

# Marine Life Protection Act Initiative



## Consideration of Stock Status and Fisheries in Science Advice for Marine Protected Area Design and Evaluation

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## Question

- *How has information on status of fish or invertebrate stocks and fisheries been considered by the MLPA Master Plan Science Advisory Team (SAT) in providing science advice to the MLPA process?*
- Key considerations:
  - Information on stock status for nearshore species is sparse
  - Fisheries affect target and non-target species
  - Marine protected area (MPA) science must assimilate uncertainty regarding future fishery management practices



# MPA Size and Spacing Guidelines

- MPA size and spacing guidelines
  - Based on biological characteristics of species
  - Not dependent on past, current, or potential future direct or indirect effects of fisheries
  - Intended to provide protection for many, but not all, species
  - Flexibility of guidelines allows for adjusting the degree of protection



# Spatially-Explicit Bioeconomic Models

- Bio-economic models:
  - Explicitly include effects of fisheries for a range of future fishery management scenarios
  - Predict long-term steady state, which is not sensitive to current conditions
- Assumption about future fishery management does not affect how MPA proposals compare in terms of total biomass.
- Predicting the course of changes over the short-term will require information on current stock status, characteristics of fisheries, etc.



## Species Likely To Benefit

- Designation of species likely to benefit is based, in part, on explicit consideration of fisheries.
  - What species are taken in commercial or recreational fisheries, either as target or associated catch?
- Species that are of special conservation concern were given additional emphasis.
  - *Example:* Abalones that are listed under the Endangered Species Act
  - *Example:* Rockfishes that have been depleted substantially below historical levels



# Levels of Protection

- SAT adopted a “decision tree” approach to evaluate proposed fishing activities
- Level of protection considers characteristics of each fishery—what is taken, how is it taken, interaction with species’ biology, etc.
- Level of protection applied to fishing activities assumes high (local) fishing effort
- Level of protection does not account for actual level of take or regulations on take



# Potential Economic Impacts

- Analysis of “worst-case” economic consequences from implementation of MPAs:
  - Integrates information on fishers’ recent activities—i.e., value of fishing grounds
  - Does not include information on biological status or trends of fished stocks, except as reflected in fishery economic data
  - Does not assess potential for redistribution of fishing effort or consequences thereof



# Summary

- Information on status of fish or invertebrate stocks and fisheries is incorporated into science advice for the MLPA
  - Bioeconomic models account for location of fisheries, relative importance of different locations and potential redistribution of fishing effort.
  - Bioeconomic models explore assumptions about future fishery management, but assumptions do not affect the relative ranking of MPA proposals.



## Summary (continued)

- Information on current fishery and stock status is
  - useful for designating certain guidelines for MPA design and evaluation
  - useful in assessing potential “worst-case” economic consequences of MPAs
  - not important for predicting long-term consequences of MPAs—*actual* fishery management in the future has important consequences for MPA performance
  - essential for effective modeling and monitoring of biological and economic responses to MPAs over “short” time scales