

Presentations

10-9-2015

Past, Present and Future of Research at VIMS

Mark Lukenbach
Virginia Institute of Marine Science

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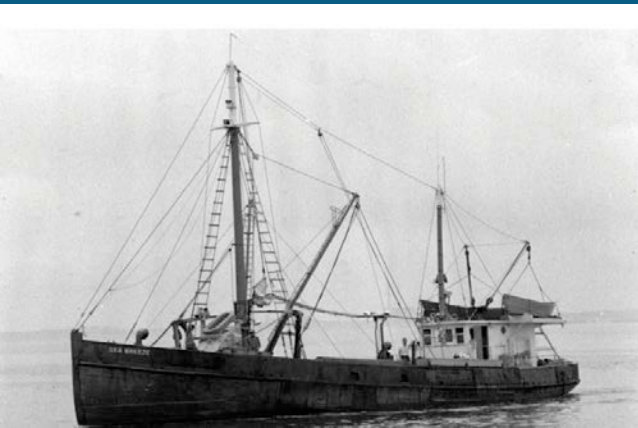
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Past, Present and Future of Research at VIMS



Mark Luckenbach
75th Anniversary Homecoming

On the Shoulders of Giants



Donald W. Davis

Davis, D. W. 1941. Biology at the College of William and Mary before the War Between the States. *Virginia Journal of Science* 2(2/3):41-52

On the Shoulders of Giants



Curtis Newcombe, Director 1940-1944

Newcombe, C. L., & Virginia Fisheries Laboratory. (1940). *Studies on the phosphorus content of the estuarine waters of Chesapeake Bay*. Yearbook of the American Philosophical Society 1940:225-227

Newcombe, C. L., & Virginia Fisheries Laboratory. (1940). *A physical, chemical and biological investigation of the layer of low oxygen content in the deeper waters of the Chesapeake Bay*.

Newcombe, C. L., Gray, E. H., & Virginia Fisheries Laboratory. (1941). *Observations on the conservation of the Chesapeake blue crab, Callinectes sapidus Rathbun*.

Newcombe, C. L., & Virginia Fisheries Laboratory. (1941). *Conserving our salt-water fisheries: Work of the Virginia Fisheries Laboratory*.

Research Trends – 1940's

30 Publications

Blue Crabs (11)
Oysters (3)
Other fisheries (6)

Curtis Newcombe (7) – Water quality,
fisheries science, blue crabs
Mildred Sandoz (5) Blue crabs
Sewell Hopkins (3) Blue crabs
Margaret Lochhead (2) Blue crabs
Winston Menzel (2) Catfish fishery
John Makin (2) Oysters
Jay Andrews (1) Oysters
Nelson Marshall (1) Fisheries management



Wilard Van Engel ca. 1947

Research Trends – 1950's

60 Publications

Oysters (16)

Crabs (3)

Other fisheries (21)

General marine ecology (11)

J.L. McHugh (13) – Oysters, fisheries

Jay Andrew (11) – Oysters

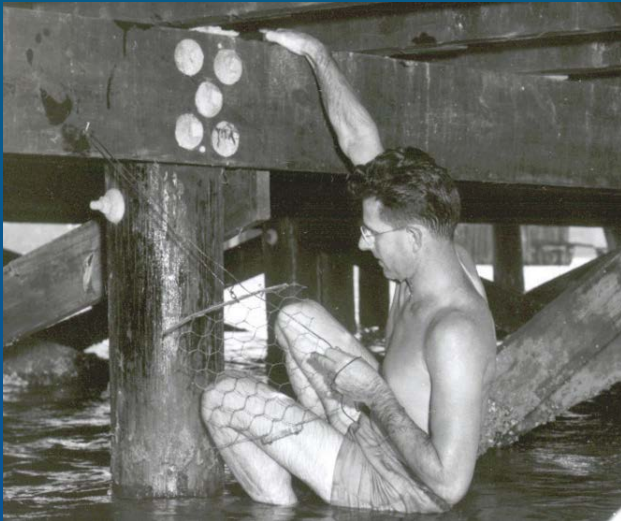
William Massmann (10) Fin fisheries

William J. Hargis (5) Everything

Dexter Havens (5) Oysters

Willard Van Engle (2) Blue crabs

Nelson Marshall (2) Oysters



Willard Van Engle



J.L. McHugh, J. Andrew, V. Loosanoff

Research Trends – 1960's

239 Publications

Oysters
Fishes and Fisheries
Sediment transport, Coastal geology
Plankton
Estuarine ecology

Bernard Patten (18) – Plankton
Wyman Harrison (15) Sediment Transport,
coastal geology
Jay Andrews (9) – Oysters
Dexter Havens (9) Oysters
William J. Hargis (9) Everything
William Massmann (9) Fisheries
Paul Chanley (8) Bivalves
Frank Perkins (8) Parasites
Maynard Nichols (6) Sediment dynamics
Jack Musick (3) Fishes



Bill Hargis

Research Trends – 1970's

574 Publications

Oysters & oyster disease
Fishes and Fisheries
Coastal Geology, Sediment
transport
Plankton
Estuarine ecology

Most cited:

Virstein 1977, Ecology

Chao & Musick 1977. Fishery Bulletin

Wiebe et al. 1975 Science

Hass 1977 Estuar. & Coast. Mar. Sci

Virnstein 1979 Estuaries

Orth 1977 Mar. Biol.

Boesch 1973 Mar. Biol

Frank Perkins (22) – Pa
William J. Hargis (13) E
Paul Sandifer (13) – Dec
Fredrick Kazama (12) P
Maurice Lynch (11) Mar
management
Dale Calder (11) Cnidari
Victor Goldsmith (11) S
dynamics
Jay Andrews (10) Oyster
Don Boesch (8) Benthic



Research Trends – 1970's



Hargis, Cronin & Pritchard

Lynch, M.P. 2005. An unprecedented scientific community response to an unprecedented event: Tropical Storm Agnes and the Chesapeake Bay. *In: K.G. Sellner (ed.). Hurricane Isabel in Perspective. Chesapeake Research Consortium, CRC Publication 05-160, Edgewater, MD*

“A Symposium on the Effects of Tropical Storm Agnes on the Chesapeake Bay Estuarine System,” 47 Technical papers

Research Trends – 1980's

618 Publications

Oysters & oyster disease
Fishes and Fisheries
Ecotoxicology
Parasitology
Coastal Geology, Sediment
transport
Estuarine ecology

Morris Roberts (16) – Ecotoxicology
Robert Orth (15) - Seagrasses
William J. Hargis (14) Everything
Gene Burreson (13) – Marine diseases & leeches
Jay Andrews (11) Oysters & disease
Don Wright (11) Sediment transport, Benthic
boundary layer dynamics
Dennis Thoney (10) Parasite

Most cited:

Wright & Short 1984. Mar. Geol.

Orth et al. 1984. Estuaries

Orth & Moore 1983. Science

Haas 1982. Ann. Inst. Oceogr.

Landry et al. 1984. MEPS



Research Trends – 1980's



Coastal geology,
sediment transport,
boundary-layer
processes, animal-
sediment relations

Estuarine toxins,
ecotoxicology,
disease dynamics



Seagrass ecology



Research Trends – 1990's

716 Publications

Oysters & oyster disease

Coastal Geology, Sediment transport

Fishes and Fisheries

Ecotoxicology

Parasitology

Benthic ecology

Estuarine ecology

Most cited:

Diaz & Rosenberg 1995. *Ocea. Mar. Biol.*

Carlson, Ducklow & Michaels 1994. *Nature*

Pihl, Baden & Diaz. 1991 *Mar. Biol.*

Milliman et al. 1999 *Deep-Sea Res.*

Burreson & Calvo 1996. *JSR*

Jerome Maa (20) – Sediment transport, boundary layer dynamics

Fu-Lin Chu (15) – Disease dynamics

Robert Orth (14) – Seagrasses

Mohamed Faisal (13) – Marine diseases

Don Wright (13) Sediment transport, Benthic boundary layer dynamics

Jerome La Peyre (12) Oyster disease

Rob Hale (10) –Environmental chemistry

Woody Hobbs (10) Coastal geology

Bob Diaz (9) Benthic ecology

Jack Musick (9) Fishes

Research Trends – 2000's

1283 Publications

Oysters & oyster disease
Coastal Geology, Sediment dynamics
Hydrodynamic modeling/water quality
Fishes and Fisheries
Parasitology
Benthic ecology
Estuarine ecology

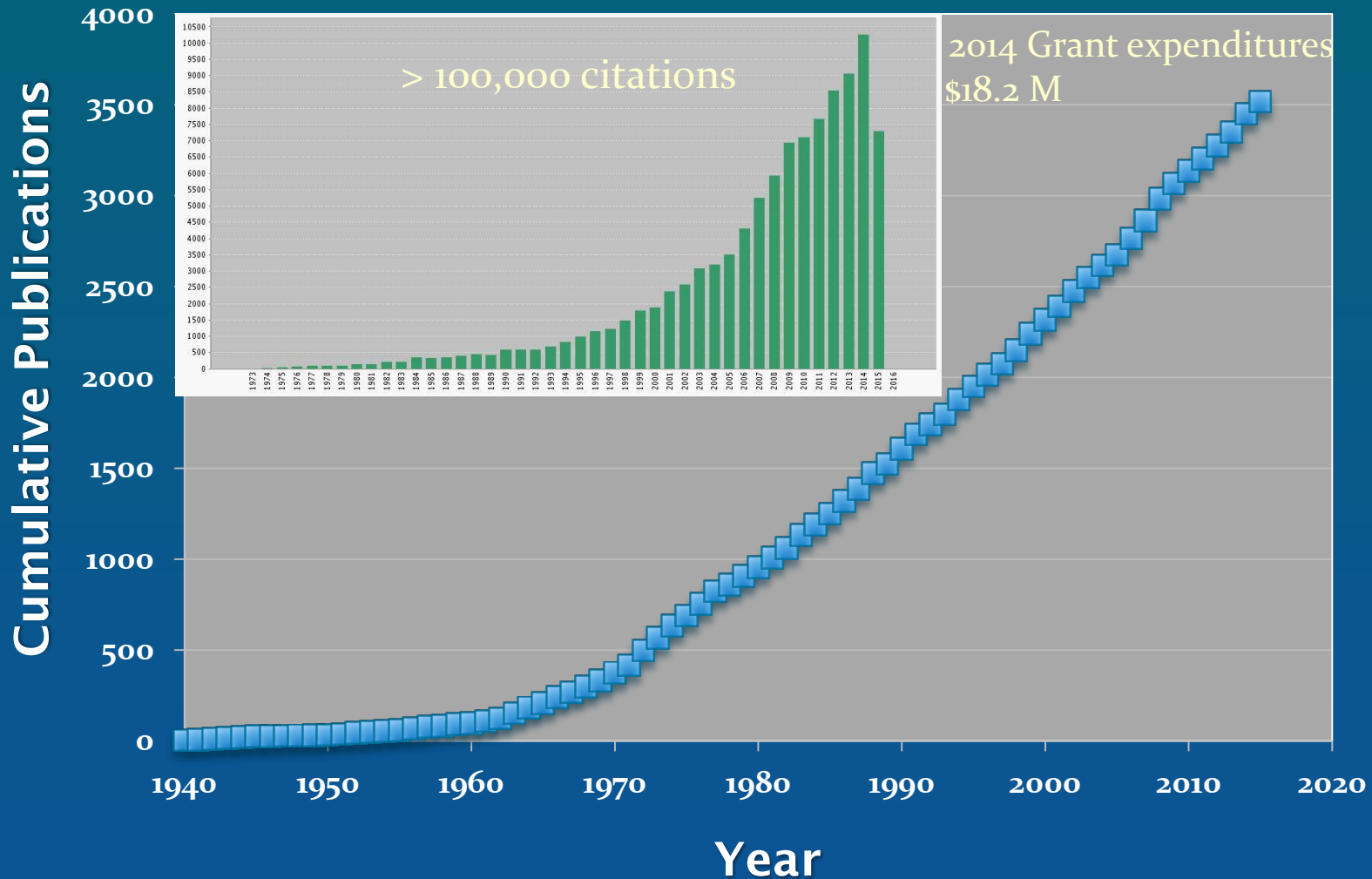
Julie Harding (19) – Molluscan ecology
Emmett Duffy (15) – Evolutionary ecology
John Olney (15) – Larval fishes
Jian Shen (15) – Hydrodynamic modeling
Bob Orth (14) Seagrasses
Fu-Lin Chu (13) Oyster disease
Roger Mann (12) – Molluscan ecology
Rochelle Seitz (10) Benthic ecology
Jeff Shields (10) Crustacean disease ecology
Kam Tang (9) Zooplankton ecology

Most cited:

Diaz & Rosenberg 2008. Science
Worm et al. (Duffy) 2006 Nature
Beck et al. (Orth) 2001 BioScience
Cardinale et al. (Duffy) 2006 Nature
Orth et al. 2006. BioScience



Cumulative Publications by Year



Research Themes

Water Quality Monitoring



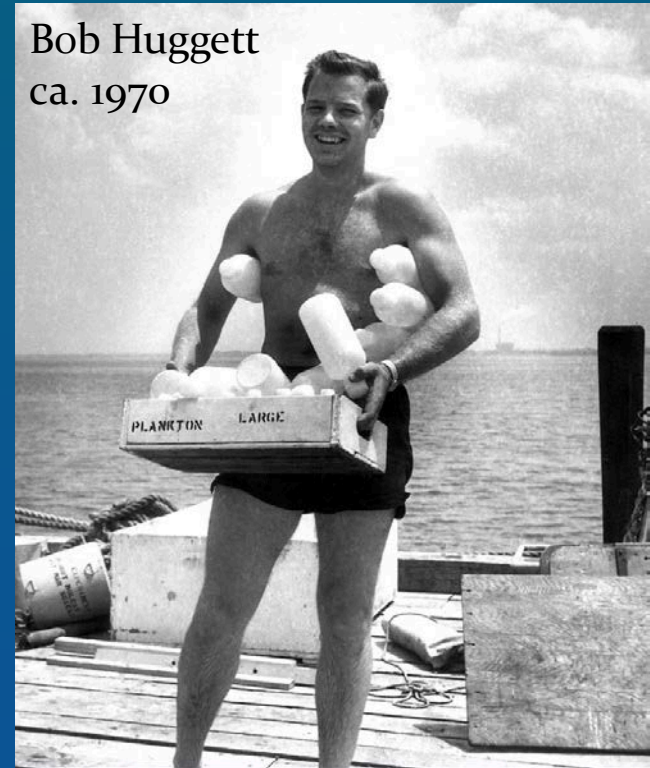
C. L. Newcombe
ca. 1940

Newcombe, C. L., & Virginia Fisheries Laboratory.
(1940). *Studies on the phosphorus content of the estuarine waters of Chesapeake Bay.*

Newcombe, C. L., & Virginia Fisheries Laboratory.
(1940). *A physical, chemical and biological investigation of the layer of low oxygen content in the deeper waters of the Chesapeake Bay.*



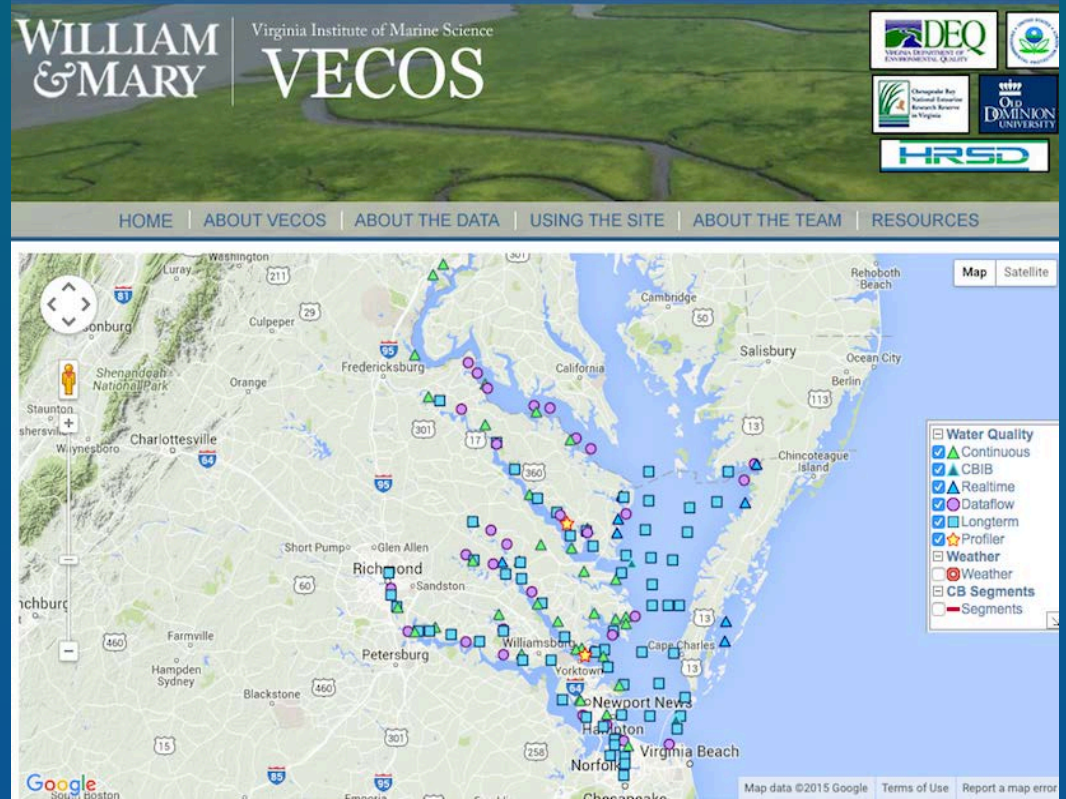
1960's



Bob Huggett
ca. 1970

Research Themes

Water Quality Monitoring



Research Themes

Hydrodynamic & Water Quality Modeling



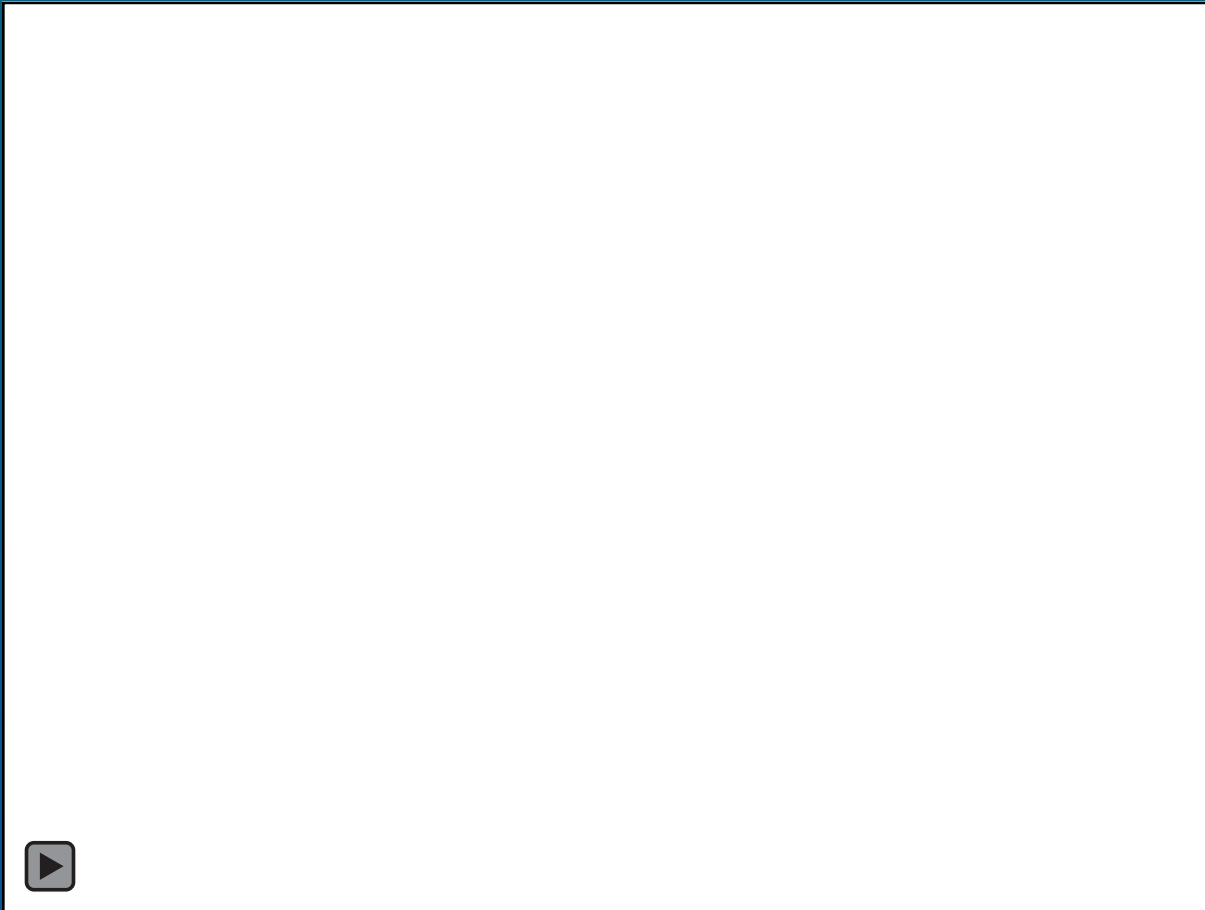
James River Hydraulic model
Vicksburg, MS
25,000 ft²

Chesapeake Bay Hydraulic model
Kent Island, MD
8 acres



Research Themes

Water Quality Modeling

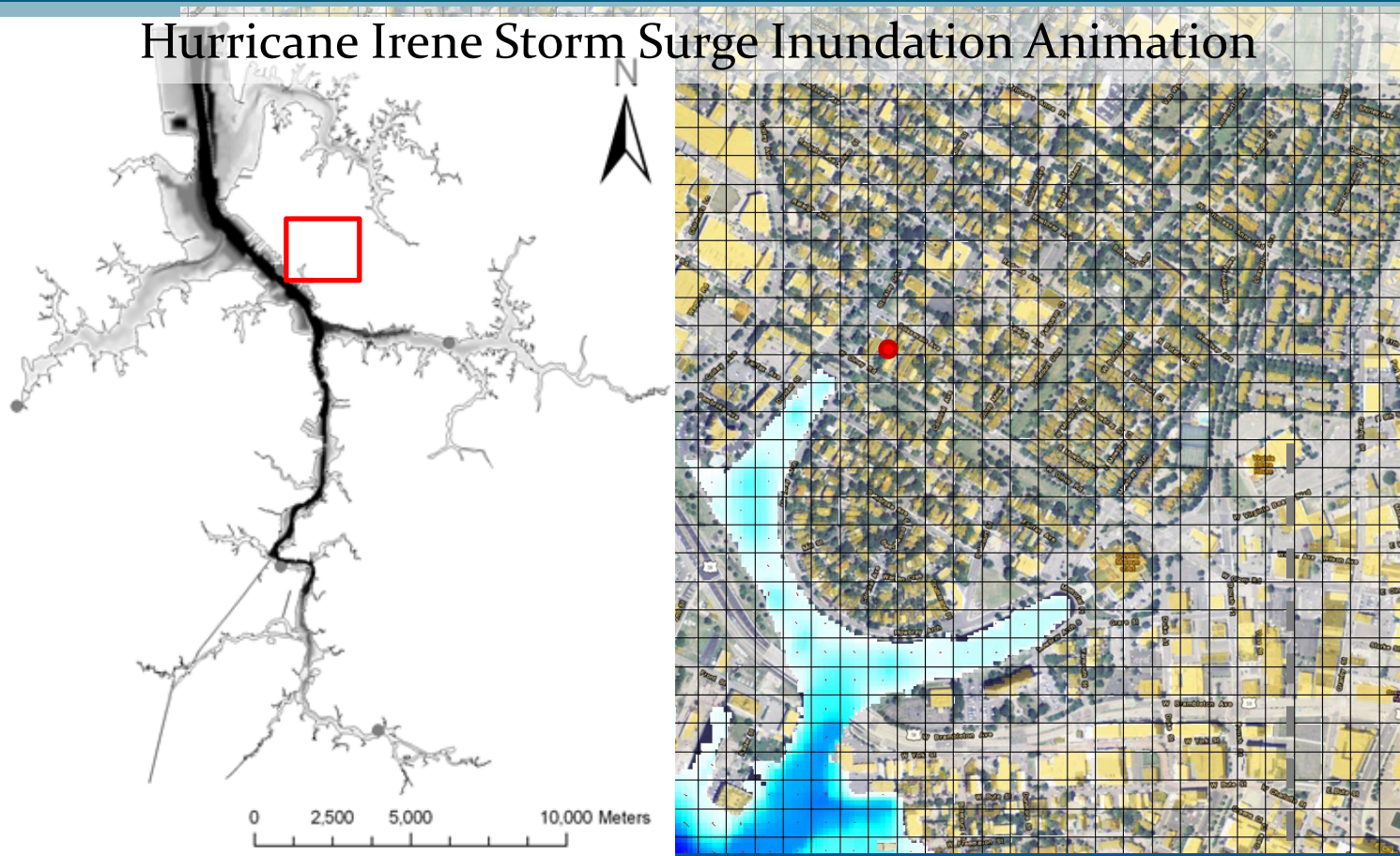


M. Friedrichs

Research Themes

Hydrodynamic Modeling

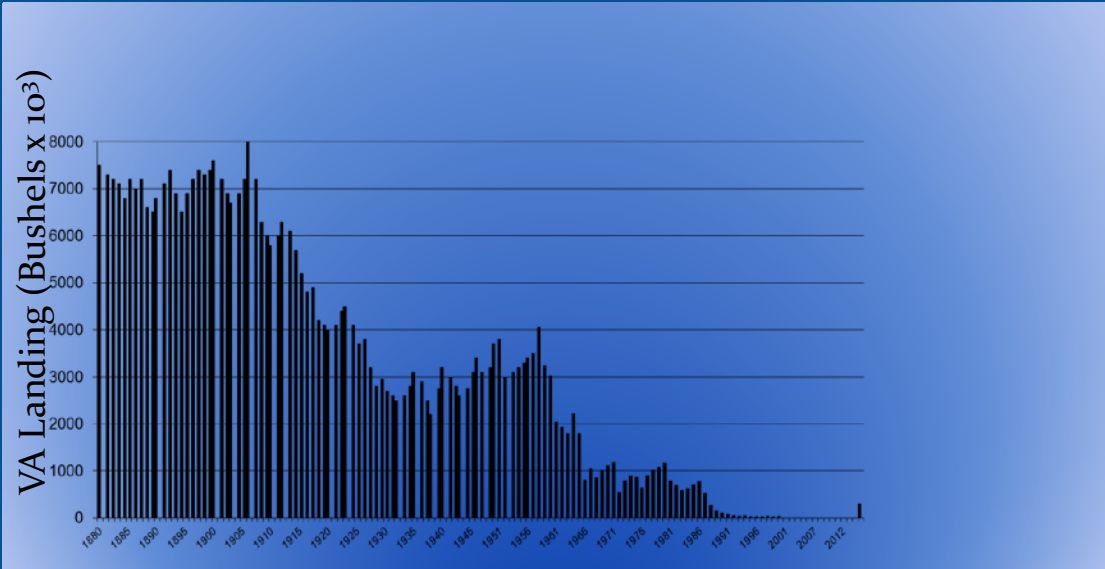
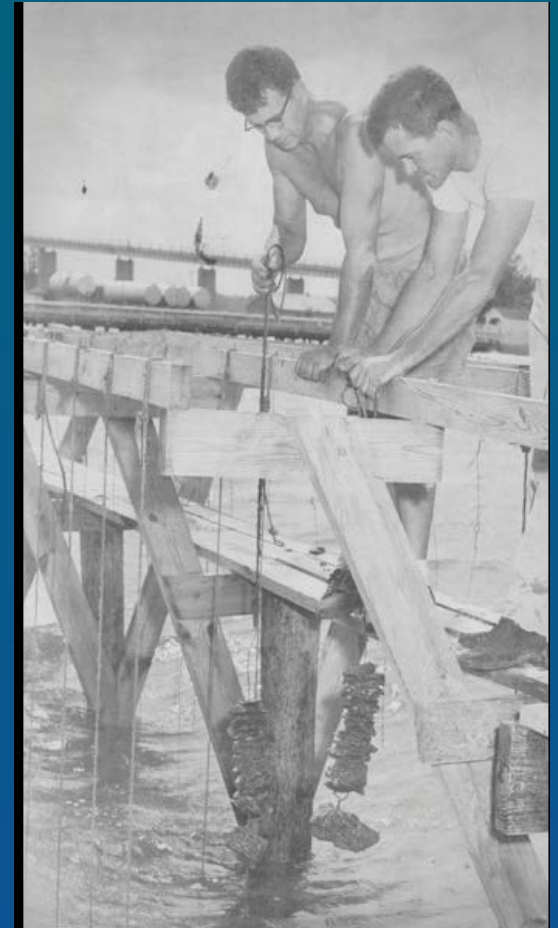
Hurricane Irene Storm Surge Inundation Animation



H. Wang, D. Loftis, J. Zhang, D. Forrest

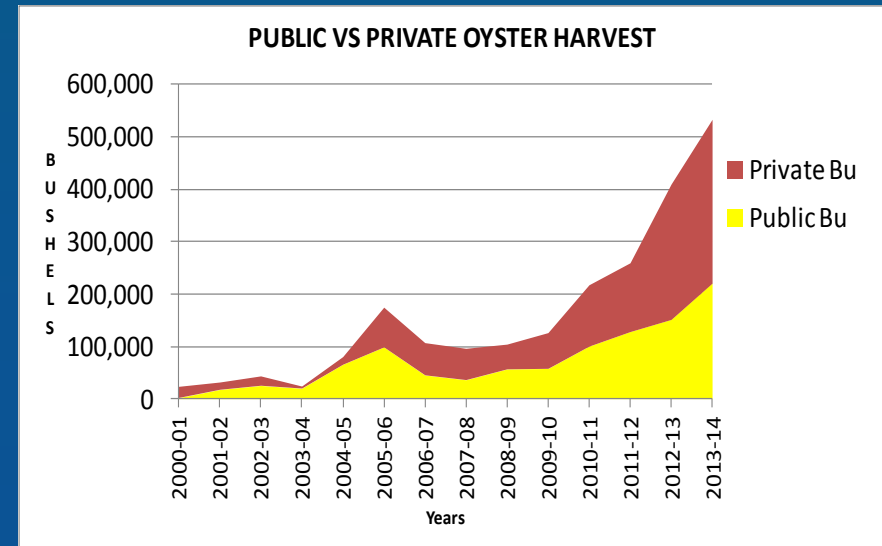
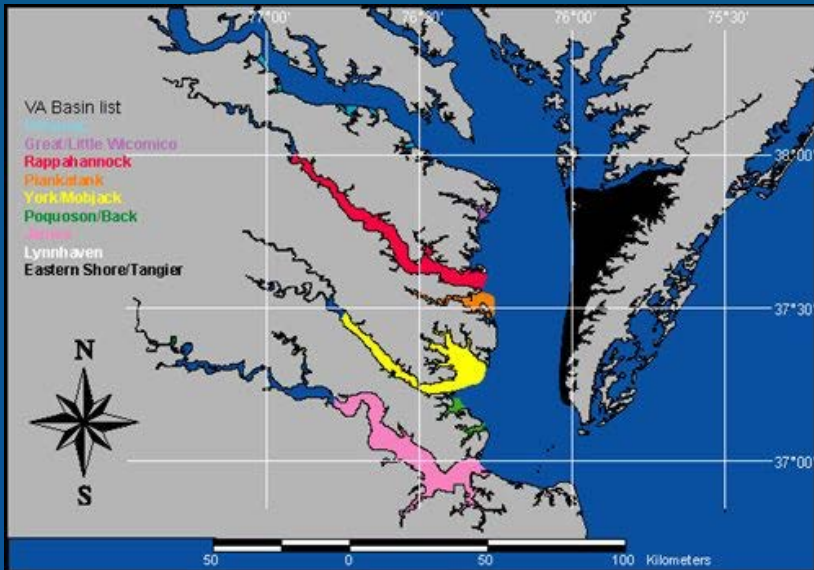
Research Themes

Oysters



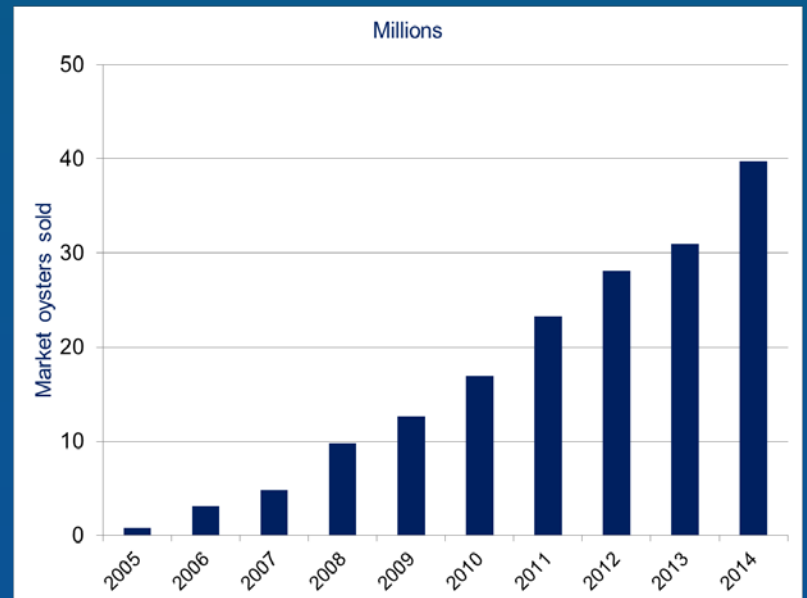
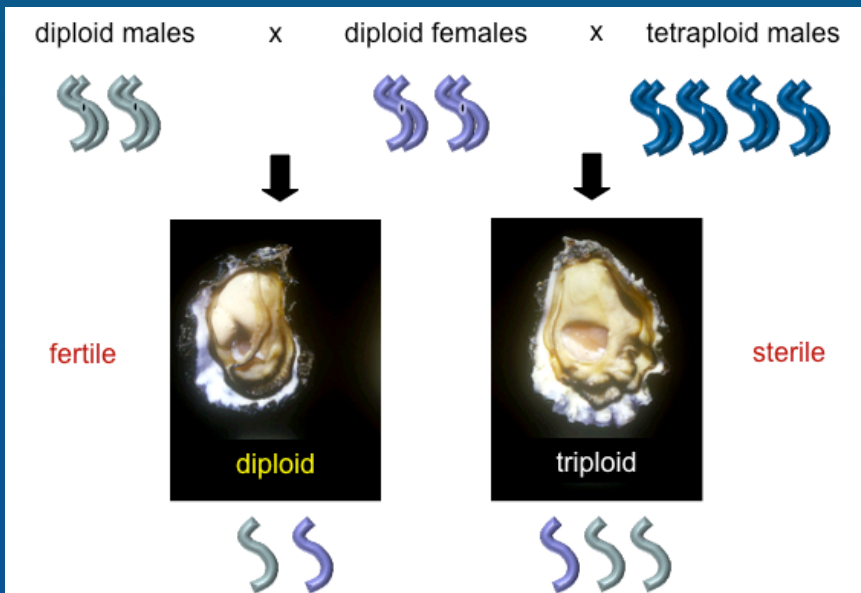
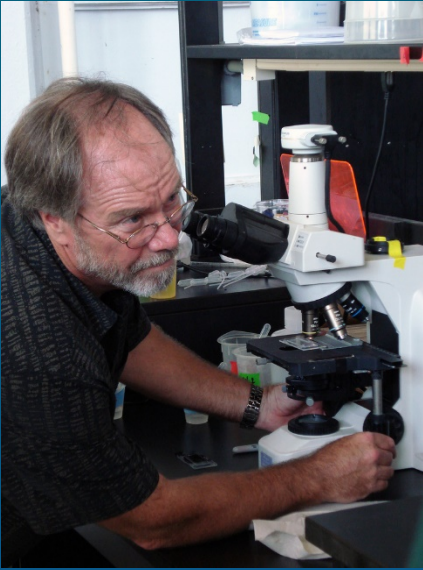
Research Themes

Oysters



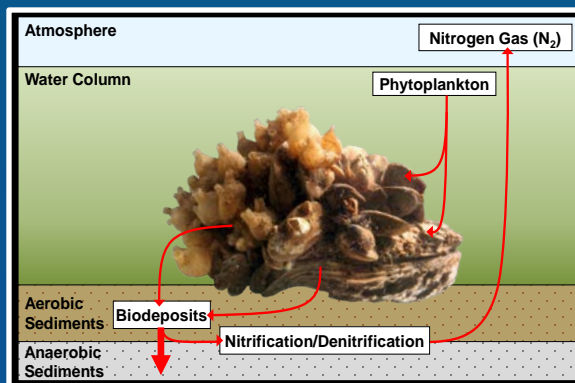
Research Themes

Oysters



Research Themes

Oysters



Research Themes

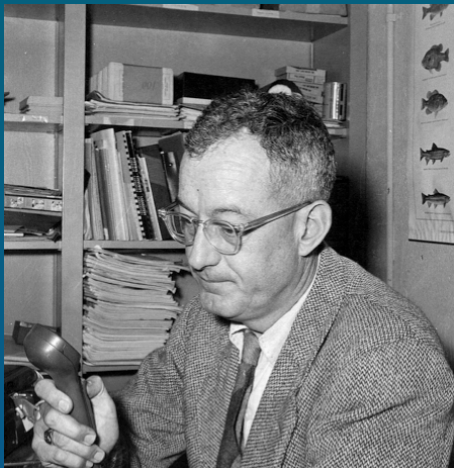
Fisheries Surveys

Some of the longest running fish surveys in the country



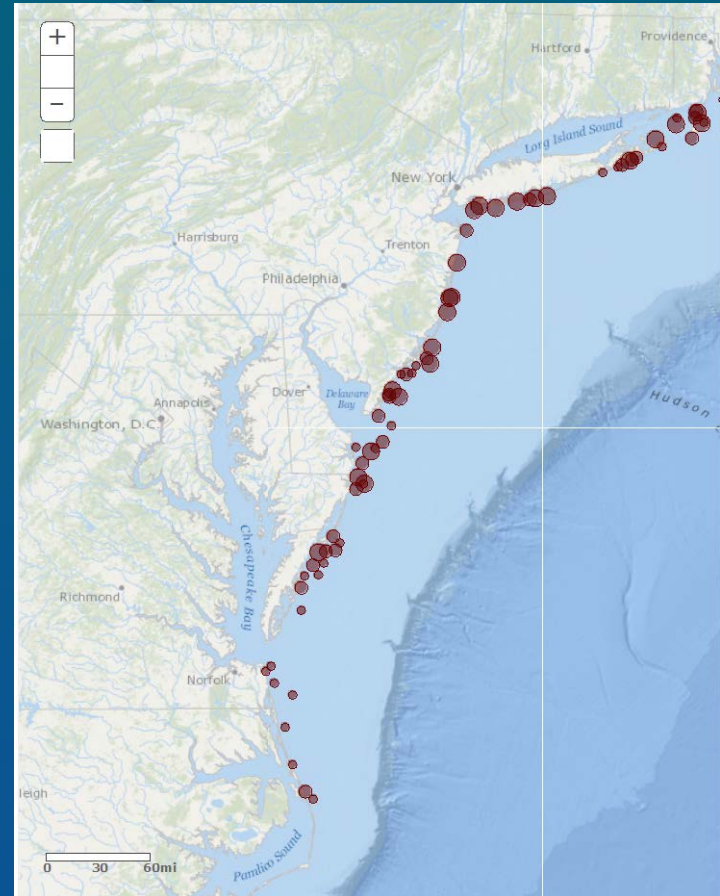
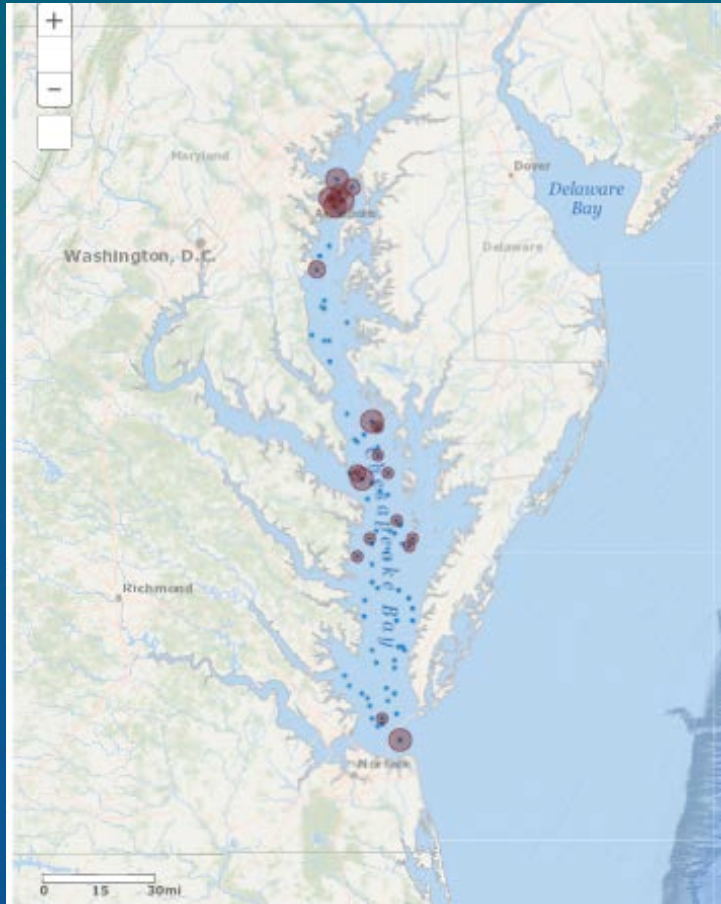
Oyster monitoring program, est. 1940's
Crab and Juvenile finfish surveys, est. 1955
Shark surveys, est. 1978
Striped bass, est. 1981

Research Themes Fisheries Surveys

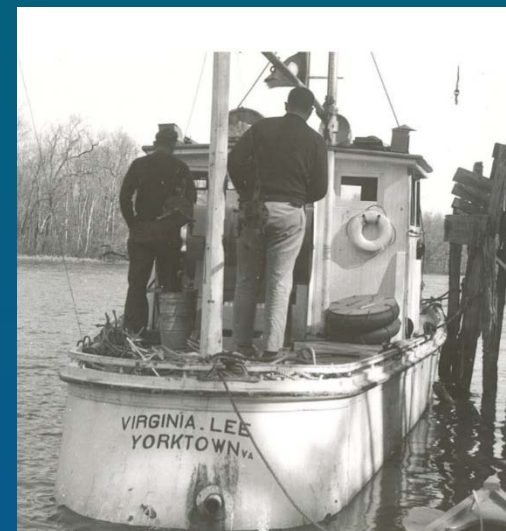
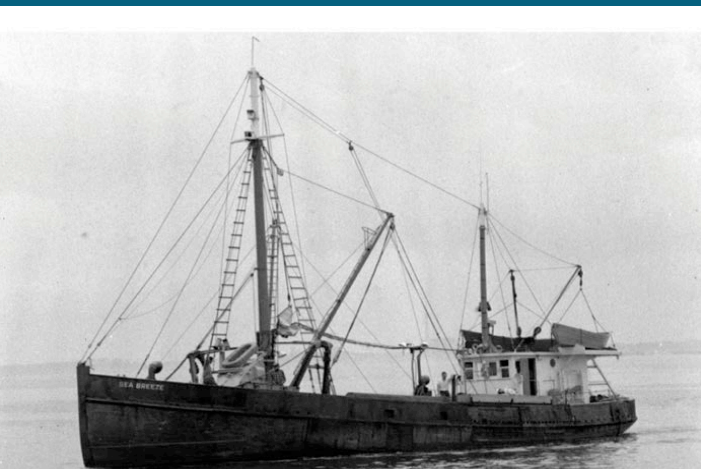


Research Themes

Fisheries Surveys

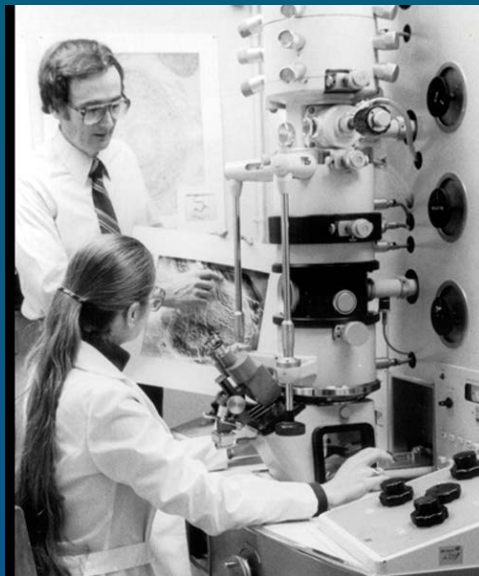


A brief aside... Vessels



Research Themes

Marine Diseases



Research Themes

Marine Diseases



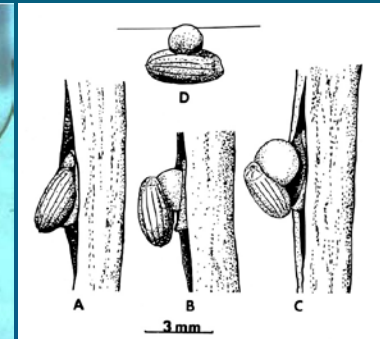
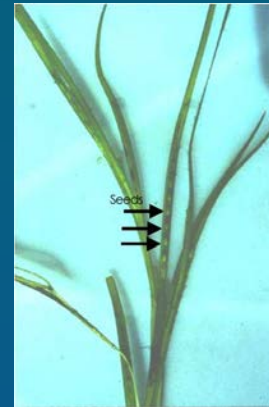
Research Themes

Seagrasses

Ecology

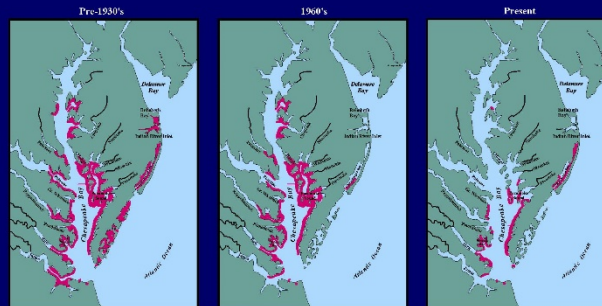
Mapping

Restoration



Orth, Moore,
van Montfrans and
many students, staff
& collaborators

Eelgrass Distribution in Chesapeake Bay & Coastal Bays



Research Themes

Seagrasses



In its fifth decade later...

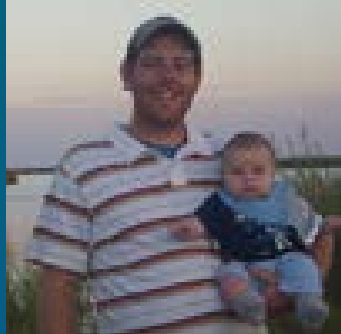
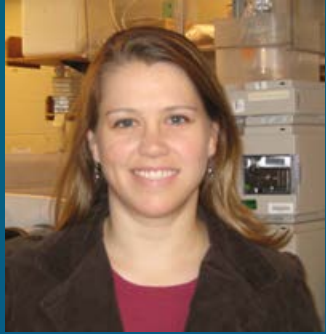
Orth, Moore, students, staff
and collaborators

Over 300 publications, theses
and dissertations

Most successful eelgrass
restoration project in the world



The Future



Some sage advice from those who came before...

Drink beer!







Past, Present and Future of Research at VIMS



Andrews, Haven

Past, Present and Future of Research at VIMS



Castagna

Past, Present and Future of Research at VIMS



Huggett





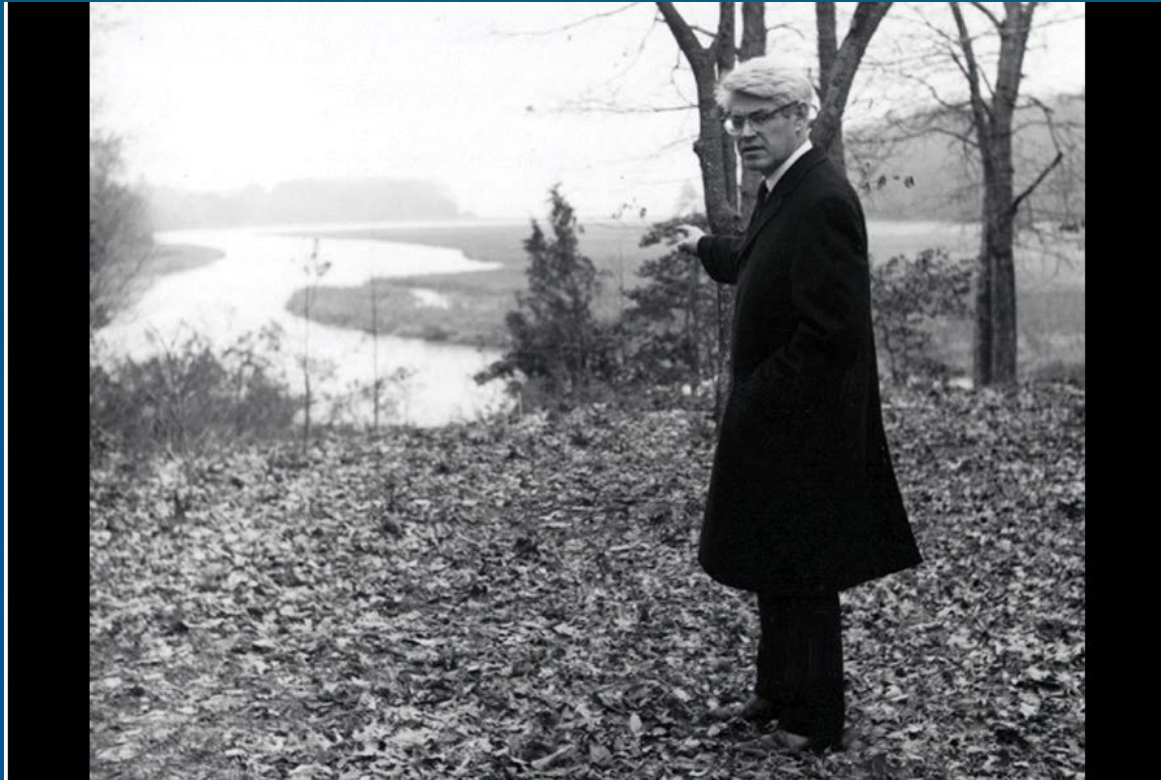
Students

Some sage advice from those who came before...

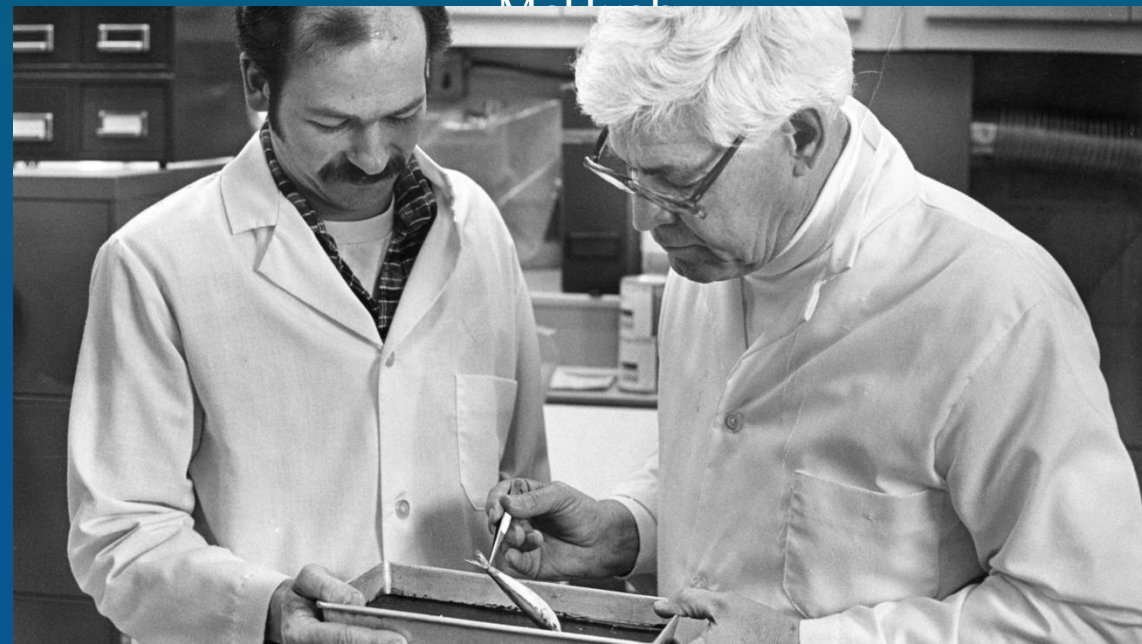
Drink beer!



Past, Present and Future of Research at VIMS



Past, Present and Future of Research at VIMS



8/27/2011 8:26 pm

VIMS

WILLIAM & MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE

Larchmont/Edgewater

337

Highland Park

Lamberts Point

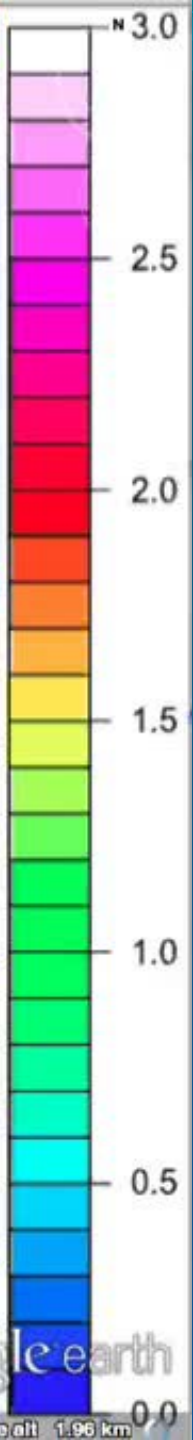
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Google earth

453 m

1990

lat 36.8880411 lon -76.300259 elev 2 m eye alt 1.96 km





Musick

