

NOAA's Oceans and Coasts Invasive Species Challenge

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What is the scale of the issue?

- 50,000 alien species now estimated in US
- ~600 alien species identified in US coastal waters
- For lower 48 states, 70–235 aliens detected in each estuary surveyed for invasions
- US marine invasive species cost hundreds of millions of dollars per year
- ~\$3 B spent in 10 years to mitigate zebra mussel damage in Great Lakes
- Invasives impact 35–46% of US endangered species

Pathways of Introduction



- Ballast Water/ship hulls
- Aquaculture
- Aquarium - public & private
- Bait
- Drilling platforms/dry dock
- Canals/dams
- Fisheries/game - recreational
- Live fish food
- Gardening

The Challenge: How to Reverse Invasion Trends?

- Prevention
- Detection
- Assessment
- Action



NOS Focus

- Manage directly (e.g. marine sanctuaries)
- Manage indirectly (e.g. NERR's)
- Integrate information
- Research

Integrated Assessment

- Status and trends
- Causes and consequences
- Ecological forecasts of alternative actions
- Impacts of management alternatives

Detection

To control coastal marine alien invaders, managers and scientists need certain information before alien species spread beyond the point of introduction...

- Early detection, verification, and warning of species introduced to a US coastal marine ecosystem
- Quantification of the risk of a new alien species becoming invasive under different options for action



Stretching as far as the eye can see, these Australian spotted jellyfish, *Phyllorhiza punctata*, invaded the northeastern Gulf of Mexico in 2000. Managers had little warning about the possible risk of invasion by this large (medusae reach 70 cm in diameter) stinging jellyfish.

Benefits to Coastal Managers

- An up-to-date inventory of all coastal marine organisms that identifies native, alien, endangered and threatened species by coastal location (e.g., state, island, bay, estuary; GIS location for aliens)
- Routinely updated species and environmental data from existing coastal marine monitoring programs
- A web page where new monitoring data can be checked expeditiously against inventoried species with automatic alerts for confirmed new aliens
- Risk assessments and evaluation of mitigation and control options

Research for Invasive Species Management

