. Reports should include explicit reference to the baseline characterization purposes and priorities and the supporting results, analyses and interpretation required to meet each program priority. Reports should also include MPA- or site-level characterizations and a regional assessment.
4. For projects including assessment of initial ecological or socioeconomic changes following MPA implementation, a technical report, which should include clear descriptions of methods, data summaries, analyses and interpretation to describe initial ecological changes and/or the short-run net benefits or costs to consumptive and non-consumptive users.
5. An Executive Summary, summarizing methods, key findings and conclusions in 1-2 pages of text and, if needed, an additional 1-2 pages of figures. The Executive Summary should be written to be appropriate for broad public release (e.g., posting on the Monitoring Enterprise website, provision to the FGC).

Final reports will be reviewed by California Sea Grant, DFG and the Monitoring Enterprise. The sections of final reports consisting of baseline characterization reports and/or reports of initial changes following MPA implementation will also be subject to scientific peer review. Final reports should be revised in accordance with reviewer comments before final submission and acceptance by California Sea Grant. Final project payments will be made following receipt and acceptance of all deliverables.

Following completion of all projects and receipt and acceptance of all final project reports, a synthesis of major findings will be prepared and a final public summary report will be produced. Project Leaders will be given the opportunity to review a draft of the summary report.

F. Supporting Information

South Coast MPA monitoring planning process (including information on workshops and other consultations to develop the monitoring metrics in Appendix 1)

<http://www.monitoringenterprise.org>

MLPA Master Plan

<http://www.dfg.ca.gov/mlpa/masterplan.asp>

South Coast Regional Profile

http://www.dfg.ca.gov/mlpa/regionalprofile_sc.asp

South Coast Final Environmental Impact Report (includes detailed descriptions, maps, objectives, and rationale for proposed MPAs)

http://www.dfg.ca.gov/mlpa/finalimpact_sc.asp

Additional background information for the South Coast MLPA planning and regulatory processes

<http://www.dfg.ca.gov/mlpa/southcoast.asp>

II. Award Information

Approximately \$4,000,000 is available to support the South Coast MPA Baseline Program. Funding is available for projects of any duration but all projects must be completed no later than March 31, 2014. Funds are expected to be awarded in July 2011. Full payment of awards may be contingent on continued availability of state funding.

Partial Funding of Selected Projects

Proposals may be selected to receive partial funding, i.e., less than was originally requested in the proposal. This includes both individual projects, and integrative multi-project proposals. Additionally, Project Leaders may be requested to consider changing aspects of their proposals to better contribute to achieving the Baseline Program purposes.

III. Eligibility Information

A. Eligible Applicants

Individuals, institutions of higher education, nonprofit organizations, commercial organizations, and federal, state, local, and tribal governments are all eligible to submit proposals.

B. Cost-sharing or Match Requirement

Projects must include at least a 25% match (cash and/or in-kind) from applicants. In-kind contributions must be documented and auditable. Larger matches or additional cost-sharing arrangements are encouraged and will be taken into consideration when evaluating proposals (see Evaluation Criteria for more information).

IV. Application and Submission Information

A. Application Package

The entire application package, including the documents referenced below, is available online through California Sea Grant's website: <http://www.csgc.ucsd.edu/>

If you do not have internet access, please contact Carol Bailey-Sumber at 858-534-7855.

B. Content and Form of Application Submission

Preliminary proposals are *not required*. Only full proposals will be considered. Proposals should include all required elements; incomplete proposals may not be accepted.

Please submit an electronic copy of the full proposal (see Submission Information and Dates). The number of pages must be in accordance with the page limitation specified under "Required Elements." All files in the full proposals when printed must measure 8.5" x 11" with an 11 point, san serif font (Arial or Helvetica).

C. Required Elements

Cover Sheet

A cover sheet template is located on the California Sea Grant website. Please provide all requested information and obtain the required signatures. If you are applying from an academic institution, send your original proposal to your campus research office for local campus approval. If your proposal encompasses more than one campus, please obtain approval from each campus and all required signatures. Make sure to send your original, signed coversheet with your full proposal.

Percentage of time should be shown for the Project Leader and the Co-Project Leader. This should agree with the amount shown on the Sea Grant Project Summary Form and should be converted to "Months of Effort." (Example: 10 percent time=1.2 months of effort.) Please leave the trainee section blank.

Project Summary

A project summary form is located on the California Sea Grant website. The form is a PDF that can be filled out electronically. You may save your information at any time. In addition, there are detailed instructions available that should help you to accurately complete the form. Please follow them carefully - the project summary is the most widely consulted description of your project.

Narrative

Proposal format may vary, however proposals should include all the information listed below. The proposal narrative should not exceed 15 pages (excluding references, illustrations, charts, tables, and figures). Applicants submitting integrative multi-project proposals are required to submit full proposals for individual projects to be included in the proposed integration and an additional full proposal that describes the integrative component. (Individual projects proposed for inclusion in a multi-project integration need not be submitted together; the integration project must clearly specify the individual projects proposed for inclusion.)

All proposals should use the following format:

- *Project Title* – Project titles should be constructed to provide as much information as possible but must not exceed two lines (approximately 16 words).
- *Project Leader(s) and Associated Staff* - The roles of the project leader(s) and associated staff should be included.
- *Project Goals and Objectives* – This section should identify the scope of the proposed project in relation to the Baseline Program purposes and priorities identified above.
- *Rationale* – The project rationale should articulate the significance of the proposed project in contributing towards the Baseline Program purposes. Proposals that include partnerships should clearly describe the rationale for the partnership and the intended benefits of the partnership. Integrative multi-project proposals should clearly describe the benefits of the integration, including how results integrated across the specified individual projects will be more informative, robust, and a greater contribution to achieving Baseline Program purposes.
- *Approach to be Used (Plan of Work)* – This section should clearly detail and justify the proposed methods and analytical approaches, and should explicitly consider the utility of existing information and the need for new data

collection (if proposed). Where projects propose new data collection, a rationale for the proposed temporal and spatial scale of sampling should be provided, including rationale for MPA selection. Where existing data will be incorporated to facilitate interpretation of results, these data should be explicitly identified and their use explained. A description of the intended mechanism or analytical framework to provide a regional assessment of the studied Ecosystem Feature or Feature component should also be included.

- *Outcomes and Deliverables* – Project outcomes should be clearly related to the initial project goals, which in turn should be linked to the Baseline Program purposes and priorities. A clear description of the intended project deliverables should be provided, including description of final reports, data and other products, and associated timelines for development and delivery.
- *Milestones Chart* – Projects may be proposed for any duration within the time period between July 2011 and March 2014. A graphical representation of the total project duration and sequence of key steps or tasks over the course of the project, with associated timing, should be provided with clear justification for the duration of each key step or task (see example on Sea Grant website).
- *References* – List all included references alphabetically following the list format from the Chicago Manual of Style.

Note: Project Leader(s) will be required to execute a non-disclosure agreement with DFG for awarded projects that require DFG confidential information (e.g., landings, license information) and/or may be asked to sign a mutually agreed-upon memorandum of understanding regarding data expectations (e.g. data housing, maintenance, protection) for awarded projects that generate their own confidential information as part of the scope of work.

Budget and Budget Justification

Applicants are strongly encouraged to use the California Sea Grant budget form, available to download from the California Sea Grant proposal web page. Applicants may use their own form as long as it includes the same information as the California Sea Grant form. Each budget should include a separate budget justification page that itemizes all budget items in sufficient detail to enable reviewers to evaluate the appropriateness of the funding requested. Please see the California Sea Grant website for detailed instructions.

Research conducted with OPC funds must limit the indirect cost (F&A; facilities & administrative) rate to 25% or less. However, UC institutions should use a 15% SWB (salaries, wages and benefits) rate per waiver 07R-202.

Current and Pending support

Applicants must provide information on all current and pending support where this is relevant to conducting the proposed project. Please use the Current and Pending Research form on the California Sea Grant website.

Vitae

Curriculum vitae should include relevant experience, skills and publications. Publications should be provided in reverse chronological order. A complete list is not required; however, applicants should include those publications that are relevant to the proposal. Full vitae should not exceed two single-spaced pages per individual.

Project Permits and Permissions

It is the responsibility of Project Leaders to determine what, if any, permits or permissions are required to carry out the proposed work. For example, project proposals that require the handling of organisms, disturbing or placing sampling equipment on the seafloor, or require entry into special closures, must acquire the appropriate state, local or federal

permits. If your proposed project is likely to require state and/or federal permits or other permissions, please note that these can take considerable time to obtain. We encourage you to apply for any necessary permits in advance, e.g., at or near the time of proposal submission. For more information about permits that may be required by the California Department of Fish and Game, please visit the special permits section of the California Department of Fish and Game's website <http://www.dfg.ca.gov/licensing/forms/forms.html>.

D. Submission Information and Date

Proposals are due in the California Sea Grant office by 5:00 pm (PDT) on Thursday, April 7, 2011. Late proposals will not be accepted.

Please upload an electronic copy of all proposal items, with required signatures. The electronic version of your proposal must be submitted as PDFs using the California Sea Grant proposal submission link:

<https://csgc.ucsd.edu/wpe/SUBMISSIONS/PILogin.php>

IMPORTANT: Contact sgmpaproposal@ucsd.edu to obtain a password to use the website link BEFORE submitting any files.

Please include your last name in the file name for each section of the proposal (e.g., Smith_budget.pdf or Smith_cv.pdf). Once submitted through the website, PDFs may not be edited. To change a PDF, it must be deleted and resubmitted. The maximum size of a PDF submitted online is 6 MB. To submit larger files, please contact sgmpaproposal@ucsd.edu.

For questions regarding the proposal submission website itself, please contact Roberto Chavez at: (858) 534-4441 or rachavez@ucsd.edu.

E. Funding Restrictions

There are no funding restrictions.

F. Informational Webinar, Bidders Conference & On-line Bulletin Board

Informational webinar

The Monitoring Enterprise will host an informational webinar to describe the purposes, scope and priorities of the Baseline Program and answer questions. The webinar will be held on March 1, 2011 and further information will be available soon on the Sea Grant website. An announcement with details on how to register and participate in the webinar will also be released on the Monitoring Enterprise listserv. (For more information and to sign up to receive Monitoring Enterprise listserv postings, please visit www.monitoringenterprise.org.)

In addition, answers to frequently asked questions about the Program scope, priorities and proposal submission process will be available on the Sea Grant website.

Bidders Conference

A bidders conference will be held on March 8, 2011 at the Radisson Hotel Los Angeles Westside. Staff from California Sea Grant, the Monitoring Enterprise and DFG will use this opportunity to discuss more fully the objectives of the program with participants. The conference will be an opportunity for applicants to ask specific questions or request additional information.

All potential applicants are strongly encouraged to attend. Potential public partners, including fishermen and other citizens interested in taking part in monitoring efforts, are also encouraged to attend to explore potential partnership

opportunities. Individual applicants may also use the conference as an opportunity to form collaborations with the objective of submitting integrative multi-project proposals.

RSVPs for the bidders conference should be made to tlarson@ucsd.edu and are requested no later than 5:00pm on March 2, 2011. Additional information about the conference, including location and time, will be posted soon on the California Sea Grant website.

On-line Bulletin Board

California Sea Grant will host an on-line bulletin board to facilitate information exchange among potential proposers, partners and resource-holders in the region. This approach is designed to facilitate partnerships by providing a forum for sharing information about potential resources (e.g., boats, survey equipment), existing data, and interest in participating in the Baseline Program. The bulletin board may be accessed through <https://csgc.ucsd.edu/wpe/EXCHANGE/index.php>. Resource-holders, including those with access to data, are encouraged to share their information on the bulletin board. Potential applicants are strongly encouraged to use the bulletin board to ensure that their proposals are cost-effective, efficient and not duplicative of existing monitoring efforts.

V. Proposal Review Information

A. Evaluation Criteria

Proposals will be evaluated against the following criteria:

1. *Relevance and applicability to the purposes and priorities of the South Coast MPA Baseline Program*
Assessment of alignment of project goals and objectives with the Baseline Program purposes and priorities, including efficiencies in data collection to address multiple program priorities.
2. *Scientific/technical merit*
Assessment of the conceptual framing and technical approaches proposed to achieve project goals.
3. *Project costs and funding leverage*
Cost-effectiveness, including project cost relative to Baseline Program purposes. **Projects must include at least a 25% match (cash and/or in-kind) from applicants. In-kind contributions must be documented and auditable.** Larger matches or additional cost-sharing arrangements are encouraged and will be considered during proposal evaluation.
4. *Partnerships and integrative multi-project proposals*
Projects that address multiple Baseline Program purposes through partnerships and/or integrative multi-project proposals. Integrative multi-project proposals will be evaluated on how well the component projects fit together to provide more information collectively than each project otherwise would if conducted alone.
5. *Qualifications of investigator(s)*
Assessment of whether the applicants possess the necessary knowledge, experience, training, facilities and resources to complete the project.
6. *Project management experience, expertise, and skills*
Assessment of multiple facets of project management, including a proven track record in completing contracts on time and within budget, experience managing and working in multi-party, multidisciplinary teams, and communication skills. Communication skills include the ability to provide clear and effective communication of project goals, approaches and results to diverse audiences interested in monitoring information.
7. *South Coast region knowledge, capacity and experience*

Projects that take best advantage of the knowledge and capacity existing within the South Coast region, through demonstrated knowledge, partnerships, collaborations or other mechanisms.

B. Review & Selection Process

Applications must be submitted to the California Sea Grant College Program Office no later than 5:00pm (PDT) on April 7, 2011 in order to be considered. Selection is competitive. Proposals will be subject to independent peer-review on the basis of the criteria described above. A two-step independent peer review process, led by California Sea Grant, will be employed to develop recommendations for project selection and funding. Independent mail-in, peer reviews will be sought to provide input into the scientific and technical merit of individual proposals and alignment with the criteria above. A review panel (6-8 additional independent experts) will then be convened to review all proposals, consider the input received from the mail-in reviews and recommend the projects or project components for funding, and the funding level for each. Reviewers will be subject-matter experts selected by Sea Grant, in consultation with staff of OPC, DFG, and the Monitoring Enterprise. Project selection will consider the individual and collective contribution of each project to achieving the Baseline Program purposes. Final funding decisions will be made jointly by staff of OPC, DFG and the Monitoring Enterprise. All applicants will be notified of the selection decision in June 2011.

C. Selection Factors

The Baseline Program management team shall award in rank order based on the peer review recommendations unless the proposal is justified to be out of rank order based on any of the following criteria: availability of funds, cost-effectiveness, duplication of other projects, program priorities, and applicant's prior performance.

Applicants may be asked to modify objectives, work plans, or budgets prior to award funding. Applications must reflect the total budget necessary to accomplish the project. Applicants will be bound by the percentage of cost sharing reflected in the grant award.

D. Announcement & Award Dates

April 7, 2011 (5:00 pm PDT) - Applications due at California Sea Grant College Program

June 27, 2011 (approximate) - Applicants notified of selection results

July 11, 2011 (approximate) - Funds awarded for selected applicants

VI. Award Administration

A. Award Notices

A member of the Baseline Program management team will notify successful applicants by email shortly after decisions are made, likely in June 2011.

B. Reporting

Applicants who receive a grant award will be responsible for submitting both financial and technical (progress and final) reports to California Sea Grant, as described above.

VII. Program Contacts

Questions about the proposal submission requirements or other aspects of the RFP process should be directed to the individuals listed below. Answers to frequently asked questions will be posted on the Sea Grant website. Persons intending to submit proposals in response to this RFP should check the Sea Grant website frequently for any additional information.

A. California Sea Grant

Assistance with overall RFP process and information about the bidders conference

- Shauna Oh, Assistant Director, California Sea Grant College Program
Phone: (858) 822-2708
Email: sgmpaproposal@ucsd.edu

General Proposal Help (assistance with forms, format and submission)

- Carol Bailey-Sumber, Grants Specialist
Phone: (858) 534-7855
Email: sgmpaproposal@ucsd.edu

Budget Help

- Catherine Hughes, Business Office
Phone: (858) 534-4440
Email: sgbudget@ucsd.edu

Computer/Internet-related Help

- Roberto Chavez , Programmer
Phone: (858) 534-4441
Email: webhelp@seamail.ucsd.edu

B. MPA Monitoring Enterprise

Assistance with Baseline Program purposes and priorities and additional information on South Coast MPA monitoring planning

- Liz Whiteman, Interim Director
Phone: (510) 251-8317
Email: mpamonitoring@calost.org

C. Department of Fish and Game

Assistance with DFG programs, priorities, or data

- Jason Vasques, Associate Marine Biologist, MPA Project
Phone: (650) 631-6759
Email: jvasques@dfg.ca.gov

Appendix 1: Draft South Coast MPA Monitoring Metrics for Assessing Ecosystem Condition & Trends

The following pages contain the draft metrics for long-term assessments of the condition and trends of ecosystems, including human activities, inside and outside MPAs in the South Coast region. These metrics are subject to ongoing review and revision in consideration of comments received during agency and public review.

Assessment of ecosystem condition and trends is implemented by monitoring the South Coast Ecosystem Features, chosen to collectively represent and encompass the region's ecosystems, including humans, for the purposes of MPA monitoring. Ten Ecosystem Features have been identified for the South Coast region. These are:

- Rocky Intertidal Ecosystems
- Kelp & Shallow (0-30m depth) Rock Ecosystems
- Mid-depth (30-100m depth) Rock Ecosystems
- Estuarine & Wetland Ecosystems
- Soft-bottom Intertidal & Beach Ecosystems
- Soft-bottom Subtidal (0-100m depth) Ecosystems
- Deep (>100m) Ecosystems, including Canyons
- Nearshore Pelagic Ecosystems (the water column habitat within state waters deeper than 30m)
- Consumptive Uses
- Non-consumptive Uses

There are 2 options for monitoring Ecosystem Features: Ecosystem Feature Checkups and Ecosystem Feature Assessments. Ecosystem Feature Checkups are designed to be carried out by community and citizen-scientist groups and thus use simplified sampling protocols and methods. The metrics for Checkups are referred to as Vital Signs, and they collectively provide a coarse-grained evaluation of ecosystem condition. Ecosystem Feature Assessments are more detailed and technically demanding than Checkups and thus are likely to be implemented by government agencies and research institutions. This monitoring option relies on the identification of key attributes, which are important aspects of the structure or functioning of the Ecosystem Feature, and indicators that provide insight into the condition of each key attribute.

These draft metrics were developed in consultation with technical experts, agency scientists and stakeholders in the region. In selecting indicators many considerations were taken into account, including species identified as priorities by stakeholders during public workshops, those with important ecological roles, likely fast and slow MPA responders, species with different life history characteristics, fished species which may be likely to show an MPA response, and unfished species for comparison with fished species.

As described in the RFP, the Baseline Program offers the opportunity to gather initial data on these metrics and others as needed to provide a comprehensive foundation for long-term monitoring and to help test and refine these metrics for use in long-term monitoring.

The following tables present the draft vital signs, key attributes and indicators for each Ecosystem Feature.

ROCKY INTERTIDAL ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Mussel bed cover
- Rockweed cover
- Ochre sea star abundance & size frequency
- Marine bird richness and abundance
- Black abalone abundance & size frequency
- Purple sea urchin abundance & size frequency
- Owl limpet density & size frequency
- Pinniped abundance (harbor seal, California sea lion, northern elephant seal)

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat	Percent cover of focal species: Mussels (<i>Mytilus</i> spp.) Feather boa kelp (<i>Egregia menziesii</i>) Rockweed (Fucaaceae, multiple species) Surfgrass (<i>Phyllospadix</i> spp.)
Trophic Structure: Predators	Ochre sea star (<i>Pisaster ochraceus</i>) density & size structure Piscivorous bird richness & abundance Shorebird richness & abundance
Trophic Structure: Herbivores	Density & size structure of focal species/species groups: Black abalone (<i>Haliotis cracherodii</i>) Purple sea urchin (<i>Strongylocentrotus purpuratus</i>) Owl limpet (<i>Lottia gigantea</i>) Turban snails (<i>Tegula</i> spp.)

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes supplemental metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat: Macroalgae	Cover of focal groups Turf algae Foliose red algae Furoid algae
Diversity	Species richness (algae & invertebrates) Species diversity (functional groups of algae & invertebrates)

KELP & SHALLOW (0-30M) ROCK ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Sheephead abundance & size frequency
- Red sea urchin abundance & size frequency
- Purple sea urchin abundance & size frequency
- Spiny lobster abundance & size frequency
- Kelp bass abundance & size frequency
- Rockfish abundance & size frequency
- Pink abalone abundance & size frequency
- Green abalone abundance & size frequency
- Red abalone abundance & size frequency

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat: Macroalgae	Giant kelp (<i>Macrocystis pyrifera</i>) areal extent
Strong Ecological Interactors	Density & size structure of focal species: Red sea urchin (<i>Strongylocentrotus franciscanus</i>) Purple sea urchin (<i>Strongylocentrotus purpuratus</i>) Spiny lobster (<i>Panulirus interruptus</i>) abundance & size structure Sheephead (<i>Semicossyphus pulcher</i>) density, size structure & sex ratio
Trophic Structure: Predatory fishes	Density & size structure of focal species: Kelp bass (<i>Paralabrax clathratus</i>) Olive rockfish (<i>Sebastes serranoides</i>) Kelp rockfish (<i>Sebastes atrovirens</i>) Cabezon (<i>Scorpaenichthys marmoratus</i>) Giant sea bass (<i>Stereolepis gigas</i>)
Trophic Structure: Predatory invertebrates	Density & size structure of focal species: Kellet's whelk (<i>Kelletia kelletii</i>) Sea stars (<i>Pisaster</i> spp., <i>Pycnopodia helianthoides</i>)
Trophic Structure: Planktivorous fishes	Density & size structure of focal species: Blacksmith (<i>Chromis punctipinnis</i>) Señorita (<i>Oxyjulis californica</i>) Blue rockfish (<i>Sebastes mystinus</i>)
Trophic Structure: Herbivores	Density & size structure of focal species: Pink abalone (<i>Haliotis corrugata</i>) Green abalone (<i>Haliotis fulgens</i>) Red abalone (<i>Haliotis rufescens</i>) Giant keyhole limpet (<i>Megathura crenulata</i>)

DRAFT OPTIONAL ADD-ONS FOR ECOSYSTEM ASSESSEMENT

This set of information includes supplemental metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat	Giant kelp (<i>Macrocystis pyrifera</i>) stipe density
	Sub-canopy & turf algae cover
	Surfgrass (<i>Phyllospadix torreyi</i>) cover
	Sessile invertebrate percent cover
Strong Ecological Interactors	Sea otter (<i>Enhydra lutris</i>) abundance
Trophic Structure: Predatory birds	Abundance (colony size) and fledgling rate of focal species:
	Brandt’s cormorant (<i>Phalacrocorax penicillatus</i>)
	Pelagic cormorant (<i>Phalacrocorax pelagicus</i>)
	California least tern (<i>Sternula antillarum</i>)
Diversity	Species richness (invertebrates & fishes)
	Species diversity (functional groups of invertebrates & fishes)

MID-DEPTH (30-100M) ROCK ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Rock crab abundance & size frequency
- Rockfish abundance & size frequency
- Lingcod abundance & size frequency
- California scorpionfish abundance & size frequency

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat: Sessile invertebrates	Structure forming invertebrate cover & height
Trophic Structure: Mobile invertebrates	Density of focal species: Rock crab (<i>Cancer</i> spp.) Sheep (spider) crab (<i>Loxorhynchus grandis</i>)
Trophic Structure: Predatory fishes	Density & size structure of focal species: Bocaccio (<i>Sebastes paucispinis</i>) Vermilion rockfish (<i>Sebastes miniatus</i>) Lingcod (<i>Ophiodon elongatus</i>) Ocean whitefish (<i>Caulolatilus princeps</i>) California scorpionfish (<i>Scorpaena guttata</i>) Rockfish (<i>Sebastes</i> spp.) size structure
Trophic Structure: Detritivores	Density & size structure of focal species: Urchin (Echinidae, multiple species) White abalone (<i>Haliotis sorenseni</i>)
Community Structure: Dwarf rockfishes	Total dwarf rockfish abundance (multiple species)

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes supplemental metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat	Cover of focal species: <i>Metridium</i> spp. Purple hydrocoral (<i>Stylaster californicus</i>) Elk kelp (<i>Pelagophycus porra</i>)
Diversity	Species richness (invertebrates & fishes) Species diversity (functional groups of invertebrates & fishes)

ESTUARINE & WETLAND ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs
<ul style="list-style-type: none"> ➤ Eelgrass areal extent ➤ Ghost & mud shrimp abundance ➤ Clam abundance & size frequency (Pacific gaper, Washington & common littleneck) ➤ Marine birds richness & abundance ➤ California halibut abundance & size frequency ➤ Arthropod biomass ➤ Pinniped abundance (harbor seal, California sea lion, northern elephant seal)

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat: Plants	Areal extent of focal species: Eelgrass (<i>Zostera marina</i>) Pickleweed (<i>Salicornia</i> spp.)
Trophic structure: Infaunal assemblage	Abundance of focal species: Mud shrimp (<i>Upogebia</i> spp.) Ghost shrimp (<i>Neotrypaea</i> spp.) Pacific gaper clam (<i>Tresus nuttalli</i>) Washington clam (<i>Saxidomus nuttalli</i>) Common littleneck clam (<i>Protothaca staminea</i>)
Trophic Structure: Predatory birds	Piscivorous bird richness & abundance Shorebird richness & abundance
Trophic Structure: Predatory fishes	Density & size structure of focal species: Leopard shark (<i>Triakis semifasciata</i>) California halibut (<i>Paralichthys californicus</i>)
Trophic Structure: Resident fishes	Density & size structure of focal species: Spotted sand bass (<i>Paralabrax maculatofasciatus</i>) Arrow goby (<i>Clevelandia ios</i>) Topsmelt (<i>Atherinops affinis</i>)
Productivity	Arthropod biomass

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes additional metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Trophic structure: Benthic infauna	Abundance & foraging rates of shorebirds
Trophic structure	Parasite diversity
Diversity	Species richness (invertebrates & fishes) Species diversity (functional groups of invertebrates & fishes)

SOFT-BOTTOM INTERTIDAL & BEACH ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Sand crab abundance
- Pismo clam abundance & size frequency
- Beach wrack composition & abundance
- Surfperch abundance (multiple species)
- Grunion, number of spawning runs
- Marine bird richness & abundance
- Pinniped abundance (harbor Seal, California sea lion, northern elephant seal)

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Trophic Structure: Suspension feeders	Density and size structure of focal species: Sand crab (<i>Emerita analoga</i>) Pismo clam (<i>Tivela stultorum</i>) Bean clams (<i>Donax gouldii</i>)
Productivity: Beach wrack	Wrack composition & abundance
Productivity: Surf zone fish assemblage	Surfperch abundance & size structure (Embiotocidae, multiple species) Grunion (<i>Leuresthes tenuis</i>) number of spawning runs
Trophic Structure: Predatory birds	Piscivorous bird richness & abundance Shorebird species richness & abundance

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes additional metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Productivity	Wrack invertebrate diversity and biomass
Diversity	Species richness (invertebrates and fishes) Species diversity (functional groups of invertebrates & fishes)

SOFT-BOTTOM SUBTIDAL (0-100M) ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs	
➤	Eelgrass areal extent
➤	Yellow rock crab abundance & size frequency
➤	California halibut abundance & size frequency
➤	Surfperch abundance & size frequency
➤	Flatfish total abundance & size frequency

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attributes	Draft Indicator/Focal species
Biogenic Habitat	Eelgrass (<i>Zostera</i> spp.) areal extent
	Sand dollar (<i>Dendraster excentricus</i>) bed extent
Trophic Structure: Benthic infauna	Functional diversity of benthic infauna (feeding guilds)
Trophic Structure: Mobile invertebrates	Density & size structure of focal species/species groups: Yellow rock crab (<i>Cancer anthonyi</i>) Sea star (<i>Astropecten</i> spp.) Ridgeback prawn (<i>Sicyonia ingentis</i>) Sea cucumber (<i>Parastichopus</i> spp.)
Trophic Structure: Predatory fishes	Density & size structure of focal species/species groups: California halibut (<i>Paralichthys californicus</i>) Angel shark (<i>Squatina californica</i>) Shovelnose guitarfish (<i>Rhinobatos productus</i>) Barred sand bass (<i>Paralabrax nebulifer</i>) Surfperch (Embiotocidae, multiple species)

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes supplemental metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Trophic Structure: Predatory fishes	Density & size structure of focal species: Bat ray (<i>Myliobatis californica</i>) Leopard shark (<i>Triakis semifasciata</i>) Sanddab (<i>Citharichthys</i> spp.)
Diversity	Species richness (invertebrates & fishes)
	Species diversity (functional groups of invertebrates & fishes)

DEEP (>100M) ECOSYSTEMS, INCLUDING CANYONS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Rockfish (*Sebastes* spp.) abundance & size frequency
- Flatfish abundance & size frequency
- Sea urchin abundance
- Spot prawn abundance & size frequency

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Biogenic Habitat: Sessile invertebrates	Structure forming invertebrate cover & height
Trophic structure: Predatory fishes	Density & size structure of focal species/group: Cowcod (<i>Sebastes levis</i>) Bocaccio (<i>Sebastes paucispinis</i>) Bank rockfish (<i>Sebastes rufus</i>) Sablefish (<i>Anoplopoma fimbria</i>)
Trophic structure: Detritivores	Total abundance of focal species/groups: Sea urchin (Echinoidea, multiple species) Hagfish (<i>Eptatretus stoudii</i>) Spot prawns (<i>Pandalus platyceros</i>) abundance, size structure and sex ratio
Community Structure: Dwarf rockfishes	Total dwarf rockfish abundance (multiple species)

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This set of information includes additional metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Diversity	Species richness (invertebrates & fishes)
	Species diversity (functional groups of invertebrates & fishes)

NEARSHORE PELAGIC ECOSYSTEMS

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Semi-pelagic/pelagic rockfish average & maximum size
- Brown pelican abundance
- Sooty shearwater abundance
- Cassin’s auklet breeding success

ECOSYSTEM FEATURE ASSESSMENT

Draft Key Attribute	Draft Indicator/Focal species
Predators: Piscivorous/planktivorous fishes	Abundance & size structure of focal species: Widow rockfish (<i>Sebastes entomelas</i>) Shortbelly rockfish (<i>Sebastes jordani</i>) White sea bass (<i>Atractoscion nobilis</i>) Pacific barracuda (<i>Sphyræna argentea</i>) Pacific mackerel (<i>Scomber japonicas</i>)
Trophic Structure: Predatory birds	Abundance (colony size) and fledgling rate of focal species: Brown pelican (<i>Pelecanus occidentalis</i>) Sooty shearwater (<i>Puffinus griseus</i>) Cassin’s auklet (<i>Ptychoramphus aleuticus</i>)
Trophic Structure: Forage base	Forage fish biomass (sardines, anchovies, other school bait fish) Market squid (<i>Loligo opalescens</i>) biomass

DRAFT OPTIONAL ADD-ONS TO ECOSYSTEM ASSESSMENT

This information includes supplemental metrics that can be added as methods & resources permit.

Draft Key Attribute	Draft Indicator/Focal species
Productivity: Ichthyoplankton	Total ichthyoplankton abundance
	Total abundance of rockfish larvae
	Ratio of fished species to unfished species
Trophic structure	Total jellyfish abundance

CONSUMPTIVE USES

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Landings (weight & value) of key species (nearshore rockfishes, spiny lobster, red urchin, California halibut & market squid) per fishing block & port for the commercial fishery
- Landings (number & weight) of key species (rockfishes, kelp bass, barred sand bass & Pacific barracuda) per fishing block & port by CPFVs
- CPUE of key species (as above) per fishing block & port by CPFVs
- Number of lobster captured per fishing trip and location by recreational fishers

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

DRAFT CONSUMPTIVE USES TO BE MONITORED

For each consumptive use or activity, key fishery species for monitoring include economically and ecologically important species.

Draft Consumptive Uses to be Monitored

Commercial Fishing:

- Nearshore rockfish (*Sebastes* spp.)
- Spiny lobster (*Panulirus interruptus*)
- California halibut (*Paralichthys californicus*)
- Red sea urchin (*Strongylocentrotus franciscanus*)
- Market squid (*Loligo opalescens*)
- Crab (*Cancer* spp., *Loxorhynchus grandis*)

Recreational Fishing – Commercial passenger fishing vessels (CPFVs):

- Nearshore rockfish (*Sebastes* spp.)
- Kelp bass (*Paralabrax clathratus*)
- Barred sand bass (*Paralabrax nebulifer*)
- Pacific barracuda (*Sphyræna argentea*)
- California scorpionfish (*Scorpaena guttata*)

Recreational Fishing – Private vessels, including kayaks:

- Nearshore rockfish (*Sebastes* spp.)
- Kelp bass (*Paralabrax clathratus*)
- Barred sand bass (*Paralabrax nebulifer*)
- Spiny lobster (*Panulirus interruptus*)
- California halibut (*Paralichthys californicus*)

Recreational Fishing – Shore-based

- Surfperches (Embiotocidae, multiple species)
- Croakers (Scianidae, multiple species)
- Silversides (Antherinopsidae, multiple species)

Recreational Fishing – diving, SCUBA and free-diving

- White sea bass (*Atractoscion nobilis*)
- Yellowtail (*Seriola lalandi*)
- Sheephead (*Semicossyphus pulcher*)
- Kelp bass (*Paralabrax clathratus*)
- Spiny lobster (*Panulirus interruptus*)

DRAFT INDICATORS

Each consumptive use is monitored using the same indicators. Note, however, that not all indicators need to be implemented at the same time, or at the same frequency. For example, Knowledge, Attitudes and Perception (KAP) surveys may be most usefully conducted once every five or more years. Indicators for Consumptive Use are:

Draft Indicators

1. Number of people or vessels engaged in the activity
2. Level of activity
 - a. Number of fishing trips per fishing location, vessel, port & region
 - b. Landings of key species per trip, fishing location, vessel, port & region
 - c. CPUE (catch per unit effort) of key species per trip, fishing location, vessel, port & region
3. Economic value or quality of activity
 - a. Landings value of key species per trip, fishing location, vessel, port & region
 - b. Ex vessel value of key species (commercial fisheries)
 - c. Net revenue (commercial fisheries) or expenditures (recreational fisheries)
4. Knowledge, Attitudes and Perceptions (KAP) of participants
 - a. Motivation
 - b. Satisfaction

DRAFT OPTIONAL CONSUMPTIVE USES TO BE MONITORED

This information includes supplemental Consumptive Use metrics, some or all of which can be monitored using the same indicators above, as methods & resources permit.

Draft Consumptive Uses to be Monitored

- Recreational Fishing – Clamming
 - Pacific gaper clams (*Tresus nuttalli*)
 - Pismo clams (*Tivela stultorum*)
 - Washington clams (*Saxidomus nuttalli*)
 - Common littleneck clams (*Protothaca staminea*)
- Scientific collecting (metrics being developed)

NON-CONSUMPTIVE USES

DRAFT METRICS FOR ECOSYSTEM FEATURE CHECKUP

Draft Vital Signs

- Number of diving trips & divers per access point & dive site
- Number of visitors engaging in recreational beach use
- Number of visitors to rocky intertidal ecosystems for tidepooling
- Number of boat-based wildlife viewing trips & visitors per port & viewing locations
- Number of shoreline wildlife viewers to estuarine, wetland & beach ecosystems

DRAFT METRICS FOR ECOSYSTEM FEATURE ASSESSMENT

DRAFT NON-CONSUMPTIVE USES TO BE MONITORED

Draft Non-consumptive Uses to be Monitored

- Scuba diving
- Recreational beach use
- Tidepooling
- Wildlife viewing – boating, including kayaking
- Wildlife viewing - shorebased

DRAFT INDICATORS

Each non-consumptive use is monitored by applying the same indicators listed below. Note, however, that not all indicators need to be implemented at the same time, or at the same frequency. For example, Knowledge, Attitudes and Perception (KAP) surveys may be most usefully conducted once every five or more years. Indicators for Non-consumptive uses are:

Draft Indicators

1. Level of activity
 - a. Number & location of trips (spatial use & intensity)
2. Knowledge, Attitudes and Perceptions (KAP) of participants
 - a. Motivation – including MPAs
 - b. Satisfaction – e.g., travel distance, travel & activity costs, likelihood of return

DRAFT OPTIONAL NON-CONSUMPTIVE USES TO BE MONITORED

This information includes supplemental non-consumptive uses, some or all of which can be monitored using the same indicators above, as methods & resources permit.

Draft Non-consumptive Uses to be Monitored

- Educational use