

Ecosystem Goal Important to Fishing Communities

- Balance healthy ecosystems and sustainable fishing communities
- (people are part of the ecosystem too!!)



Forage Policy Concept

- Draft developed with input from Dr. Richard Parrish and Deb Wilson-Vandenberg
- Forage species separated into three tiers
- Rationale for 3rd tier:

The included tropical and oceanic pelagic species not currently of importance to California fisheries are all species that have huge populations that could expand into California waters with global warming.
- [1] California Current forage species with annual landings managed under FMPs or other active management programs
- [2] California Current forage species not under active management that have zero to moderate annual landings
- [3] small pelagic species with centers of abundance and fisheries in tropical, subtropical and oceanic regions outside of U.S. territorial waters that have large international landings but little or no commercial importance in California landings.

Forage Species Defined*

- [1] California Current forage species managed under state or federal FMPs, or are actively managed, include:

northern anchovy, Pacific sardine, Pacific herring, Pacific sanddab, Pacific hake, shortbelly rockfish, market squid and krill.

* List by Dr. Richard Parrish

Forage Species 2

- California Current species that have zero to moderate commercial landings in California, and are not actively managed, include:

American shad, mesopelagic fishes (Myctophidae, Bathylagidae, Paralepididae, Gonosomatidae), Pacific sandlance, silversides, eulachon,* Osmerid smelts, speckled and longfin sanddabs, Pacific tomcod, small croakers (excluding white seabass and corbina), and pelagic squids (boreal clubhook squid, neon flying squid).

- * *Pacific eulachon Southern DPS is listed as threatened under the ESA*

Forage Species 3

- [3] Small pelagic species that have their center of abundance outside of U.S. Territorial Waters, and little or no landings in California , include:

Northeastern Pacific population of round herring, Pacific thread herring, Pacific saury, and Pacific anchoveta.

Policy for Existing Forage Fisheries 1

- Maintain healthy populations of forage species to help assure the integrity of the ecosystem and habitats upon which marine resources depend.
- Integrate with and complement relevant provisions of the California Current Fishery Ecosystem Plan (FEP) now being developed by the Pacific Fishery Management Council and other state and federal FMPs and statutes (i.e. MLPA)
 - so catch limits and other management measures consider the ecological benefits that forage species provide to the broader ecosystem and balance sustainable ecological services with sustainable fishing communities.
- Consider both recreational and commercial fishing interests as well as a range of other economic sectors in achieving balance among ecological, economic and social values.

Policy for New or Expanding Fisheries for Forage Species 2

- *(Reference: Emerging Fisheries Policy, Section 7090 Fish and Game Code)*
- Better science is needed to support new or allow expansion of an emerging fishery, including forage species listed under [2] and [3]
- For species not included in an FMP or other active management program but subject to a new or expanding fishery, the Commission shall encourage the development of ecosystem-based management methodology and sustainable management.
- For species listed in [2], the Commission shall not allow the total landings of this group of species to exceed the historical annual landings of the group** until an FMP that considers forage and ecosystem needs is in place, with the exception below:

Exception: Fishing for Data

- The Commission supports and may allow limited experimental fisheries to obtain critical essential fisheries information necessary to develop a sustainable fishery management program for a specified forage species. Proposed fisheries should provide a research plan for a prescribed period for approval by the Department and Commission, subject to annual progress reports
- ** Note: Rationale for setting a combined quota for group 2 will prevent any individual species from developing into a significant fishery, minimize enforcement costs, allow small fisheries that can be monitored to develop ecosystem parameters and not force extensive re-organization of the pink ticket system to monitor small quotas, and notify quota status to commercial fishermen.

Policy for New or Expanding Fisheries for Forage Species 3

- *(Reference: Emerging Fisheries Policy, Section 7090 Fish and Game Code)*
- For forage species with their centers of abundance outside of U.S. Territorial Waters, listed in [3], the Commission shall not allow catch limits or catch rates beyond 1% of those attained in the International fishery during the period 2000-2009 until stock abundance estimates and/or data collection programs are in place, supporting development of FMPs for such species.
- To the extent that data are available, the Department and the Commission shall consider the forage needs of key predators when making management recommendations and decisions regarding fisheries targeting forage species that are not already included in an FMP. If insufficient information exists or the condition of the resource is poor, a conservative approach to fisheries management will be taken.

Scientific Needs

- The Department and Commission support and encourage collection of the best readily available information on:
- The population levels of specified forage species and their predators;
- The preferred diet of those predators;
- The status of other [fished and unfished] forage species that serve as similar prey items;
- The effects of fishing on these forage species, i.e. the effectiveness of existing regulations, including marine protected areas and fishing gear regulations, to provide adequate forage for ecosystem services.

More Scientific Research

- The Commission recognizes existing scientific efforts ... and supports the following additional types of scientific research in partnership with other agencies, and others, to improve management:
- Ecosystem modeling to better understand the forage needs of predators and the effects of fishing on forage species on trophic dynamics;
- Synthesis of diet composition studies for California Current predators
- Stock assessments to determine more accurately the status and trends of forage species, including unfished species, and their relative importance in the broader forage pool;
- The effects of oceanographic conditions on forage species' cycles of abundance, including the dynamics of decadal or long-term oceanic cycles, that affect populations of forage species, including those forage species subject to a fishery.

