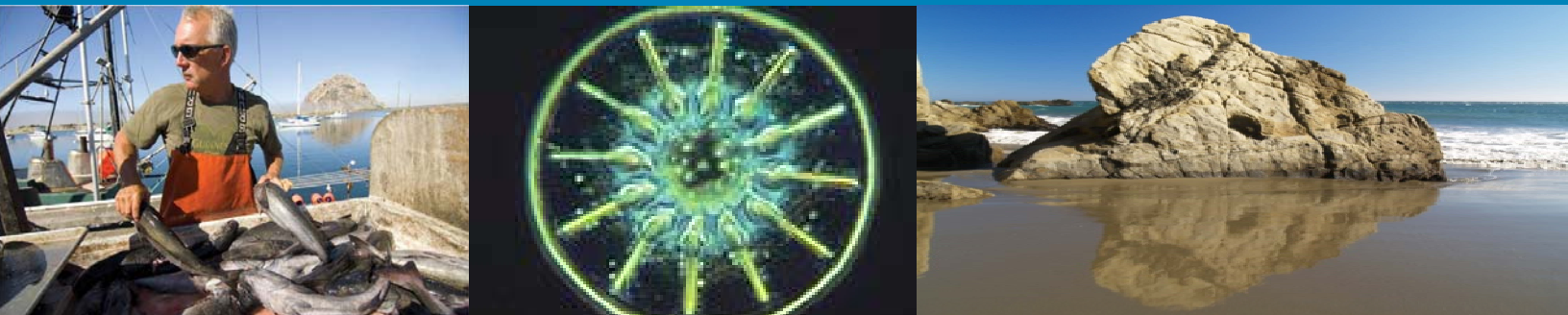


# Aquatic Invasive Species Vector Risk Assessment Project



## Invasive Species

In today's global society, it has become easier and more convenient than ever to travel and to move products to markets around the world. This has given rise to a significant problem for vulnerable aquatic environments: invaders.

These invading species are being transported around the globe, sometimes deliberately to be sold in markets as food, ornamentation, or as pets. But in many instances, these species are transported by accident, such as an insect stowed away in a cargo box or a larval fish brought on board a ship in the ballast water. When these species are brought outside their natural range, they may find suitable conditions that allow them to establish a population. In their new homes, exotic species can thrive and cause significant ecological and economic damage - it is these potentially harmful exotic species that we call "invasive."

Many people are familiar with invasive insects like the Mediterranean fruit fly and plants such as scotch broom that have wreaked extensive damage to the farms and

fields of California. However, in our waterways and beneath the surface of our oceans California's aquatic environment is under similar threat by invasive species.

San Francisco Bay itself is widely considered to be an invasive species hot spot. Aquatic Invasive Species (AIS) can upset ecological stability, outcompete native species, and impact water quality, which affects commercial and recreational uses of the bay and other waterways.

The economic cost of AIS has been estimated at approximately \$9 billion annually in the United States.<sup>1</sup> But AIS management is not just an economic issue—the health of our unique coastal and marine ecosystems is a source of pride and recreation for California's 37 million citizens. If invasive species are allowed to establish themselves in a new area, they can become extremely difficult to eradicate. Therefore, understanding and managing the pathways, or vectors, that allow invaders into our waters is the most effective method of protecting against the damaging effects of AIS.

## Project Background

In 2008, the California Ocean Protection Council (OPC) reached out to the California Ocean

Science Trust (OST) to coordinate risk assessments for introductions of AIS into California's coastal and estuarine waters. The OST was chosen for this project because of its expertise in presenting scientific research in a manner that is useful for ocean management. The OST also has in place processes to coordinate scientific studies so that managers know that the information they ultimately receive is unbiased, accurate, and up to date. Some routes of AIS introduction into new areas—such as the unintentional transport of species in the ballast water of freight ships—are relatively well understood. The goal of this project is to learn more about other lesser-known vectors that pose a significant risk of introducing invasive species to California. These include:

- commercial fishing
- recreational boating
- live bait
- live imported seafood
- aquariums and aquascaping
- aquaculture

## About the Project

Through a competitive process, the OST recruited three highly qualified teams of AIS scientists from across the country. The teams are using a combination of literature and database review, augmented with direct sampling and interviews where appropriate, to provide the state with an assessment of the risks posed by each vector. The OST is working to ensure a consistent approach across the project teams so that each vector can also become part of a wider analysis.

The OST guarantees that the State will ultimately receive a comprehensive study that clearly lays out the relative risk posed by each of these potential introduction routes. The OST will also work with a team of scientific and socioeconomic experts to de-

velop specific recommendations about the costs and opportunities of management options for controlling key pathways of AIS into California. Managing AIS is one of the many issues that our coastal state must address that requires the most reliable, advanced scientific information to guide decision-making. As an organization that fluently converses with both California policy-makers and the scientific community, the OST can ensure a productive dialogue and better outcomes.



For more information about Aquatic Invasive Species in California, see:

- The California AIS Management plan: [www.dfg.ca.gov/invasives/plan/](http://www.dfg.ca.gov/invasives/plan/)
- The Invasive Species Council of California [www.iscc.ca.gov/](http://www.iscc.ca.gov/)
- The California Ocean Science Trust [www.calost.org](http://www.calost.org)

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<sup>i</sup> Pimentel, D. 2003. "Economic and Ecological Costs Associated with Aquatic Invasive Species." pp. 3-5. In K Wakefield and A Faulds (eds.) *Proceedings of the Aquatic Invaders of the Delaware Estuary Symposium*, Malvern, Pennsylvania, May 20, 2003.

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