



NOAA update

presentation to West Coast Green
Technical Meeting
September 13, 2005

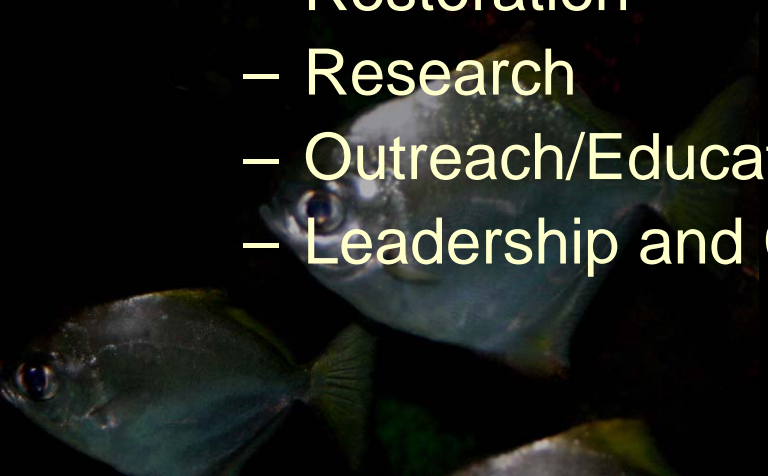




NOAA AIS Program supports:

Informed action to protect NOAA steward resources from aquatic invasive species

- Prevention
- Monitoring/Early Detection
- Control
- Restoration
- Research
- Outreach/Education
- Leadership and Coordination





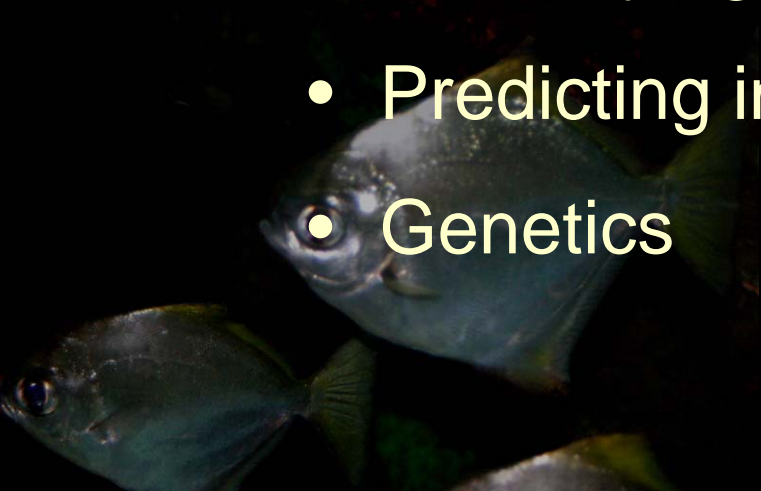
NOAA aquatic invasive species program components

- **National Sea Grant College Program**
 - **Ballast Water Technology Development Program**
 - **National Centers for Coastal Ocean Science**
 - **Great Lakes Environmental Research Laboratory**
 - **NISA/Alaska Program**
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- Fisheries Science Centers
 - Regional Laboratories
 - Cooperative Institutes
 - Habitat Program
 - Ecosystem Research Program
 - Coral Program
 - NOAA Restoration Center
 - National Marine Sanctuaries
 - National Estuarine Research Reserves



Sea Grant Green Crab projects 1998 - present

- Biological control
- Quantifying Spread
- Predicting and monitoring spread
- Quantifying Impacts
- Predicting impacts
- Genetics





“Predicting And Monitoring The Spread Of Marine Invasive Species: Development Of Approaches And Application To The Green Crab (*Carcinus Maenas*) And The Asian Shore Crab (*Hemigraspus Sanguineus*)” B. Leung

Further, *C. maenas* and *H. sanguineus* have the most comprehensive data sets available, documenting their establishment and spread on the east coast of North America. Therefore they are ideal case studies to parameterize one of the first invasion spread models specific to marine systems. *C. maenas* was first recorded in 1817 and *H. sanguineus* in 1988 in New Jersey (Say 1817; McDermott 1998; Carlton & Cohen 2003). *C. maenas* has a long temporal record of 187 years of spread along the eastern coast of North America. *H. sanguineus* has a highly quantitative data set, and is a more recent invasion. Thus, major aspects of spread can be parameterized using *C. maenas*, and tested using *H. sanguineus*, which are similar organisms. More generally, these case studies may form the foundation for a more generalized spread model for other marine invasive with a planktonic life stage, depending on sensitivity of the model to life history parameters. A few examples of potential species include the invasive gastropod *Ocenebrellus inornatus*, North Pacific seastar, *Asterias amurensis*, and the Asian clam, *Potamocorbula amurensis*.

We separate our proposal into three sections, corresponding with our three objectives: 1) forecasting spread, 2) optimizing monitoring approaches, and 3) developing volunteer monitoring network. In each section, we discuss the background and proposed research, including approaches, data sources, and validation.





Ballast Water Technology Demonstration program

- Multi-agency program to support research, development, test and evaluation of BW treatment technologies
- NOAA funding is from Congressional earmarks, sometimes with strings attached.
- Through 2005, the BWTDP funded 54 proposals with \$11.8M in funds from NOAA (\$10.2M) and FWS (\$1.6M). MARAD has contributed use of its vessels. A total of \$3.5M in matching funds since 1998.
- 2006 Appropriations: \$6M.





NISA Alaska program

- Grants program to address invasive species issues in Alaska and the Pacific Northwest
- NOAA funding by Congressional direction goes to Pacific States Marine Fisheries Commission and Alaska Department of Fish and Game
- About \$1.5M per year since 2003
- 2006 Appropriations: \$1.5M.





NCCOS

integrated assessments of ecosystem condition

- Assess status and trends in ecosystem condition
- Report causes and consequences of this status
- Predict impact to resources, human and ecosystem health and well being with no management action
- Predict impacts with management actions
- After management decisions implemented, evaluate effectiveness of decisions.





Lionfish integrated assessment

- Current distribution, expected range expansion
- Anticipated population dynamics
 - With no action, the lionfish population will continue to grow along the southeast United States shelf
- Predicted ecosystem impacts
- Predicted human health impacts
- Guidance for specific management actions
 - Reducing population abundance
 - Outreach and Education
 - Research





integrated assessment of the marine tunicate, *Didemnum lahillei*

- What is the likelihood that *D. lahillei* will become invasive in U.S. waters within the next 10 years?
- What would be the impacts--environmental, human health, social, and economic?
- forecasts future conditions under various policy options; and
- provide technical guidance for implementing each option.





integrated assessment of the Green Crab, *Carcinus maenus*

- Assess status and trends in ecosystem condition
- Report causes and consequences of this status
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NERR report

Using the National Estuarine Research Reserve System platform to prevent and control invasions by exotic decapod crabs. 2003

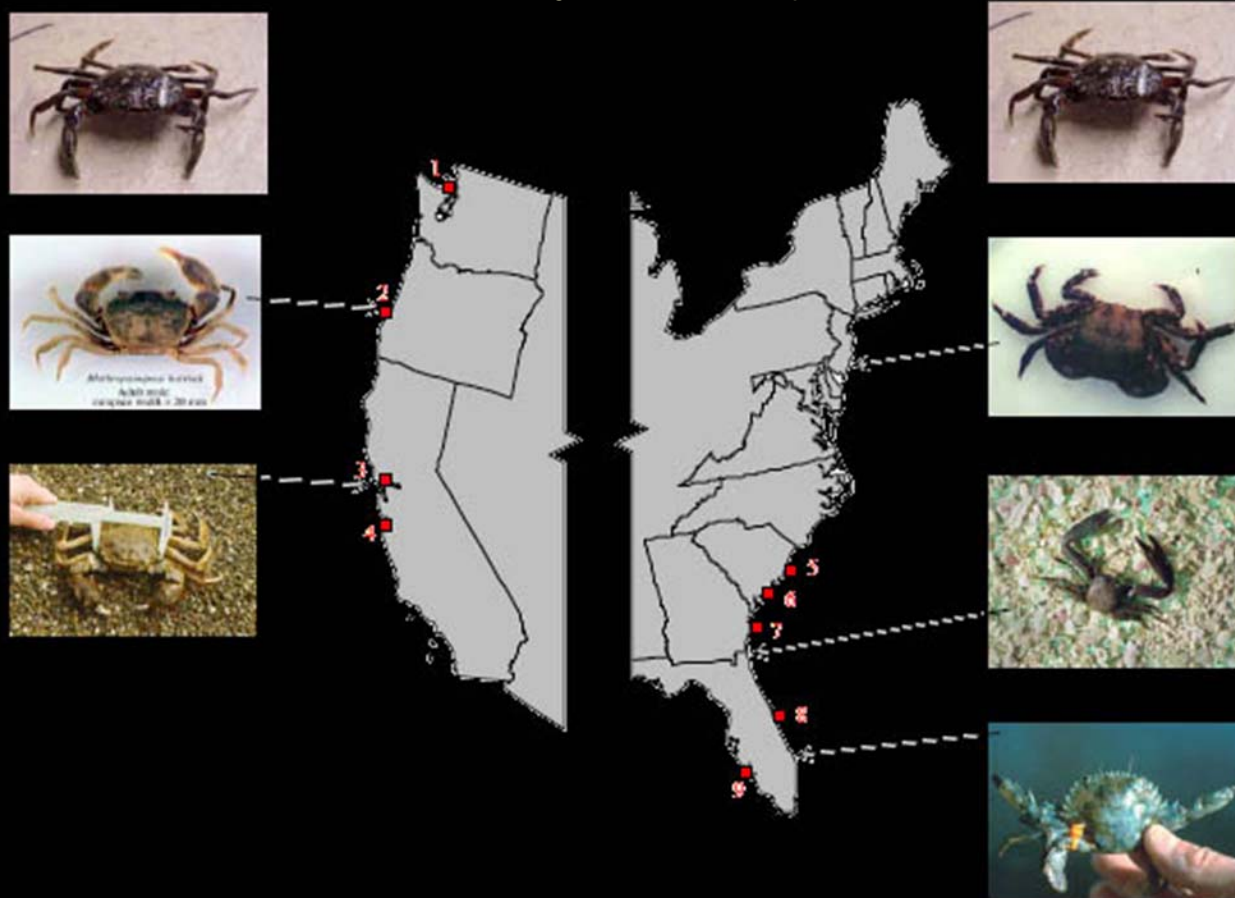


Figure 1. Crab invasions on the Atlantic and Pacific coasts of North America. Clockwise from top right: *Carcinus maenas*, early 1800s; *Hemigrapsus sanguineus*, 1988; *Petrolisthes armatus*, 1994; *Charybdis hellerii*, 1995; *Eriocheir sinensis*, 1989; *Rithropanopeus harrisi*, date unknown; *Carcinus maenas*, 1989. The ten participating sites included nine NERR sites (red boxes) and one Department of Natural Resources (DNR) site; 1. Padilla Bay NERR, WA, 2. South Slough NERR, OR, 3. San Francisco Bay NERR, CA, 4. Elkhorn Slough NERR, CA, 5. North Inlet-Winyah Bay NERR, SC, 6. ACE Basin NERR and South Carolina -DNR, SC 7. Sapelo Island NERR, GA, 8. GTM NERR, FL, and 9. Rookery Bay NERR, FL.



the future of NOAA AISP

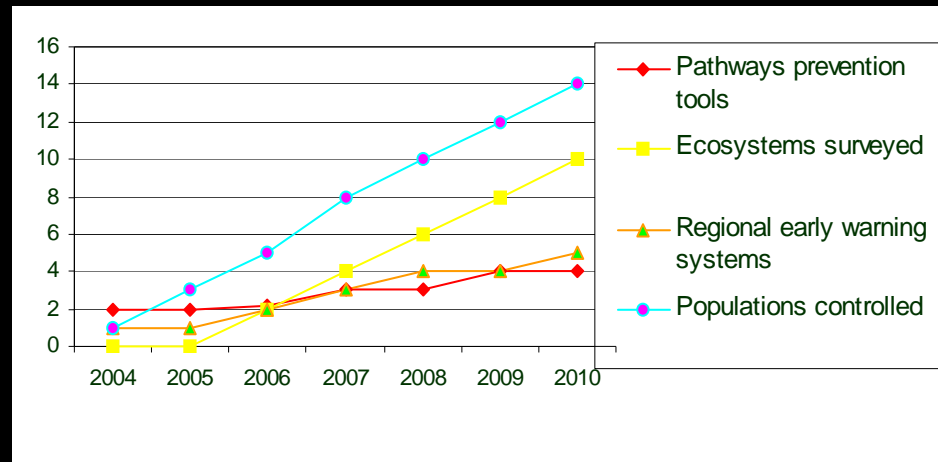
- More strategic
 - AISP strategic plan
 - AISP research plan
 - Habitat Matrix Program, other programs at NOAA
- More focused
 - can't do it all
 - more and better prioritization
- Continue to be results driven
 - close link to constituent needs
 - close link to outreach/extension
 - protection of NOAA steward resources
 - *Performance Measures*





Performance Measures

2004 Program Goals



2006 Performance Measure

- Increase number of invasive species populations eradicated, contained, or mitigated: *Number of invasive species detected early enough to consider rapid response.*
- 2006 target: 1

2008 Performance Measure

- Economic benefit due to invasive species prevention and control.
- 2008 target: \$2,000,000



more info

- <http://www.seagrant.noaa.gov>
- http://www.oarhq.noaa.gov/seagrantasp/SG_Public_Search/SearchHome.asp
- <http://www.nccos.noaa.gov>
- <http://www.nccos.noaa.gov/stressors/invasivespecies/welcome.html>
- <http://www.glerl.noaa.gov/res/Programs/ais/aisList.html>
- <http://www.glerl.noaa.gov/nobob/>
- <http://www.glerl.noaa.gov/pubs/brochures/>
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