

Subaqueous Soils

George P. Demas, Ph.D.

1958 - 1999

- NRCS – Soil Survey Project Leader
- Pioneer in Subaqueous Soils
- USDA - Secretary's Honor Award for Scientific Research
- SSSA - Emil Truog Award for outstanding contribution to Soil Science through the Ph.D. thesis
- Concept paper “Submerged soils: a new frontier in soil survey.” *Soil Survey Horizons* (1993)



Contributions of Demas

- 1. Developed high quality bathymetric DEM and joined with areal photography to identify subaqueous landforms



Sinepuxent Bay

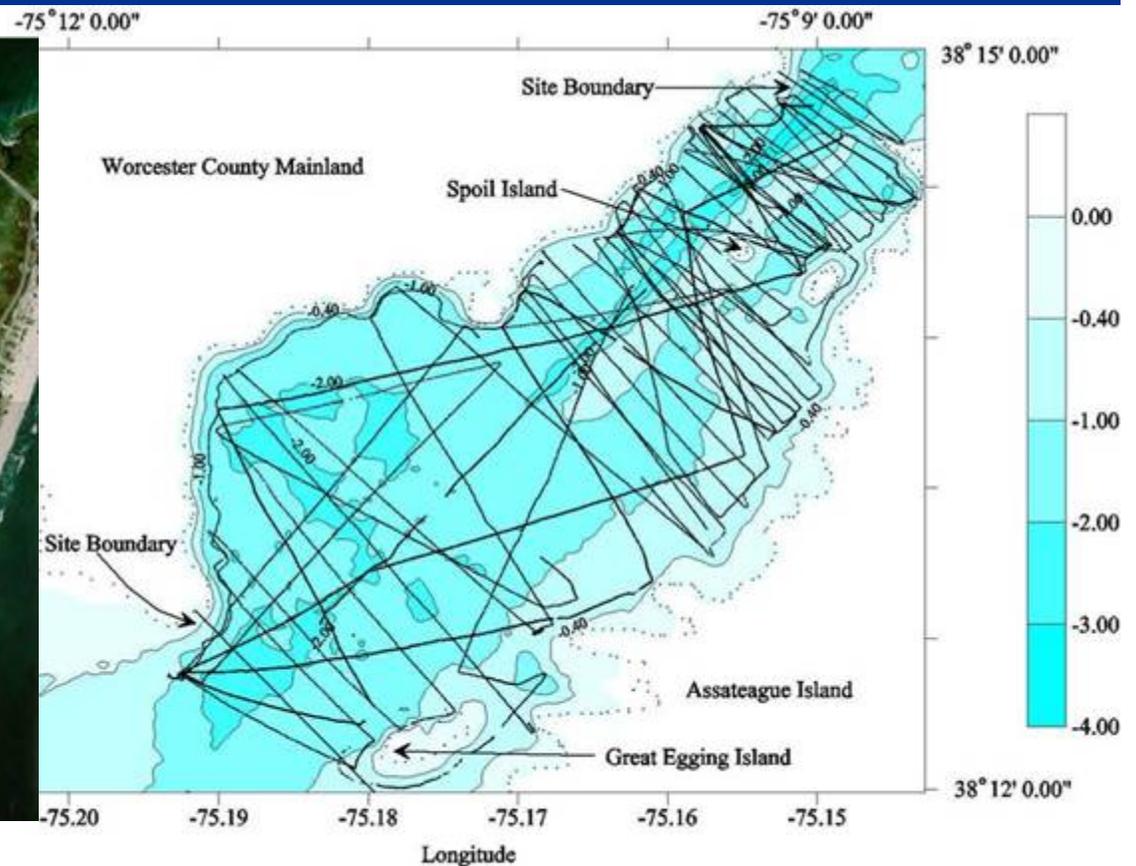


Figure 3-2. Location map of bathymetric runs in Sinepuxent Bay (depth in meters below MSL). Distance between successive readings was approximately 10 m.

Contributions of Demas

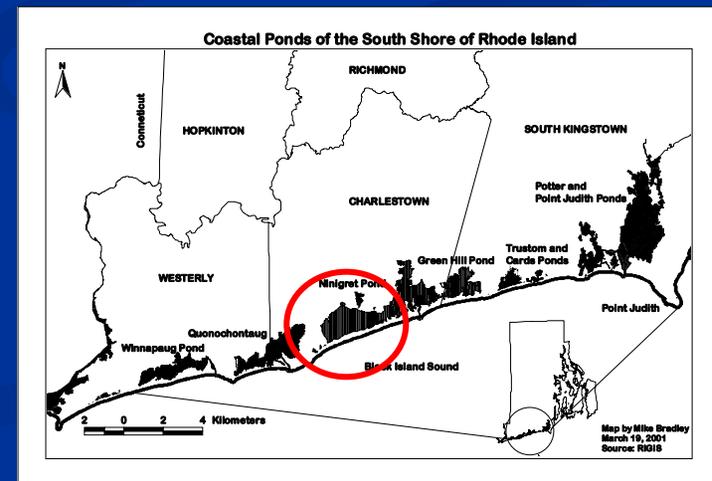
- 2. Collected and examined subaqueous cores recognizing soil horizons formed as a result of pedogenic processes - classified according to Soil Taxonomy. Proposed modification to the definition of soil accommodating subaqueous soils – in *Soil Taxonomy* 1999.



- Initial work by Demas 1995-1998
- What's gone on in the last 10 years?

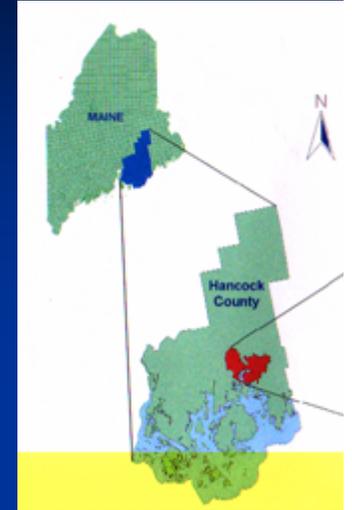
Ninigret Pond, RI

- M.S. Student Mike Bradley working with Mark Stolt at URI
- Ninigret Pond, a coastal lagoon “pond”
- Show subaqueous landforms change little with time (mostly in the tidal delta areas near the inlet)
- Formal description of the subaqueous soil-landscape relationships in Southern New England
- Developed set of terms for naming subaqueous landforms (<http://nesoil.com/sas/glossary.htm>).
- Initial development of ecological interpretations (eelgrass - *Zostera marina*)



Taunton Bay, Maine

- Graduate students under the advisement of Dr. Laurie Osher at the University of Maine.
- Chris Flannagan focused on developing soil landscape relationships in Taunton Bay
- Jen Jespersen's work was focused on the carbon sequestration in subaqueous soils



NATIONAL WORKSHOP ON SUBAQUEOUS SOILS

July 14-18, 2003

Georgetown and Rehoboth Bay, DE

[Goals](#) [Classroom Topics](#) [Field Sessions](#) [Registration Info](#)

[Weekly Schedule](#)

WORKSHOP LEADERS:

[Martin C. Rabenhorst](#) - Professor of Pedology, University of Maryland

Philip King - Soil Scientist, Georgetown, Delaware

Mark Stolt - Associate Professor of Soil Science, University of Rhode Island

[Laurie Osher](#) - Assistant Professor of Soil and Water Quality, University of Maine

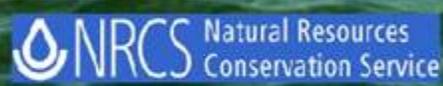
[Download Brochure \(PDF\)](#)

[What to Bring](#)

[Location](#)

[Download Registration Form \(MS Word\)](#)

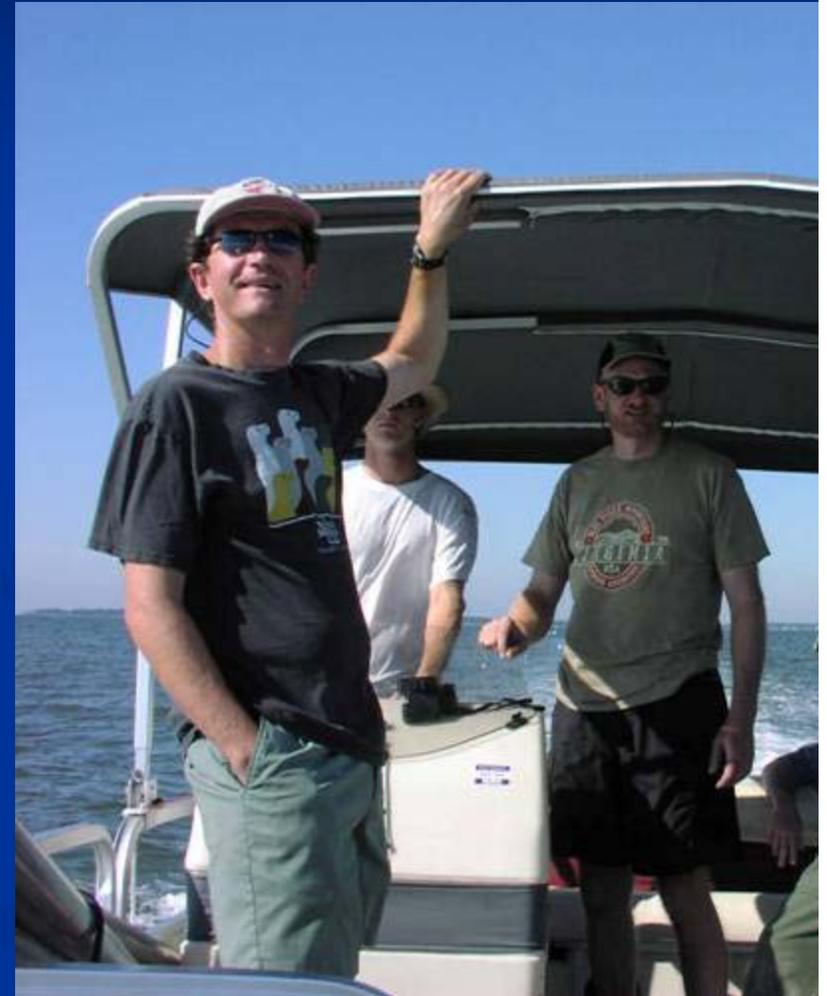
Workshop Sponsors





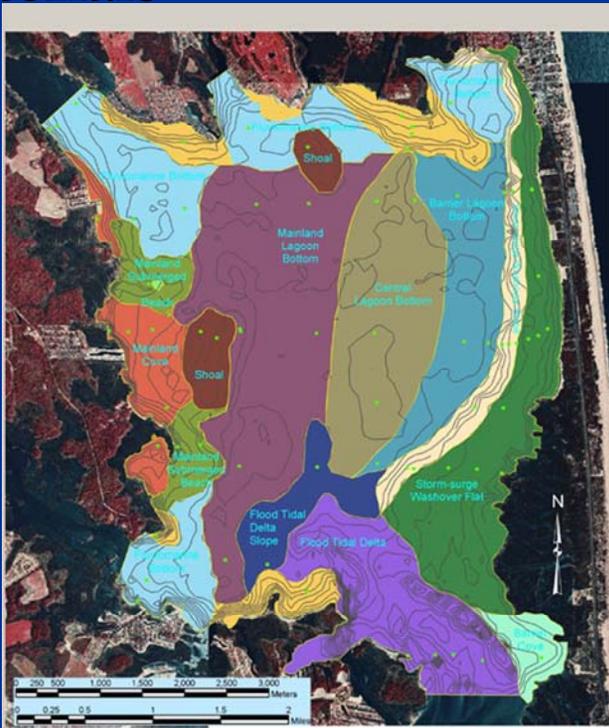
Massachusetts: Carver Pond

- Freshwater pond in Eastern MA
- Phil Angell
- MS Student at UMASS
- Attended the 2003 National Workshop on Subaqueous Soils



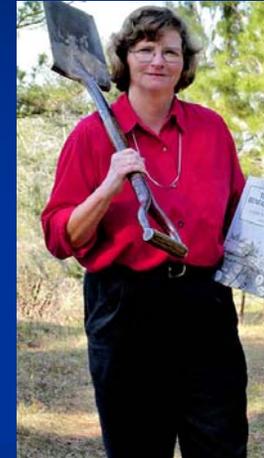
Rehoboth Bay, DE

- Cary Coppock working at UMD
- Soil-landscape relations in a 3300 Ha coastal lagoon
- Broader recognition of sulfidic materials



Florida

- Under the guidance of Dr. Mary Collins at the University of Florida
- PhD student Larry T. Ellis studied interactions of sea grasses with subaqueous soils (2004-2006) (attended 2003 SAS workshop)
- MS student Kelly C. Fischler examined seagrass restoration in Indian River Lagoon (2005-2007)
- Thomas J. Saunders also conducting SAS research in Chassahowitzka River Estuary, Florida. (2005-2007)
- Collaborating with Wade Hurt – NRCS and UFL



Chincoteague Bay, MD

- Soil-landscape relations in a 18,000 ha coastal lagoon located behind the Assateague barrier island.
- Evaluation of SAV interpretations

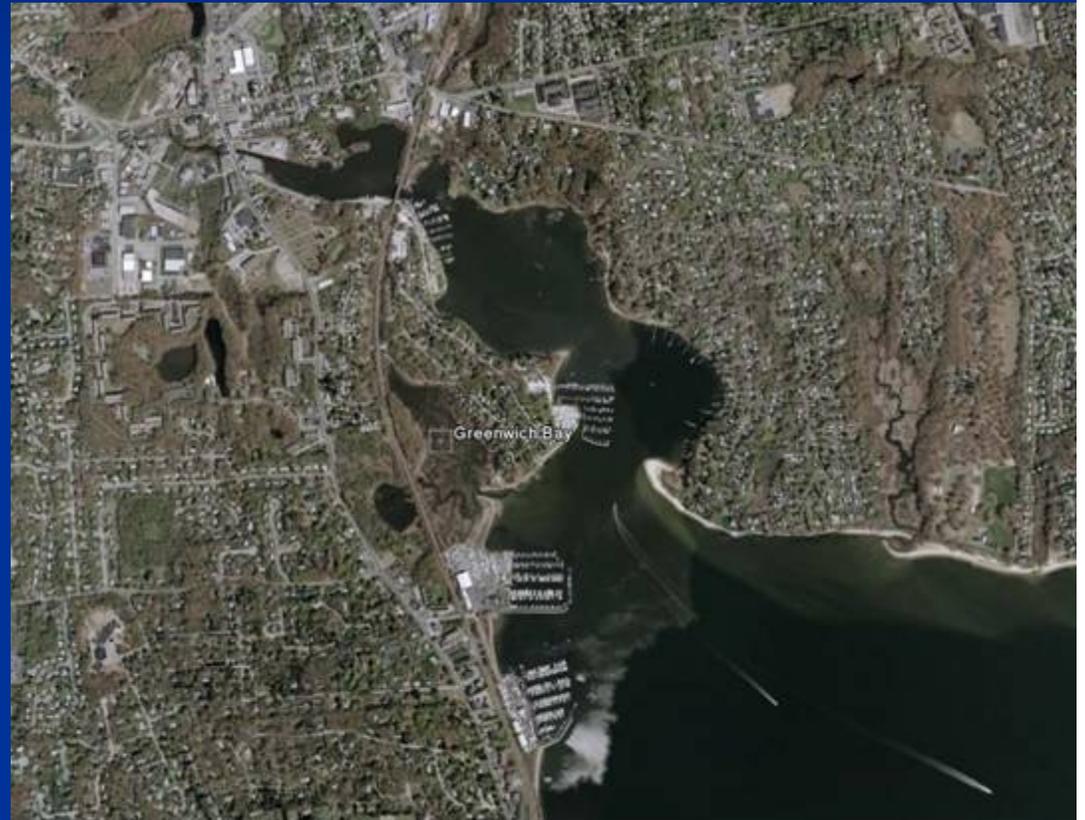


Yiyi Wong working with Rick Shaw and others in Jamaica Bay, New York City



Wickford Cove and Greenwich Bay RI

- Margot K. (Maggie) Payne - working with Dr. Stolt in RI, studying the effects of water column attributes (water quality) on SAS morphology and chemistry;
- presence of sulfidic materials in subaqueous soils



Little Narragansett Bay, CT/RI

- Debbie Surabian and Donald Parizek, NRCS CT
- Mapped soils (2005-2007)
- Developed subaqueous soil interpretations such as presence of sulfidic materials, moorings, potential presence of eelgrass and bottom type



Quonochontaug Pond, Trustom Pond, Point Judith Pond

■ Soils mapped as part of the MapCoast Partnership

U.S.D.A. Natural Resources Conservation Service
URI Department of Natural Resources Science
URI Department of Geosciences
URI GSO Environmental Studies and Paleomagnetism Laboratory
URI Coastal Institute
Rhode Island Geologic Survey
Rhode Island Sea Grant
R.I. Agricultural Experiment Station & Cooperative Extension Service
The National Park Service
North Atlantic Coast Cooperative Ecosystems Studies Unit
R.I. Coastal Resources Management Council
Narragansett Bay Estuary Program
Narragansett Bay National Estuarine Research Reserve
Rhode Island Natural History Survey
URI Environmental Data Center
R.I. Geographic Information System

Quonochontaug Pond

Trustom Pond

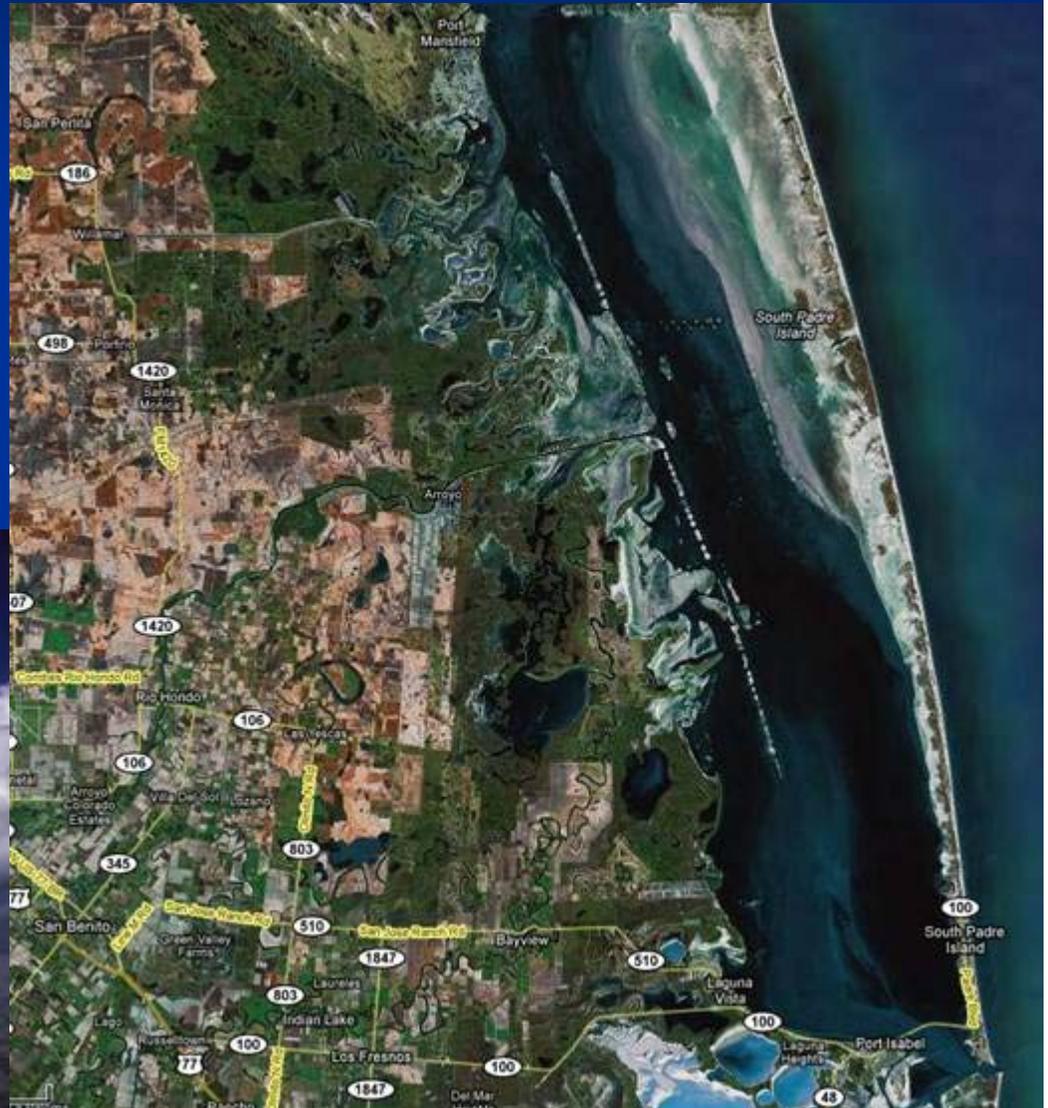
Point Judith Pond

Image NASA
Image © 2008 DigitalGlobe
Image RIGIS

Image MassGIS - Commonwealth of Massachusetts EOEA

South Padre Island, Texas

- Susan Casby-Horton – Examined subaqueous soils and associated landforms (including wind-tidal flats, washover fans, and black mangrove swamps)



NRCS Interest and Collaboration

- Additional work in Rhode Island and Connecticut with the support of Jim Turenne



New Hampshire: Little Bay

- New Hampshire NRCS

