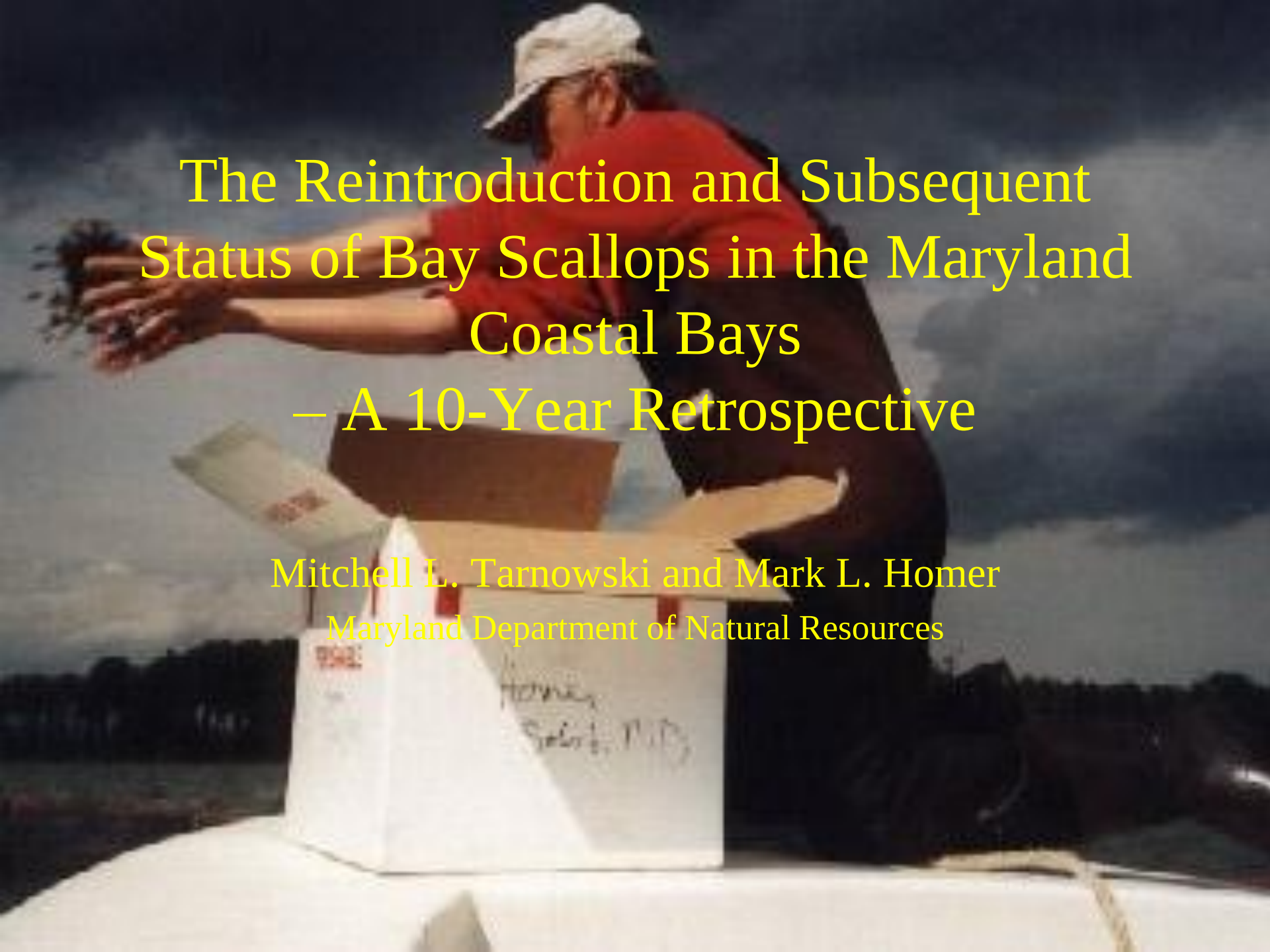
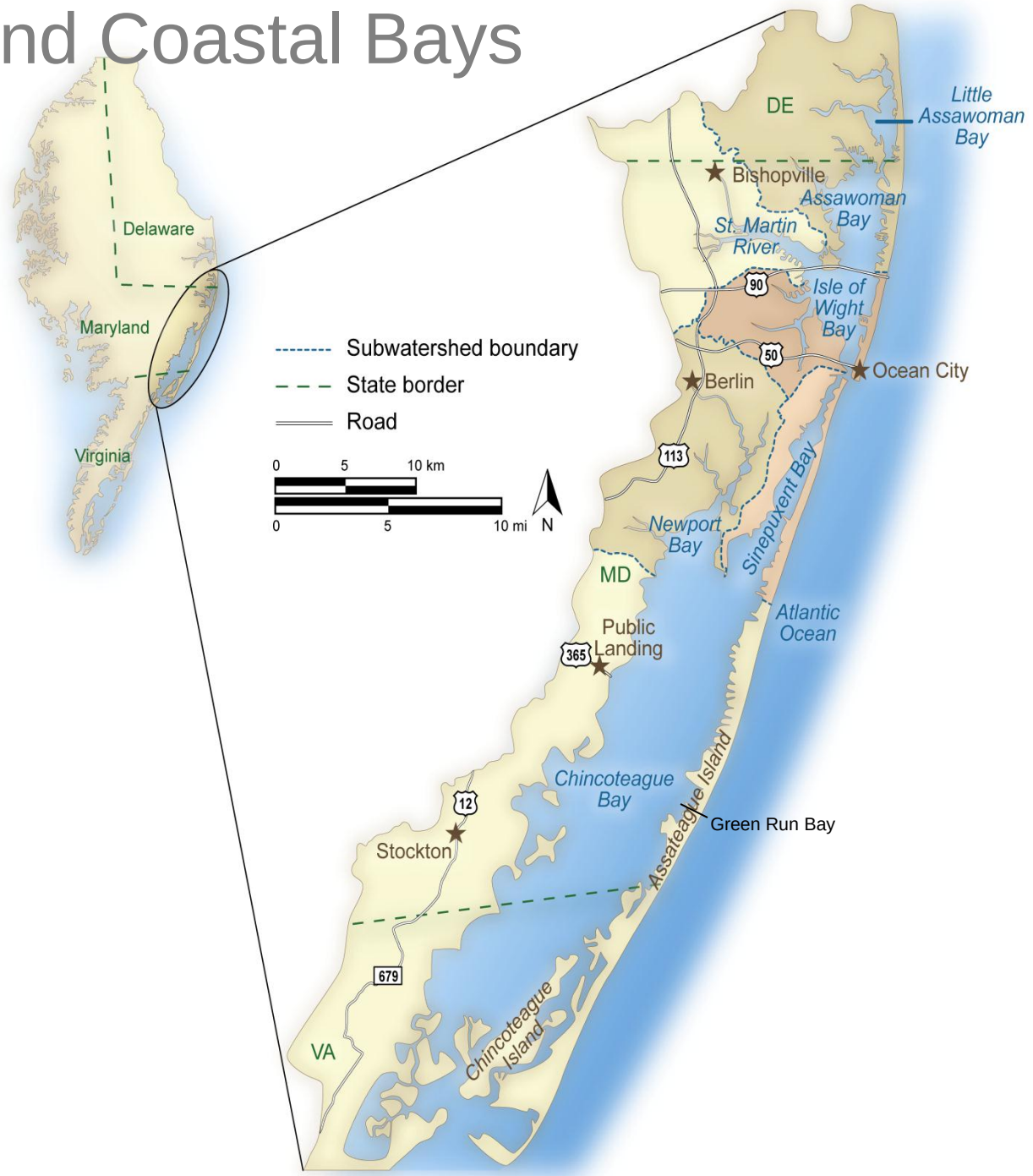


The Reintroduction and Subsequent Status of Bay Scallops in the Maryland Coastal Bays – A 10-Year Retrospective

Mitchell L. Tarnowski and Mark L. Homer

Maryland Department of Natural Resources

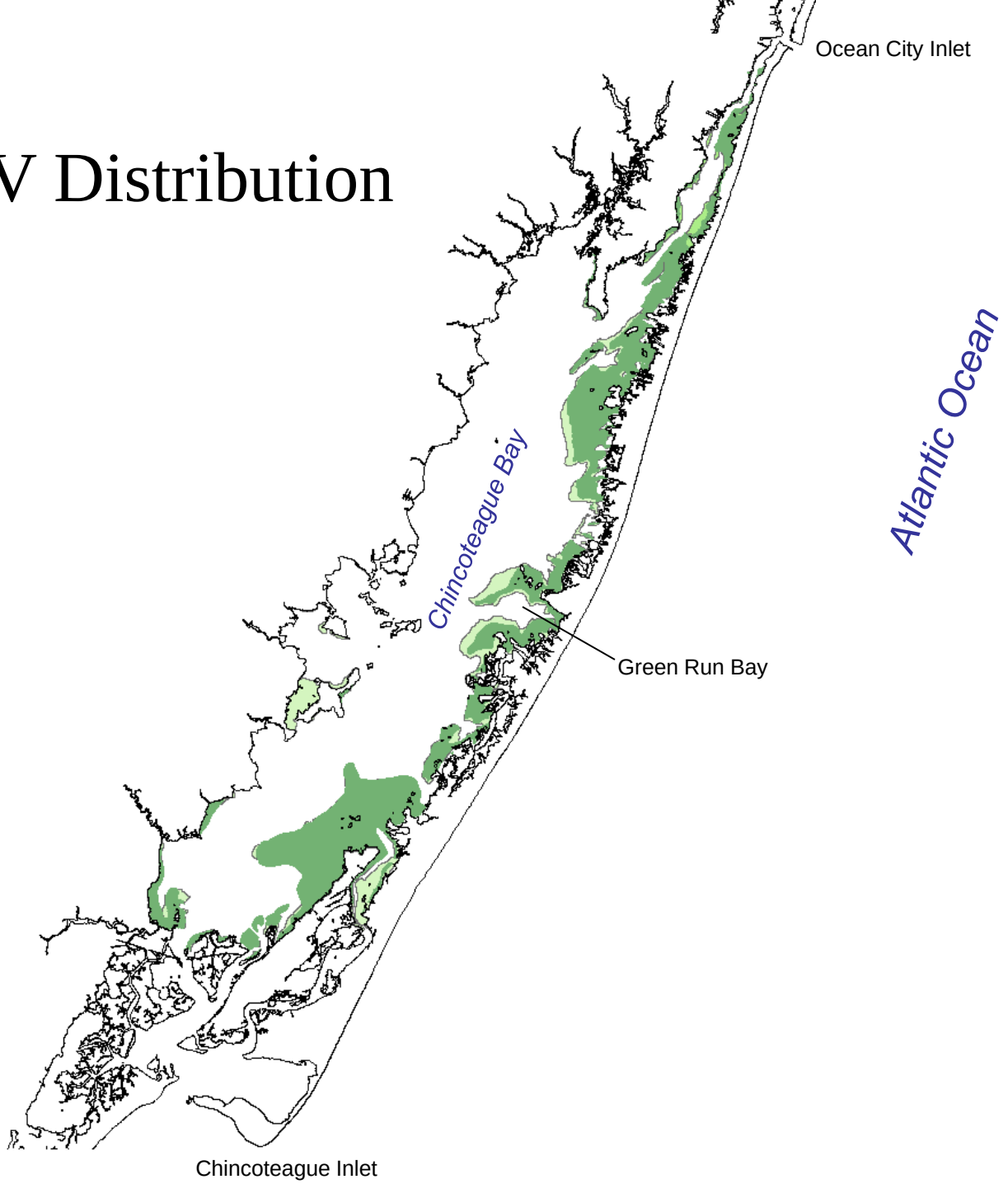
Maryland Coastal Bays



1997 Conditions

- Adequate salinity
- Abundance of seagrasses
  - ~12,000 acres
- Good water quality
- No brown tide

1997 SAV Distribution



Plan

- Plant and overwinter hatchery-reared seed scallops
- Protect the seed scallops in large predator exclosure pens
- Enhance survivorship to sexual maturity in the following spring

1997 Seed Scallops

Site Selection – Green Run Bay

- Well protected from storms
- Abundance of seagrasses
- Fine, hard sand substrate
- Extensive shallows (< 3 m)
- Good water quality
- Larval trap
- Federal park – no development
- Minimal user conflicts
- Remote – avoid unwanted attention

USGS photo

Predator Exclosures

- 1997
  - 2 pens: 80 ft x 80 ft
- 1998
  - 2 pens: 100 ft x 100 ft
  - 1 pen: 80 ft x 80 ft
- Fencing 4 ft high
  - Fine netting overlapping bottom
- Crab pots added

Results

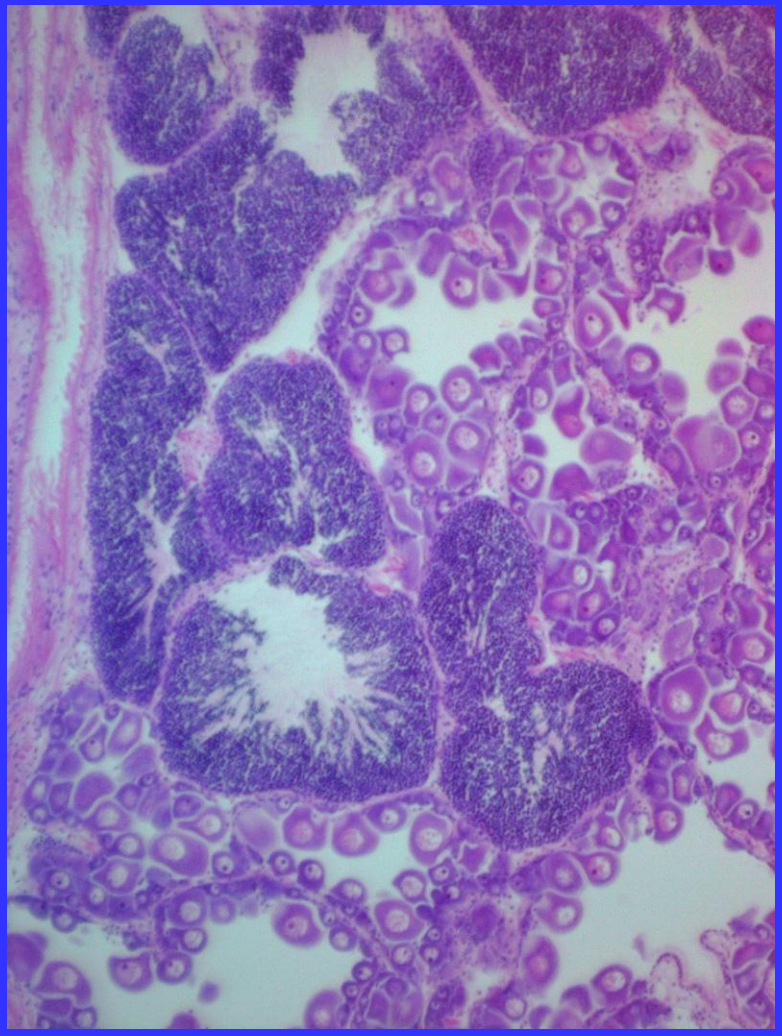
- Planting – Total of 1.2 million seed scallops
  - 1997: 550,000 seed (avg. 8 mm SL)
  - 1998: 650,000 seed (avg. 20 mm SL)

- Density
  - 1997: 42/ft^2
  - 1998: 24/ft^2

- Survivorship to Initial Spawning
  - 1997: 80%
  - 1998: 89%

Results (cont'd)

- Total Number of Spawnings
  - Three: Spring, Fall, Spring
- Surviorship to Second Spawning
  - 14%-30%
- Survivorship to Third Spawning
  - 5%



C. McCullough

Obstacles

- Serpulid worms
- Macroalgae
- Eelgrass detritus

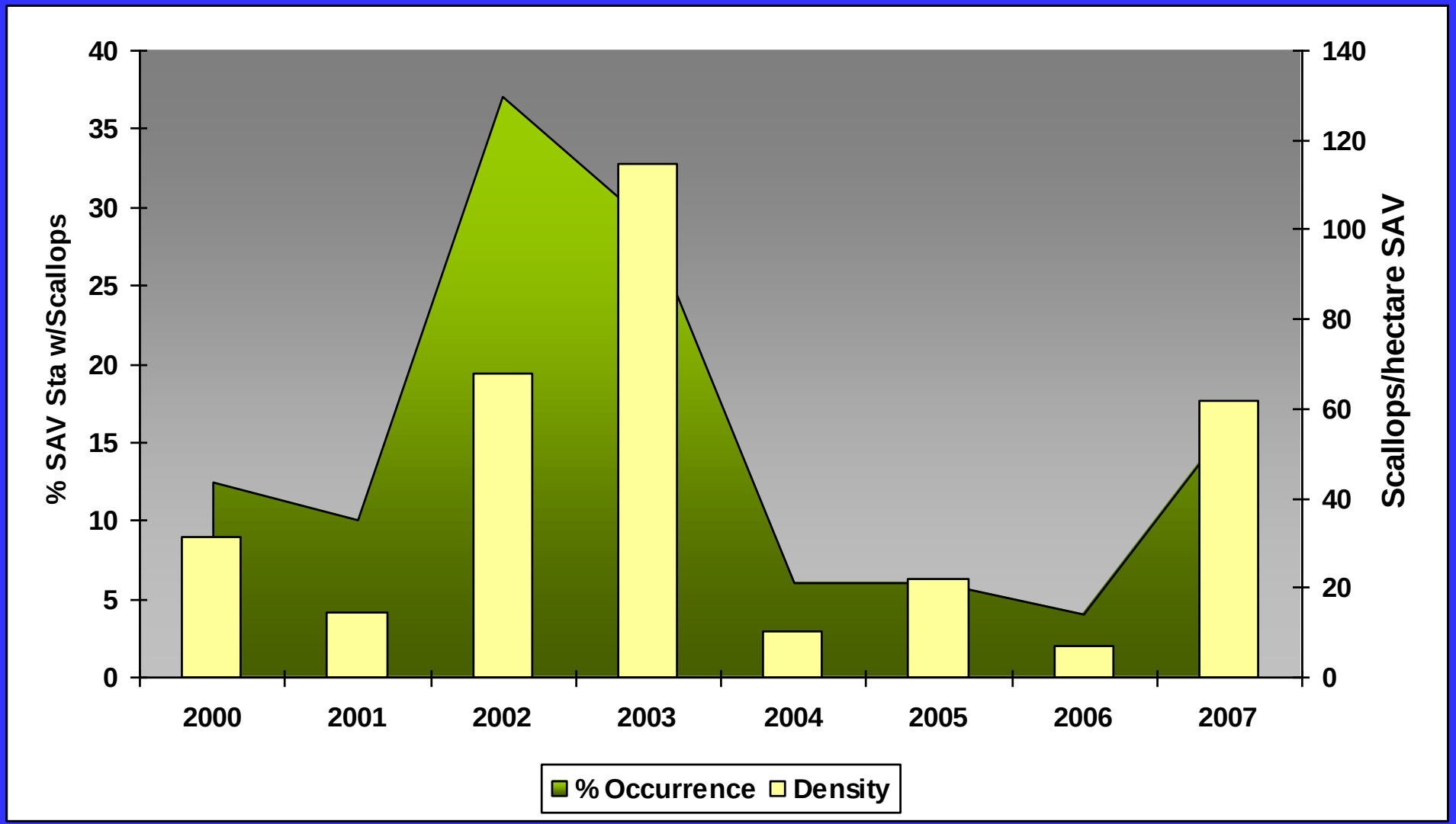
Breaks

- Mild winters
  - No ice for 3 successive years
- Fewer predators
  - Blue crabs decimated by *Hematidinium* (44% prevalence)

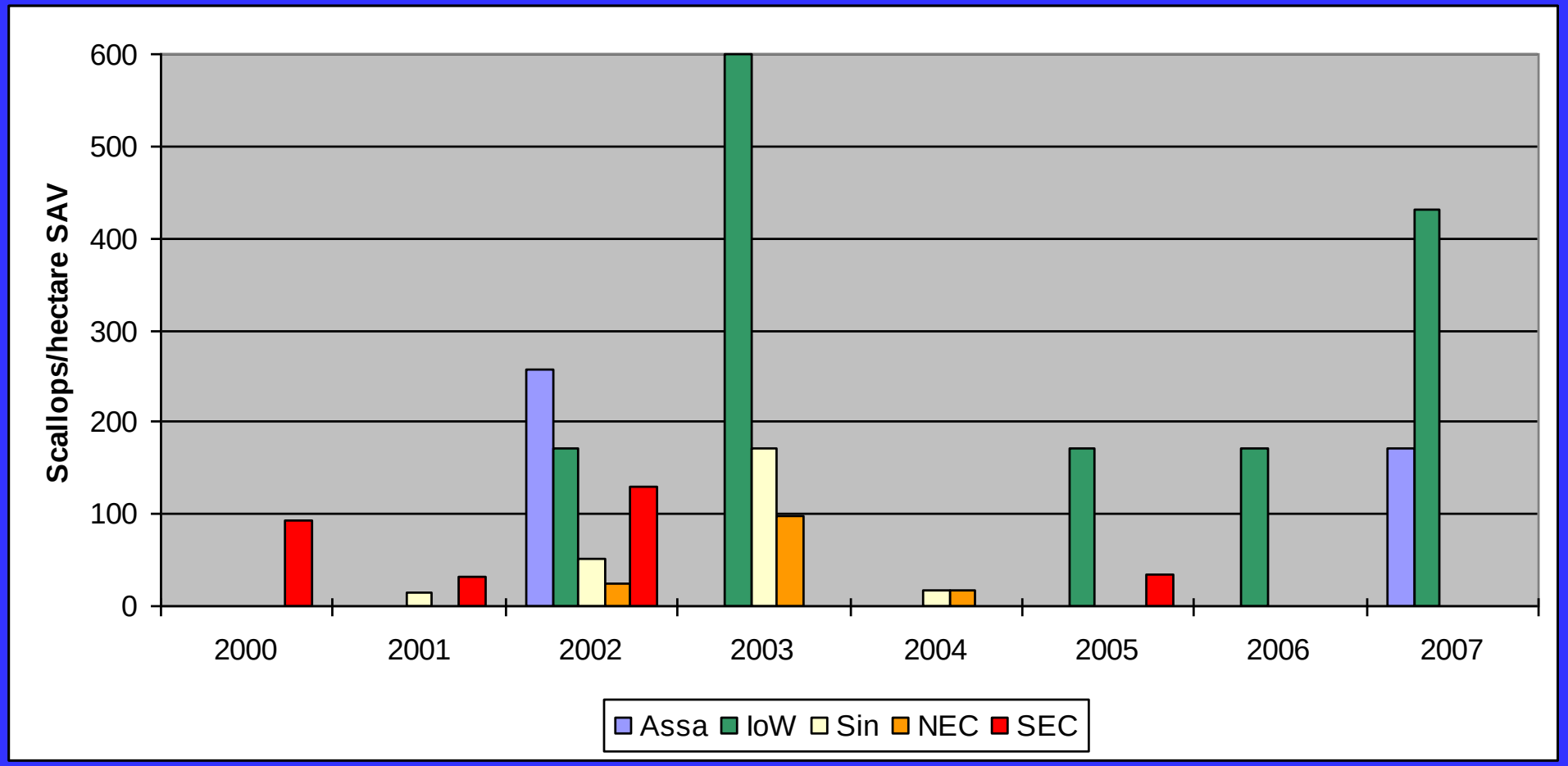
Field Surveys

- Commercial hard clam boat w/ hydraulic escalator dredge
- 250 ft. dredging distance
- Small sample n – only 21 to 38 samples/yr in SAV beds

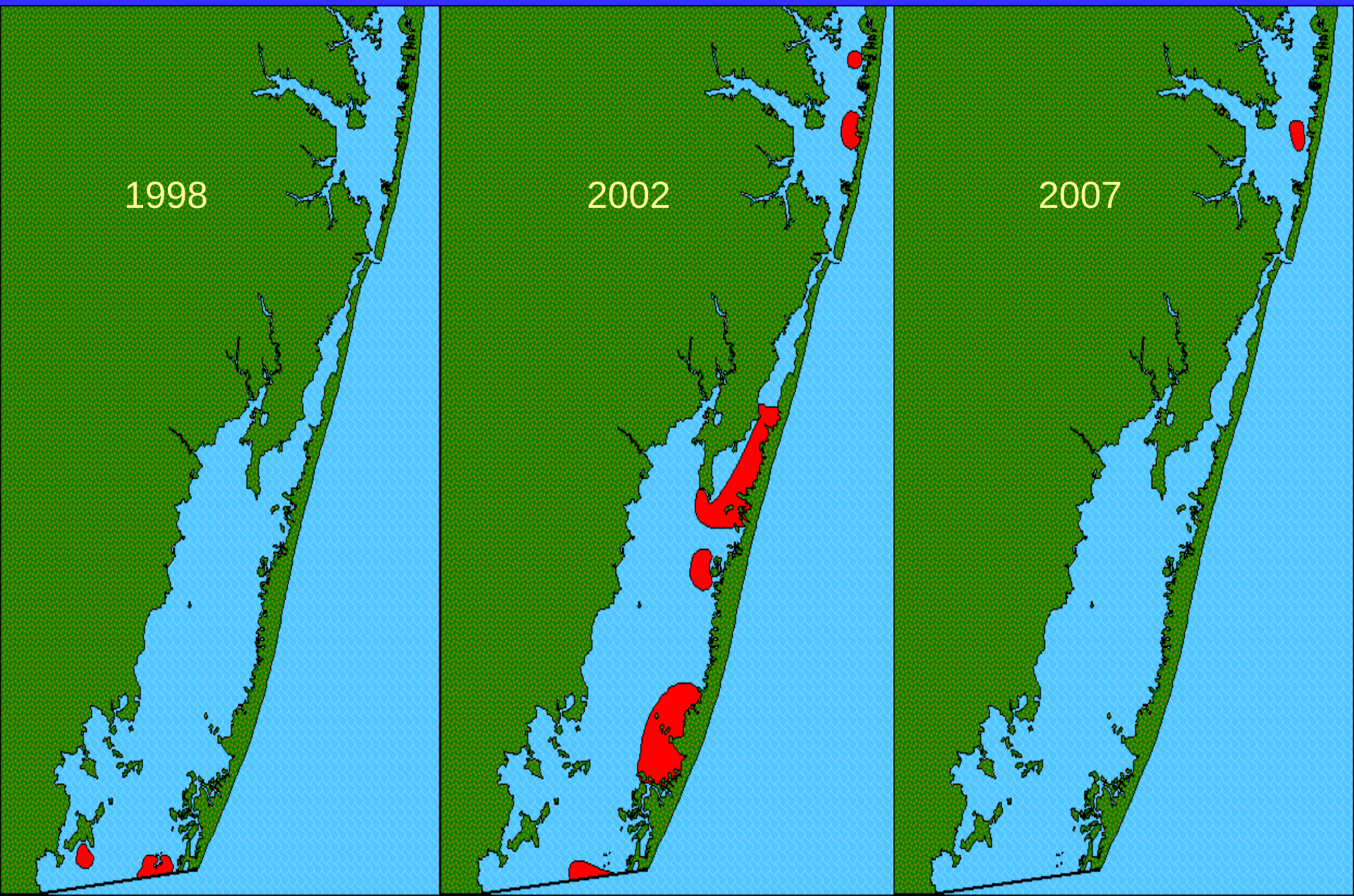
Hard Clam Surveys – SAV Stations



Density by Area



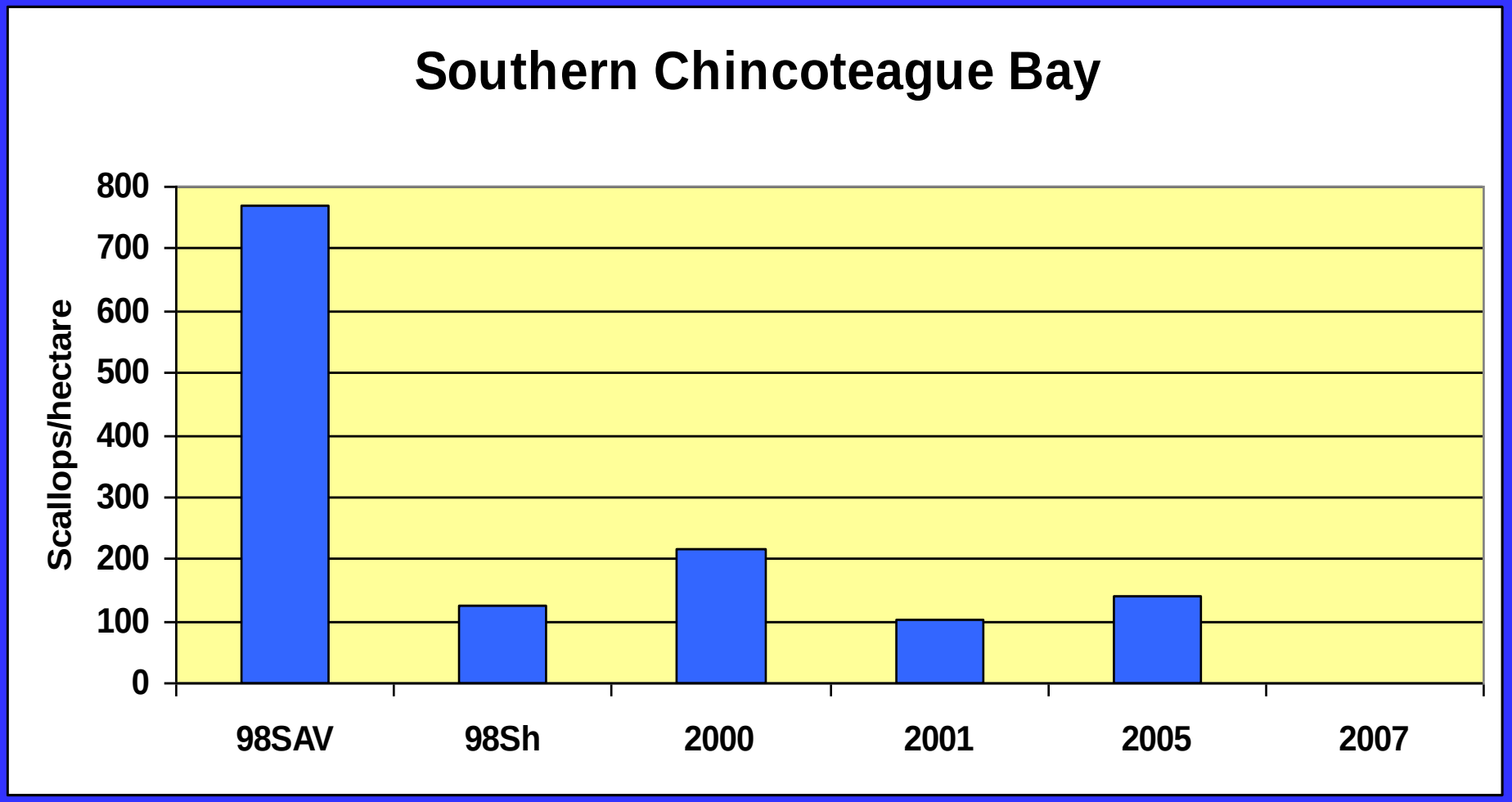
Scallop Distribution (Hard Clam Surveys)



Dedicated Scallop Surveys

- Hydraulic escalator dredge
- Focused in known scallop areas

Dedicated Scallop Surveys



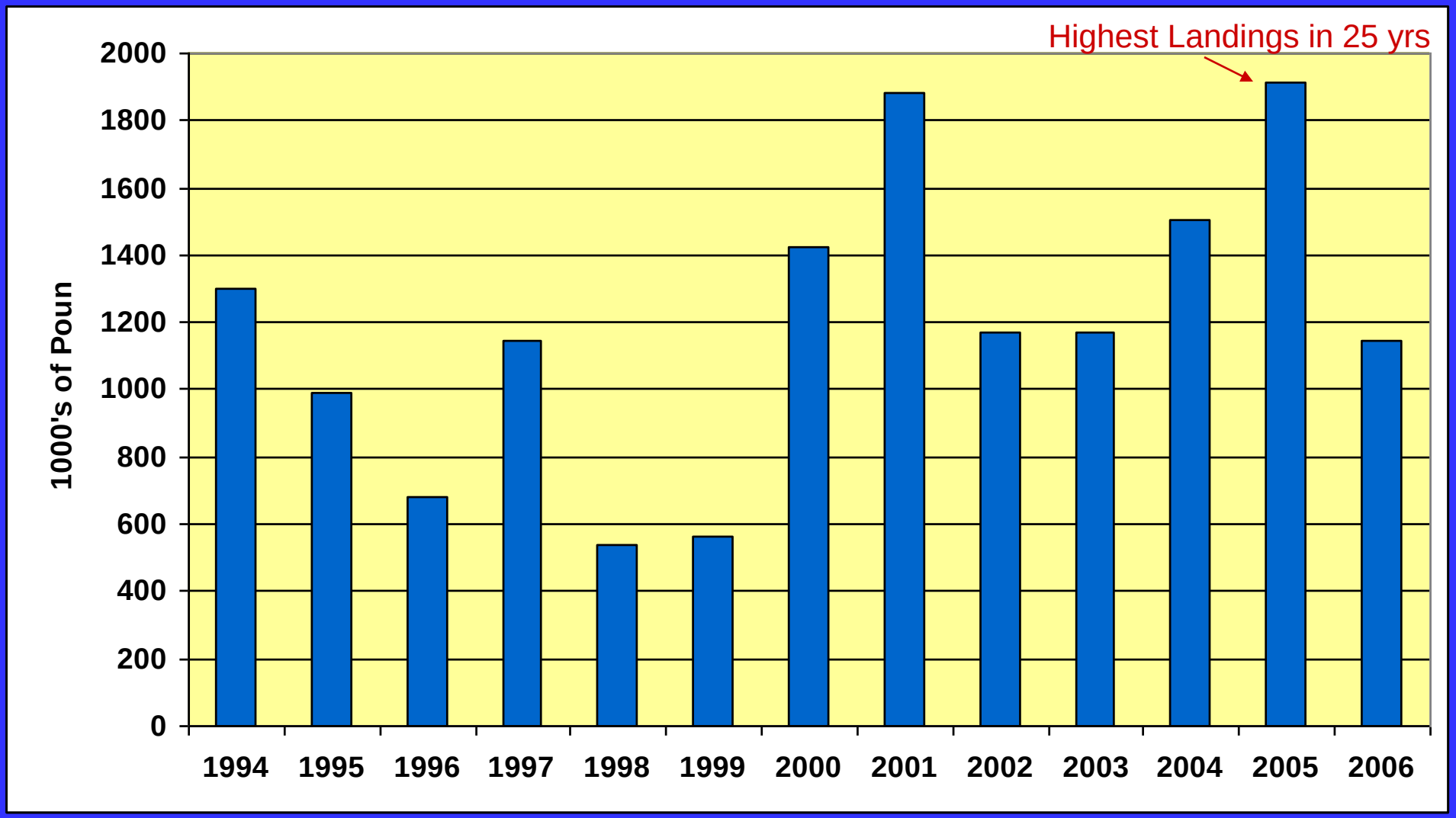
Reasons for Decline

- Loss of Habitat
  - Chincoteague Bay seagrass acreage dropped from 16,000 acres in 2001 to 7,700 acres in 2006
  - 52% decline

Reasons for Decline

- Loss of Habitat
  - Chincoteague Bay seagrass acreage dropped from 16,000 acres in 2001 to 7,700 acres in 2006
  - 52% decline
- Increased Predation
  - Blue crab populations have rebounded
  - Other predators more abundant e.g. cow-nose rays
  - Loss of protective seagrasses

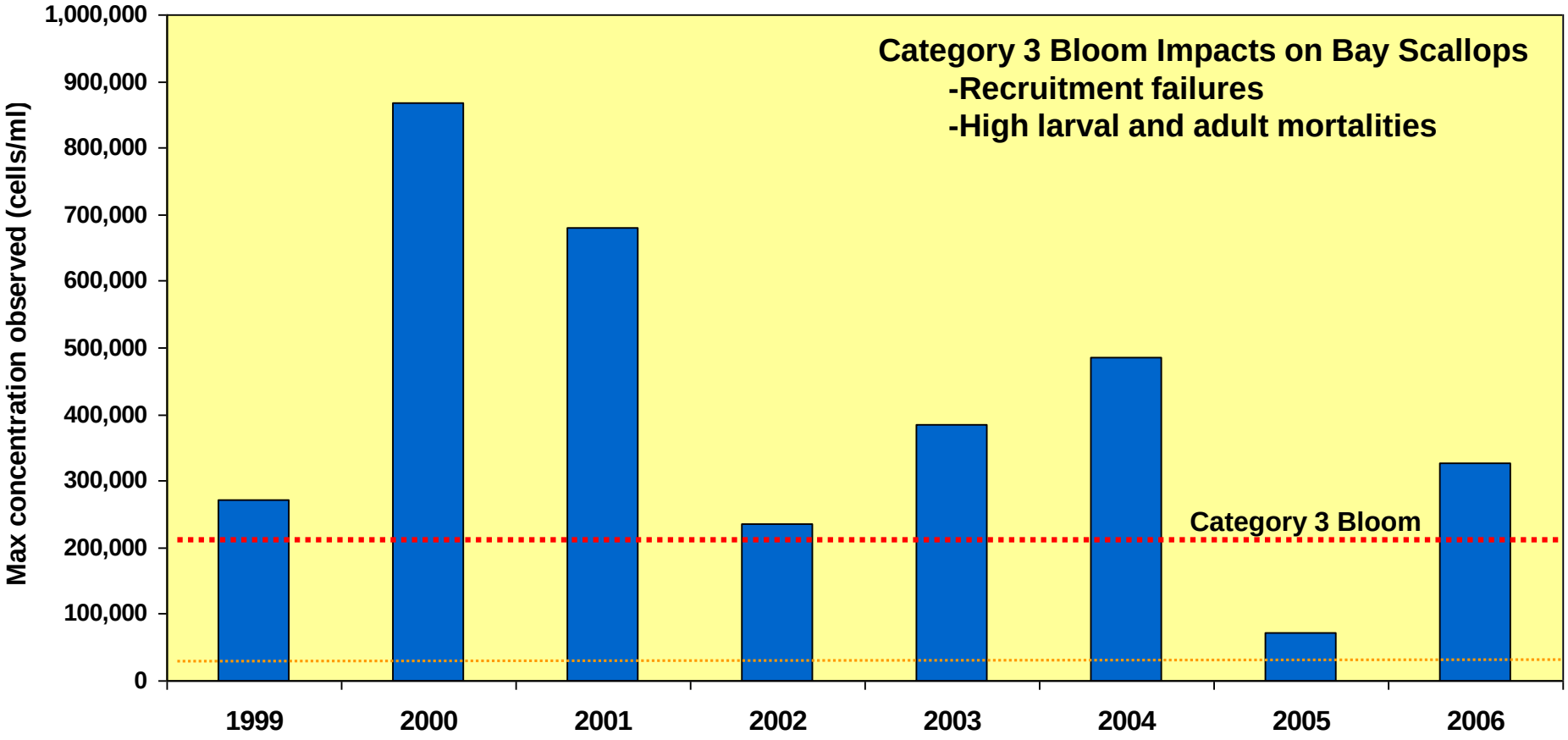
Maryland Coastal Bays Blue Crab Landings



Reasons for Decline

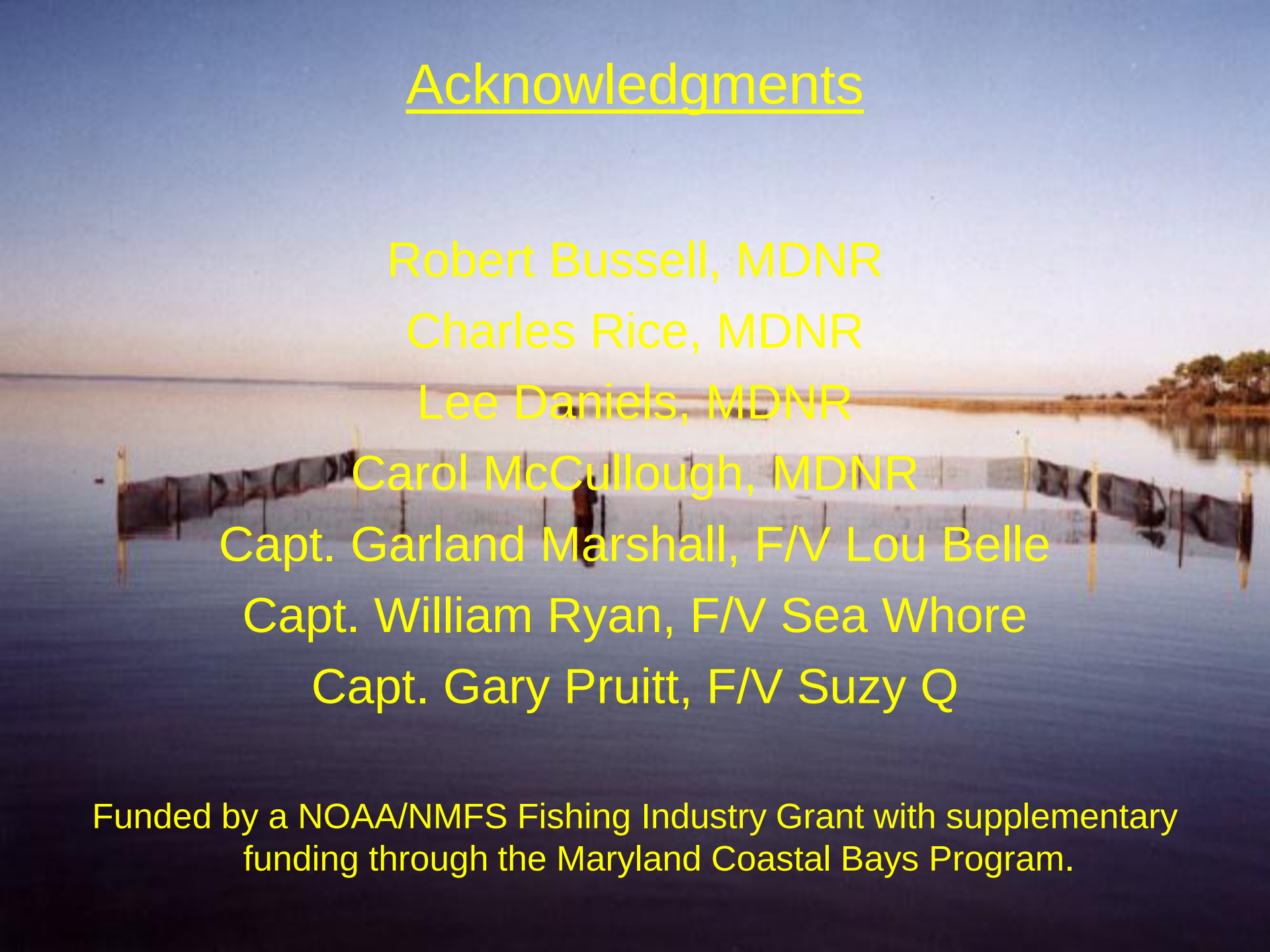
- Loss of Habitat
  - Chincoteague Bay seagrass acreage dropped from 16,000 acres in 2001 to 7,700 acres in 2006
  - 52% decline
- Increased Predation
  - Blue crab populations have rebounded
  - Other predators more abundant e.g. cow-nose rays
  - Loss of protective seagrasses
- Brown Tide
  - Category 3 blooms 7 of 8 years in Chincoteague Bay

Maximum Brown Tide Counts at Public Landing



Other Possible Reasons for Decline

- Deteriorating water quality
- Elevated temperature anomaly off Delmarva coast in 2005



Acknowledgments

Robert Bussell, MDNR

Charles Rice, MDNR

Lee Daniels, MDNR

Carol McCullough, MDNR

Capt. Garland Marshall, F/V Lou Belle

Capt. William Ryan, F/V Sea Whore

Capt. Gary Pruitt, F/V Suzy Q

Funded by a NOAA/NMFS Fishing Industry Grant with supplementary funding through the Maryland Coastal Bays Program.