

Monterey Bay National Marine Sanctuary

Introduced Species

Management Issue

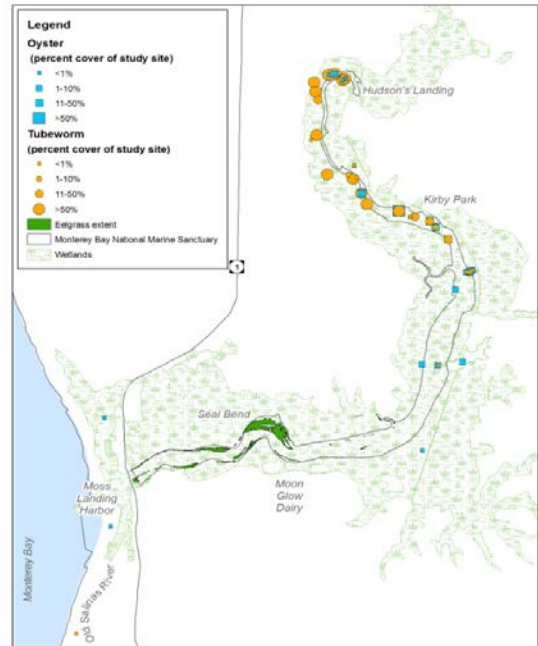
Introduced species are a major economic and environmental threat to the living resources and habitats of the Monterey Bay National Marine Sanctuary (MBNMS or Sanctuary) as well as the commercial and recreational uses that depend on these resources.

Description

Introduced species in marine and estuarine environments alter species composition, threaten native biodiversity (especially threatened and endangered species), modify ecosystem structure and function, and can disrupt commercial and recreational activities. It is necessary to identify the pathways by which new species are introduced into the Sanctuary, and prioritize which pathways pose the greatest threat to Sanctuary resources. Researchers need to establish baseline information and monitor for new invasions to rapidly evaluate the most feasible and efficient methods of eradication, containment or management of existing and future introduced species. This is critical to minimizing the impact of introduced species on Sanctuary resources and to implementing the protection of species and habitats threatened by introductions.

Questions and Information Needs

- 1) What are the ecological and economic impacts of introduced species within the Sanctuary?
- 2) What are the pathways by which species are introduced into the Sanctuary? What process can be used to evaluate the pathways posing the greatest threat to Sanctuary resources? Which agencies, organizations, regulations, or policies already address introduction pathways?
- 3) Can we detect new invasions (including Elkhorn Slough and tsunami debris from Japan)
- 4) What are the most feasible and efficient methods of eradication, containment or management for existing and future introduced species in the Sanctuary?
- 5) Where, how and for how long should monitoring studies be conducted in the Sanctuary to further our understanding of species already introduced to the Sanctuary?



*Distribution of eelgrass (*Zostera marina*), native oyster (*Ostreola conchaphilia*), and non-indigenous tubeworm (*Ficopomatus enigmaticus*). Map credit: MBNMS*

Scientific Approach and Actions

- Assess known pathways of introduction: aquaculture, aquarium trade, ballast water, biological control, fisheries enhancement, hull fouling and other non-ballast vessel introductions, live bait, commercial businesses, scientific research institutions, and dispersal of adults, eggs and larvae
- Establish baseline data collection and monitoring programs, including an expansion from the Elkhorn Slough region to investigated areas of Santa Cruz and Pillar Point harbors, and the outer coast

Potential Key Partners and Information Sources

Regional Water Quality Control Board, California Department of Boating and Waterways, California Sea Grant, California Department of Fish and Game, Marine Pollution Control Studies Lab, Elkhorn Slough

Current as of 11/28/2012

For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>

Potential Key Partners and Information Sources *(continued)*

National Estuarine Research Reserve, Smithsonian Environmental Research Center, University of California, California State University, local divers

Management Support Products

- Distribution and abundance map of introduced species in the Sanctuary
- An evaluation of detection and response options specific to individual introduced species

Planned Use of Products and Actions

- Develop and implement prevention program for known introduction pathways
- Identify incentives and necessary infrastructure and training to reduce risk of introduction
- Develop early detection and response programs
- Assess ecological and economic impacts of introduced species in the Sanctuary



*The invasive seaweed, Undaria pinnatifida appeared in the Monterey Harbor in 2001.
Photo credit: MBNMS/SIMoN.*

Program References

MBNMS Management Plan

- Introduced Species Action Plan, Strategy IS-1, IS-3

MBNMS Condition Report

- What is the status of non-indigenous species and how is it changing? (Offshore, Nearshore, and Estuarine Environments – Question 11)

ONMS Performance Measures

- Develop and implement action plans to address four key known pathways to prevent introduction of non-native species
- Number of sites in which select living marine resources, based on long term monitoring data, are being maintained or improved

Current as of 11/28/2012

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