

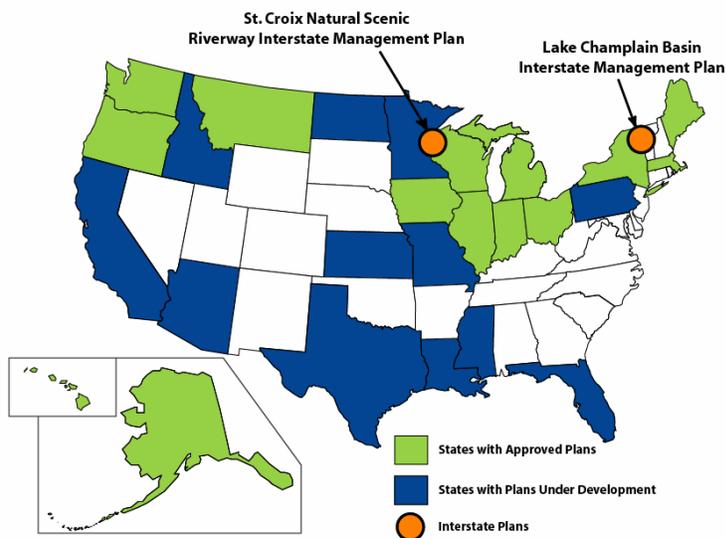
# Aquatic Invasive Species Without Borders... *Working Regionally*



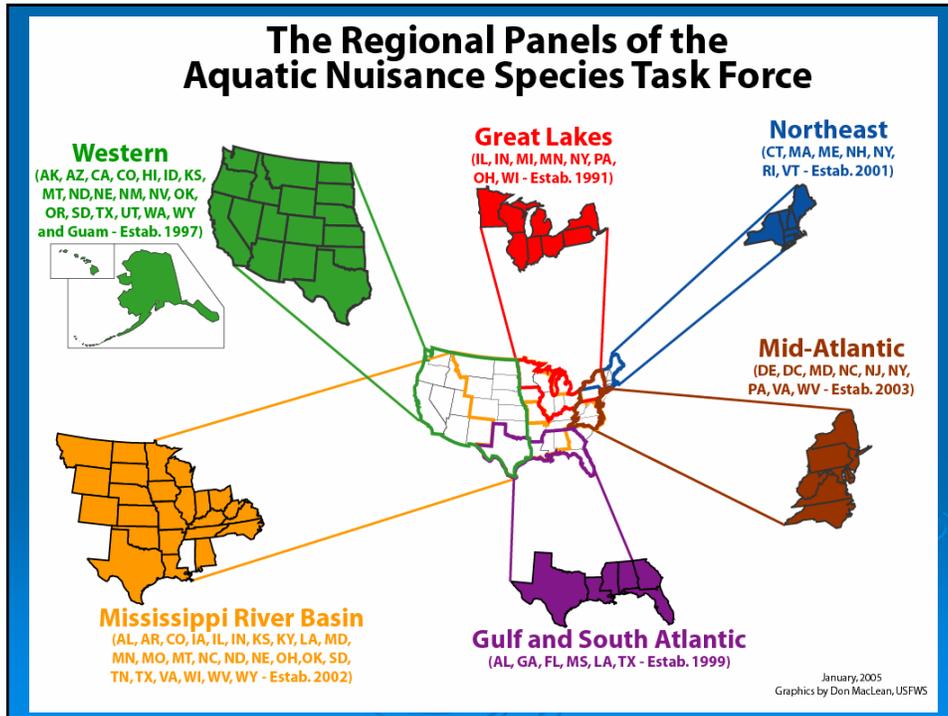
Paul Heimowitz  
U.S. Fish and Wildlife Service  
Pacific Region ANS Coordinator



## Status of State ANS Management Plans

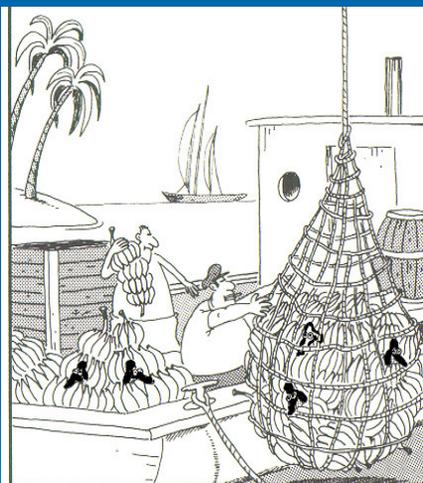


January, 2005  
Graphics by Don MacLean, USFWS



## Dealing with Invasion Path-ology

- Recreational boating
- Commercial shipping
- Fishing/live bait
- Aquaculture
- Live seafood
- Aquarium/water garden hobbyists
- Research/education facilities
- Natural resource management
- Cultural rituals



How Poodles Came to America

## Aquarium Hobbyists/ Classroom Educators



## Natural Resource Management Activities



**Hazard Analysis and Critical Control  
Point (HACCP) Plans**

## Detection and Monitoring



### Pacific Northwest Aquatic Monitoring Partnership (PNAMP)

## ANS Task Force National Control and Management Plans

- **Completed Plans**
  - Green crab
  - Chinese mitten crab
  - Eurasian ruffe
  - *Caulerpa* sp.
  - New Zealand mudsnail
- **Plans under development**
  - Asian carp (silver, bighead, black)
  - Asian swamp eel
  - Nutria



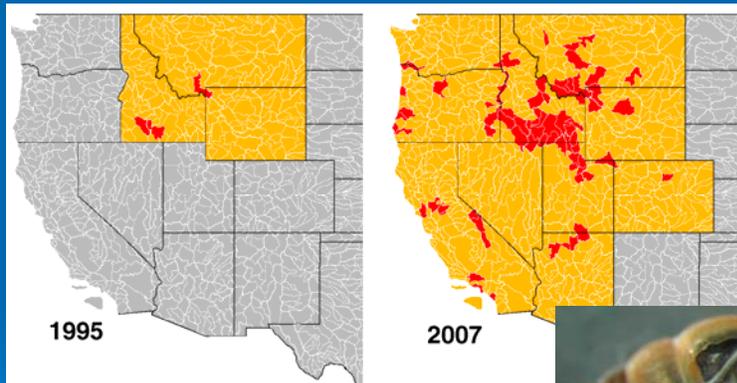
## Silver, Bighead, Black Carp



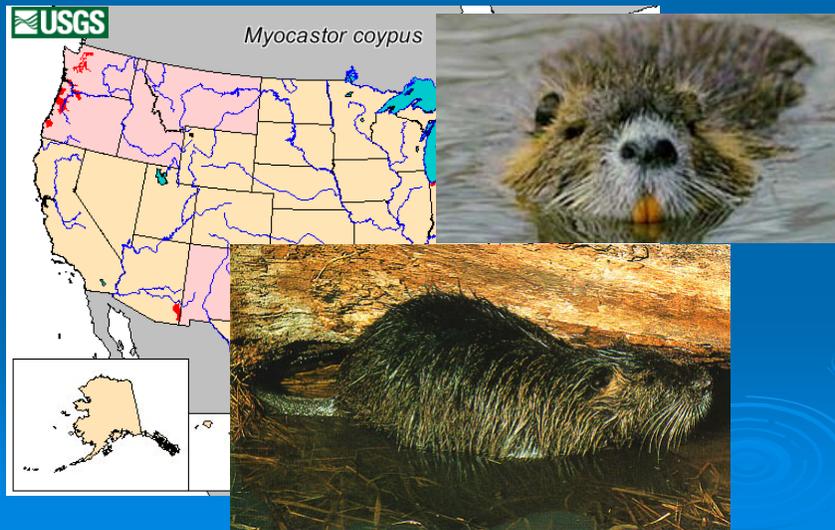
Calcium?



## New Zealand Mudsnails



# Nutria



## Issues to Address...

- How do we best remove ANS fouling large vessels/equipment?
- What's the next invader to worry about?
- How do we enhance early detection?
- What is the eradication "threshold" for \_\_\_?
- Direct impacts to listed species from \_\_\_?
- What are ANS implications of climate change?

