

# Morro Bay: working together for a healthy ecosystem



Morro Bay is located on the central coast of California, USA.



Morro Rock marks the entrance to the estuary of Morro Bay.

Many people and organizations are working together to ensure the Morro Bay ecosystem remains healthy: the San Luis Obispo Science and Ecosystem Alliance (SLOSEA), the Morro Bay National Estuary Program (MBNEP), and the Marine Interest Group of San Luis Obispo (MIG). This poster describes these three major groups' activities, and provides a conceptual overview of the key features of this ecosystem.



The kelp forests of Estero Bay provide refuge for many species.

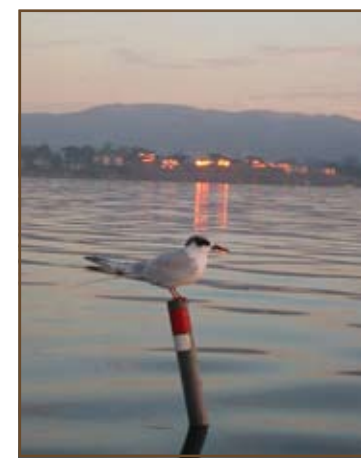
## SLOSEA

San Luis Obispo Science and Ecosystem Alliance

### COASTAL OCEAN, ESTUARY, HARBOR, AND WATERSHED

develop and share high-quality information to improve understanding of the ecosystem, and to employ this knowledge to facilitate conservation, restoration, and sustainable use of the ecosystem

SCIENTISTS / STAKEHOLDERS / MANAGERS



The Forster Tern is a top predator in Morro Bay.



### ESTUARY AND WATERSHED

restore and protect water quality and habitat, community outreach and education, and environmental monitoring

LOCAL CITIZENS

GOVERNMENT AGENCIES

LANDOWNERS



Of San Luis Obispo County

### COASTAL OCEAN

develop and support collaborative (constituent-based) research examining the status of nearshore fish and bird populations

ELECTED OFFICIALS

LOCAL CITIZENS

CONSERVATIONISTS

BUSINESS PEOPLE

FISHERMEN

SCIENTISTS

### Further Information

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### Acknowledgements

The SLOSEA Advisory Committee includes representatives from the following agencies and stakeholder groups:

Bay Foundation  
California Coastal Commission  
California Coastal Conservancy  
California Department of Fish & Game  
California State Parks  
City of Morro Bay  
Coastal San Luis Resource Conservation District  
Los Osos Community Advisory Council  
Marine Interests Group of San Luis Obispo County

Monterey Bay National Marine Sanctuary  
Morro Bay Harbor District  
Morro Bay National Estuary Program  
NOAA Fisheries  
Port San Luis Harbor District  
Recreational Fishing  
Regional Water Quality Control Board  
San Luis Obispo County Planning  
U.S. Fish & Wildlife Service



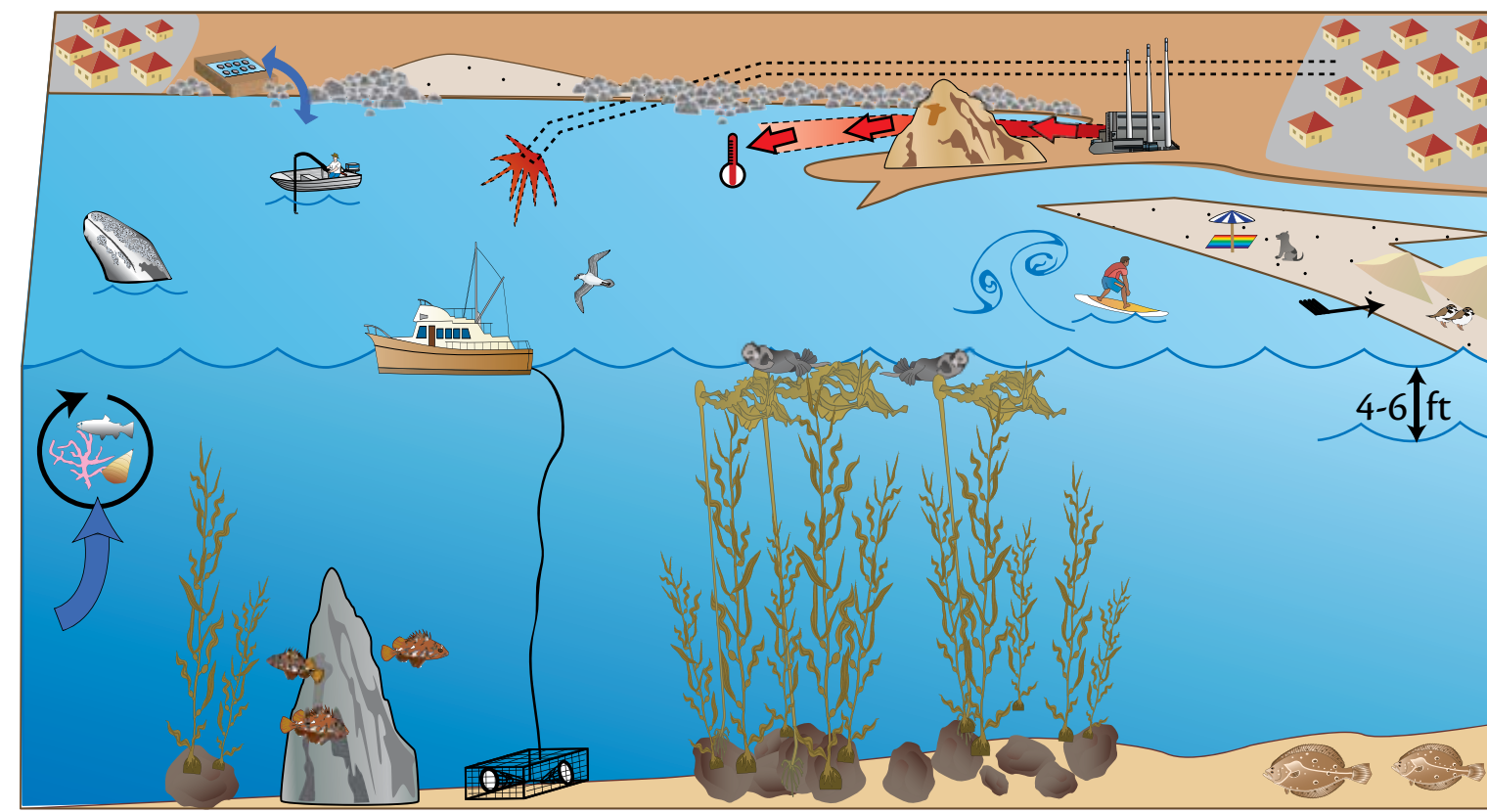
Support for this project was provided by the David & Lucile Packard Foundation.

Photographs courtesy of: Morro Bay National Estuary Program, Dean Wendt, the Integration & Application Network, and visitusa.com.

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### Estero Bay

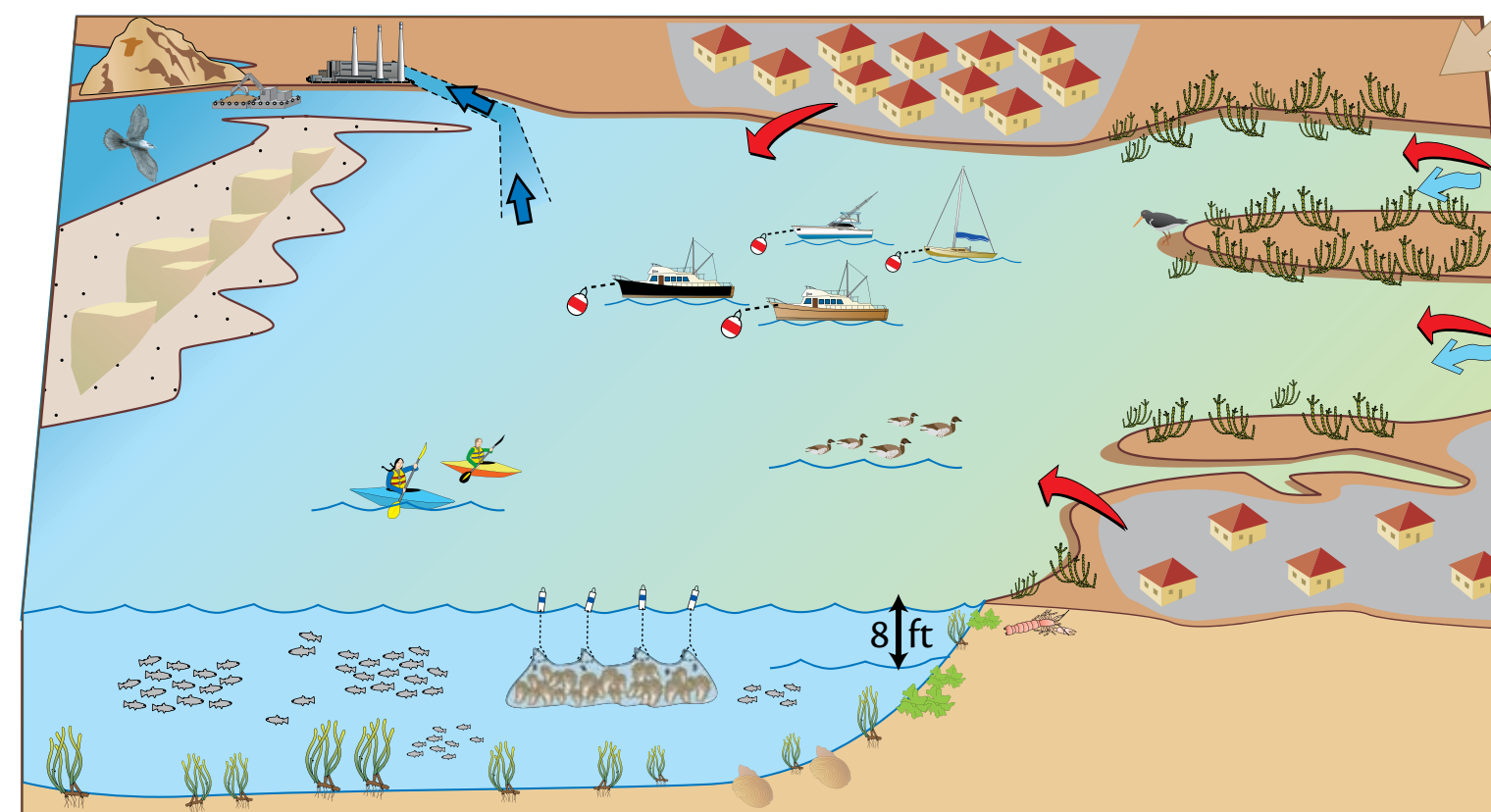
Estero Bay is an ecologically rich and diverse region. The Bay is the endpoint for several perennial and intermittent streams. The town of Cayucos and a portion of the city of Morro Bay are located on the shores of Estero Bay.



- rocky intertidal zones, sandy beaches
- high wave energy, wind, tide (4-6ft)
- coastal upwelling, productive waters
- seamount, kelp forest, sand bottom
- abundant marine life
- endangered species
- Cayucos, Morro Bay
- commercial / recreational fishing
- power plant outflow
- surfing, beach use
- commercial abalone farms
- sewage outflow

### Morro Bay Estuary and Harbor

Morro Bay is a small, shallow estuary and harbor that receives freshwater input from Los Osos and Chorro Creeks. The community of Los Osos and a portion of the city of Morro Bay are located on the shores of the Bay.



- Los Osos / Chorro Creeks input
- tidal flushing (8ft)
- vast mudflats, large salt marsh
- seagrass, macroalgae
- abundant resident / migratory species
- endangered species
- Los Osos, Morro Bay
- engineered / dredged entrance
- power plant intake
- safe anchorage, recreation
- oyster aquaculture
- high nutrient input

### Morro Bay Watershed

The Morro Bay watershed delivers water to one of the most significant wetland systems on California's central coast. The area is recognized as a globally significant hotspot for terrestrial biodiversity. The watershed consists of two primary tributaries—Chorro and Los Osos Creeks. Both creeks deliver nutrients and sediments to the estuary, as well fertilizers and pesticides. Storm water runoff and septic systems from Los Osos also deposit toxicants and nutrients.



The 75 sq. mile watershed of Morro Bay has many crop and cattle farms.



- multiple primary / secondary creeks
- oak grasslands
- coastal chaparral
- volcanic peaks, mountain ridges
- endangered species
- Los Osos, Morro Bay
- military / prison / university sites
- crop farming, cattle grazing
- erosion
- sediment / nutrient / toxicant input
- invasive / exotic species



The estuary's wetlands and seagrass beds provide nursery habitat and food sources for fish.



Severely accelerated erosion and sedimentation are quickly filling Morro Bay.



The following research and monitoring initiatives were developed by members of the San Luis Obispo Science and Ecosystem Alliance, the Morro Bay National Estuary Program, and the Marine Interest Group of San Luis Obispo. The overarching goal is to develop a better understanding of the ecological dynamics of the Morro Bay Ecosystem to ensure that management decisions sustain a productive and resilient ecosystem and community.

#### Water quality

To determine spatial and temporal changes in physical and chemical characteristics of water quality in the Morro Bay Ecosystem. To identify the importance of both natural and anthropogenic sources in causing those changes so as to improve management and policy actions.

#### Bioindicators

To develop and utilize representative bioindicators to monitor and track changes in ecosystem health. To determine the dynamics and response of secondary production in the Morro Bay Ecosystem.

#### Economic indicators

To determine how ecological health influences the economic wellbeing of people who live near and make a living from the Morro Bay estuary and near-shore ecosystem.

#### Habitat

To determine the relevant extents, distributions, and characteristics of critical spawning and nursery areas for nearshore fish and invertebrates species in the Morro Bay Ecosystem. Determine the importance of the Morro Bay estuary as a nursery environment for coastal species of fish and invertebrates.

#### Human access

To determine the effects of human uses on marine biological communities in the Morro Bay estuary and the associated coastal habitats.

#### Linking science and management

To provide clear and concrete linkages between the science projects and the incorporation of their results into resource management and improved ecosystem health.