2018 Coastal Zone Soil Survey Work Planning Conference: Why are we here?

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Information on CZSS: www.nesoil.com/sas or www.mapcoast.org
Social sites: @SoilSNE (Twitter/FB)

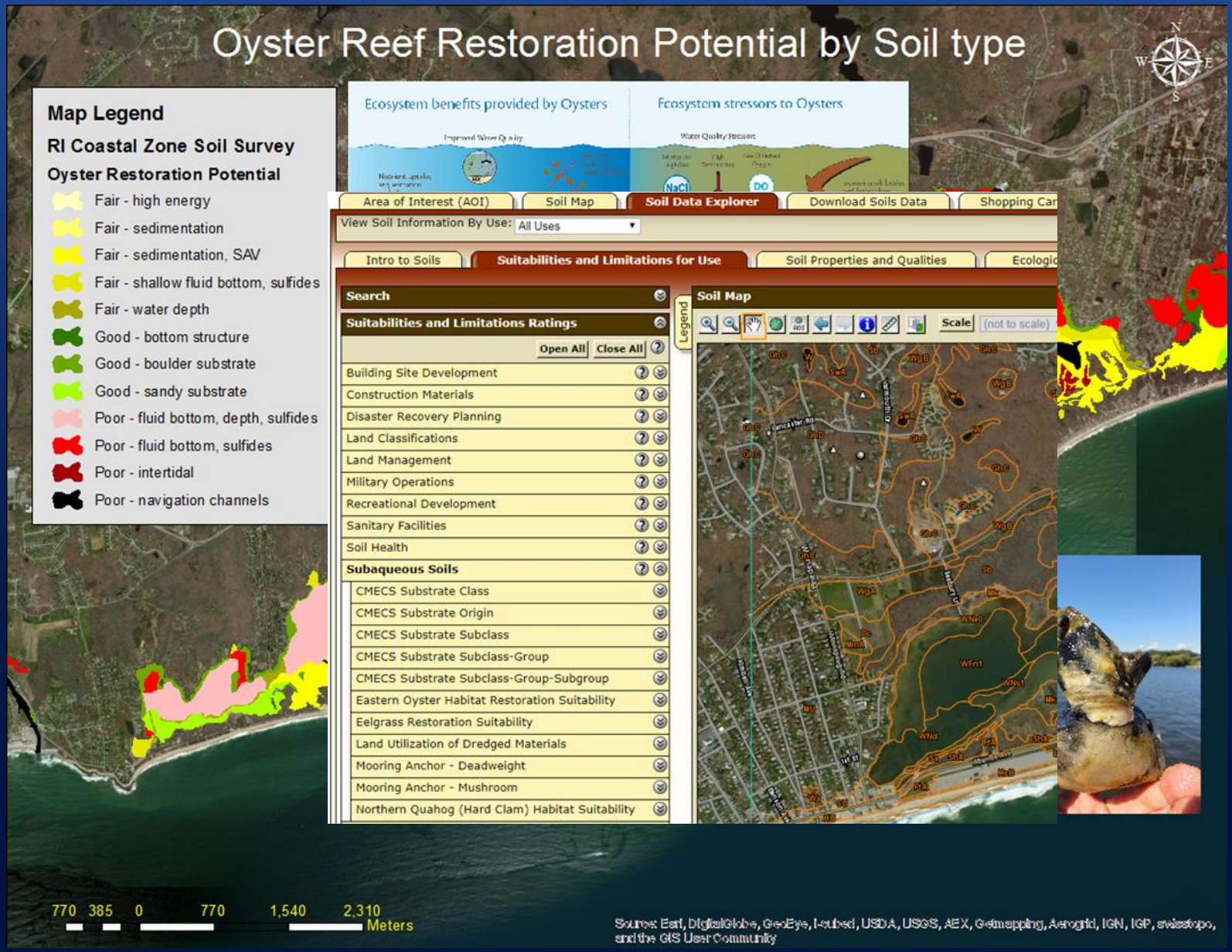
30 years soil survey, 15 years doing coastal zone mapping

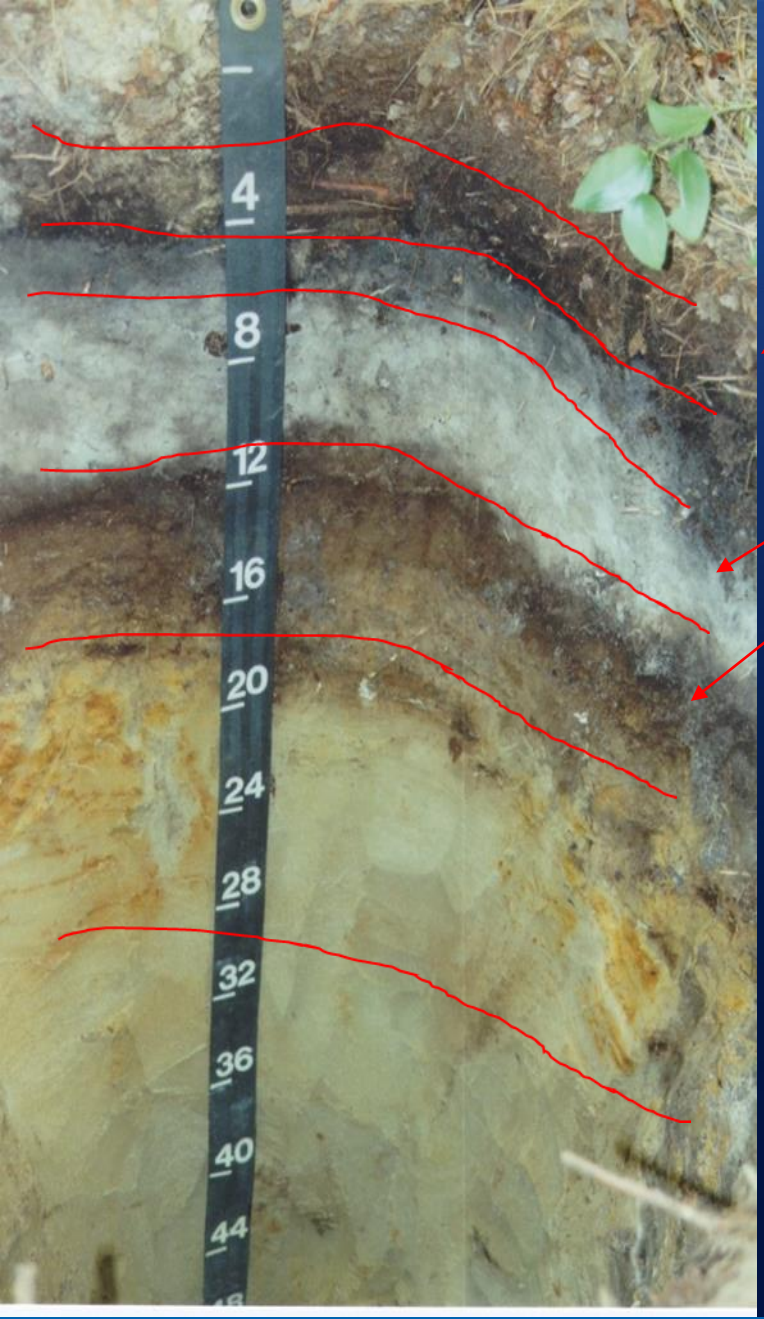
Thanks Rob and Greg!

No SAS, No Interp
Coastal Urban not mapped
Tidal Marshes all Mk
Dunes Misc Unit
One unit Ba
Map Legend
1996 SSURGO
Pre CZSS (2009)

2010 RI Completes 1st CZSS

Main purpose of Soil Survey is to provide interpretations, suitability, limitations, ecologic information, and chemical/physical property of the soils!





Oi--0 to 5 centimeters ; loose; abrupt wavy boundary. Lab sample # 93P04863

Oe--5 to 10 centimeters; very dark gray (5YR 3/1) broken face and dark reddish brown (5YR 3/2) rubbed partially decomposed organic matter; very friable; common fine to coarse roots throughout and many very fine roots throughout; abrupt wavy boundary. Lab sample # 93P04864

Oa--10 to 18 centimeters; dusky red (2.5YR 3/2) broken face and very dark gray (N 3/0) rubbed ; very friable; common fine to coarse roots throughout and many very fine roots throughout; extremely acid, pH 4.3, Bromcresol green; abrupt wavy boundary. Lab sample # 93P04865

A--18 to 24 centimeters; very dark gray (N 3/0) broken face fine sandy loam; weak medium and coarse granular structure; friable, nonsticky, nonplastic; common very fine and fine roots throughout and few medium and coarse roots throughout; strongly acid, pH 5.1, Bromcresol green; abrupt wavy boundary. Lab sample # 93P04866

E--24 to 36 centimeters; dark gray (10YR 4/1) broken face fine sandy loam; 10 percent medium faint spherical very dark gray (10YR 3/1) and 25 percent medium and coarse faint spherical gray (10YR 5/1) mottles; massive; friable, nonsticky, nonplastic; few very fine to medium roots throughout; organic stains; strongly acid, pH 5.3, Chlorophenol red; abrupt wavy boundary. Lab sample # 93P04867

Bhs--36 to 57 centimeters; dark brown (7.5YR 3/2) broken face loamy sand; 10 percent fine distinct spherical strong brown (7.5YR 4/6) and 10 percent fine and medium distinct spherical very dark gray (5YR 3/1) mottles; massive; friable, nonsticky, nonplastic; common very fine and fine roots throughout and few medium roots throughout; strongly acid, pH 5.5, Chlorophenol red; abrupt wavy boundary. Lab sample # 93P04868

Bsm--57 to 65 centimeters; strong brown (7.5YR 5/6) broken face loamy sand; 10 percent fine and medium prominent irregular dark reddish brown (2.5YR 3/4) and 10 percent fine and medium prominent irregular dusky red (2.5YR 3/2) mottles; massive; very firm, hard, nonsticky, nonplastic; common very fine roots in cracks; strongly acid, pH 5.5, Chlorophenol red; clear wavy boundary. Lab sample # 93P04869. sample # 93P4875 is a subsample of this horizon.

Bs--65 to 98 centimeters; 85 percent (10YR/), broken face and 15 percent (2.5Y/), broken face; 25 percent medium and coarse prominent irregular red (2.5YR 4/6) and 25 percent medium and coarse distinct irregular strong brown (7.5YR 4/6) mottles; firm, slightly hard, nonsticky, nonplastic; few fine roots in cracks and common very fine roots in cracks; strongly acid, pH 5.5, Chlorophenol red; clear wavy boundary. Lab sample # 93P04871. 93P4870.

C--98 to 126 centimeters; yellowish brown (10YR 5/4) broken face loamy sand; 10 percent fine and medium distinct irregular yellowish brown (10YR 5/6) and 10 percent fine faint irregular brown (10YR 5/3) mottles; massive; friable, loose, nonsticky, nonplastic; moderately acid, pH 5.7, Chlorophenol red; clear wavy boundary. Lab sample # 93P04872

2Cd1--126 to 150 centimeters; light olive brown (2.5Y 5/3) broken face sandy loam; 1 percent medium prominent irregular yellowish brown (10YR 5/6) and 1 percent medium distinct irregular light brownish gray (10YR 6/2) mottles; massive; firm, slightly hard, nonsticky, nonplastic; brittle; common very fine and fine moderate-continuity vesicular pores; moderately acid, pH 5.6, Chlorophenol red; clear wavy boundary. Lab sample # 93P04873

2Cd2--150 to 183 centimeters; grayish brown (2.5Y 5/2) broken face sandy loam; 1 percent fine and medium prominent irregular yellowish brown (10YR 5/6) mottles; massive; firm, hard, nonsticky, nonplastic; brittle; common very fine and fine moderate-continuity vesicular pores; 1 percent fine spherical extremely weakly cemented dark reddish brown (5YR 3/2) iron-manganese masses throughout; moderately acid, pH 5.7, Chlorophenol red. Lab sample # 93P04874

*** Primary Characterization Data ***

Pedon ID: 93MA023001 (Plymouth, Massachusetts)
Sampled As: Mattapoisett
USDA-NRCS-NSSC-National Soil Survey Laboratory
Pedon No. 93P0704

PSDA & Rock Fragments

Layer	Depth (cm)	Horz	Prep	Total Clay (<.002)	Total Silt (.002-.05)	Total Sand (.05-2)	Clay Fine (<.0002)	Clay CO_3 (.0002-.002)	Fine Silt (.002-.02)	Coarse Silt (.02-.05)	VF Sand (.05-.10)	F Sand (.10-.25)	M Sand (.25-.50)	C Sand (.5-1)	VC Sand (1-2)	>2mm (% of <2mm Mineral Soil)
				3A1	3A1	3A1			3A1	3A1	3A1	3A1	3A1	3A1	3A1	3B1
93P04863	0-5	Oi	S													
93P04864	5-10	Oe	S													
93P04865	10-18	Oa	S													
93P04866	18-24	A	S	1.9	20.5	77.6			9.2	11.3	10.3	31.6	23.1	9.0	3.6	
93P04867	24-36	E	S	1.7	18.8	79.5			8.9	9.9	10.9	33.2	25.2	8.0	2.2	
93P04868	36-57	Bhs	S	2.3	7.5	90.2			3.1	4.4	10.5	39.8	29.4	8.7	1.8	
93P04869	57-65	Bsm	S	0.8	5.1	94.1			2.1	3.0	7.8	39.6	32.3	12.0	2.3	
93P04870	65-99	Bs	S	0.4	2.9	96.7			0.8	2.1	11.8	50.2	26.3	6.8	1.8	
93P04871	65-99	Bs	S	--	4.3	95.7			0.1	4.2	14.5	45.9	24.2	8.4	2.7	
93P04872	99-126	C	S	--	20.8	79.2			4.1	16.7	22.8	25.4	15.4	9.2	6.4	
93P04873	126-150	2Cd1	S	--	26.5	73.5			9.6	16.9	15.1	22.2	17.3	10.4	9.5	
93P04874	150-183	2Cd2	S	2.0	39.7	84.3			17.4	16.3	12.3	20.5	15.9	8.7	6.9	
93P04875	57-65		S													

*** Primary Characterization Data ***

Pedon ID: 93MA023001 (Plymouth, Massachusetts)
Sampled As: Mattapoisett
USDA-NRCS-NSSC-National Soil Survey Laboratory
Pedon No. 93P0704

Bulk Density & Moisture

Layer	Depth (cm)	Horz	Prep	Bulk Density 33 kPa (g/cm³)	Bulk Density Oven Dry (g/cm³)	Cole Whole Soil	Water Content 6 kPa (% of <2mm)	Water Content 10 kPa	Water Content 33 kPa	Water Content 1500 kPa	1500 kPa Moist	Ratio AD/OD	WRD Whole Soil (g/cm³)	Aggst Stabl 2-0.5mm (g/g)
				4A1d	4A1h				4B1c	4B2a	4B2b	4B5	4D1	
93P04863	0-5	Oi	S							86.1		1.068		
93P04864	5-10	Oe	S							96.9		1.070		
93P04864	5-10	Oe	M								125.6			
93P04865	10-18	Oa	S							50.3		1.066		
93P04865	10-18	Oa	M								158.3			
93P04866	18-24	A	S	1.56	1.59	0.006			13.8	9.7		1.013	0.06	
93P04867	24-36	E	S	1.71	1.72	0.002			7.1	0.3		1.002	0.11	
93P04868	36-57	Bhs	S	1.42	1.45	0.007			10.0	2.8		1.005	0.10	
93P04869	57-65	Bsm	S	1.82	1.84	0.004			9.5	2.4		1.008	0.12	
93P04870	65-99	Bs	S	2.05	2.05	--			8.7	0.4		1.003	0.17	
93P04871	65-99	Bs	S							1.8		1.002		
93P04872	99-126	C	S	1.75	1.76	0.002			8.6	0.8		1.002	0.13	
93P04873	126-150	2Cd1	S	1.94	1.95	0.002			8.8	0.9		1.002	0.14	
93P04874	150-183	2Cd2	S	1.94	1.96	0.003			9.8	0.9		1.002	0.13	
93P04875	57-65		S							1.1		1.011		

Established Series
PCF-JDT-DAS-DCP
06/2010

MATTAPOISETT SERIES

The Mattapoisett series consists of soils shallow to ortstein, moderately deep or deep to dense lodgement till and very deep to bedrock. They are poorly drained soils that formed in sandy glaciofluvial deposits and/or eolian material underlain by lodgment till. Slope ranges from 0 through 8 percent. Saturated hydraulic conductivity is very high in the surface horizon and moderately low through low in the cemented subsoil (ortstein layer) and dense substratum. Mean annual temperature is about 48 degrees F. (9 degrees C.) and mean annual precipitation is about 1090 millimeters.

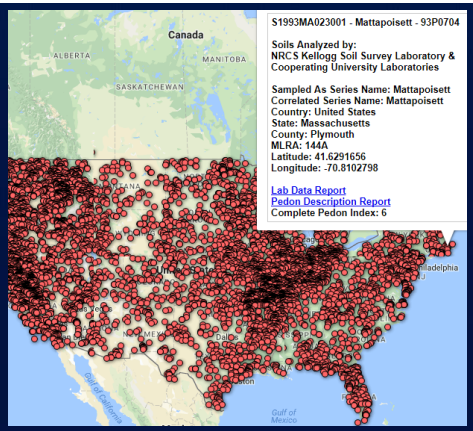
TAXONOMIC CLASS: Sandy, isotic, mesic, shallow, ortstein Typic Duraquods

TYPICAL PEDON: Mattapoisett loamy sandy - on an east-facing, concave, 3 percent toe slope of a drumlin in a wooded area. (Colors are for moist soil).

Oe-- 0 to 3 centimeters; black (5YR 2.5/1) hemic material; many very fine, fine and medium roots; extremely acid; abrupt wavy boundary.

Oa-- 3 to 8 centimeters; black (N 2.5/0) sapric material; common very fine and fine and few medium and coarse roots; extremely acid (pH 4.2); abrupt wavy boundary. (Combined thickness of the O horizons is 3 to 20 centimeters.)

A-- 8 to 18 centimeters; black (N 2.5/0) loamy sand; massive; very friable; common very fine and fine roots and few medium and coarse roots; very strongly acid (pH 4.6); 5 percent gravel; 1 percent cobble; 2 percent stones; abrupt wavy boundary. (3 to 20 centimeters thick.)

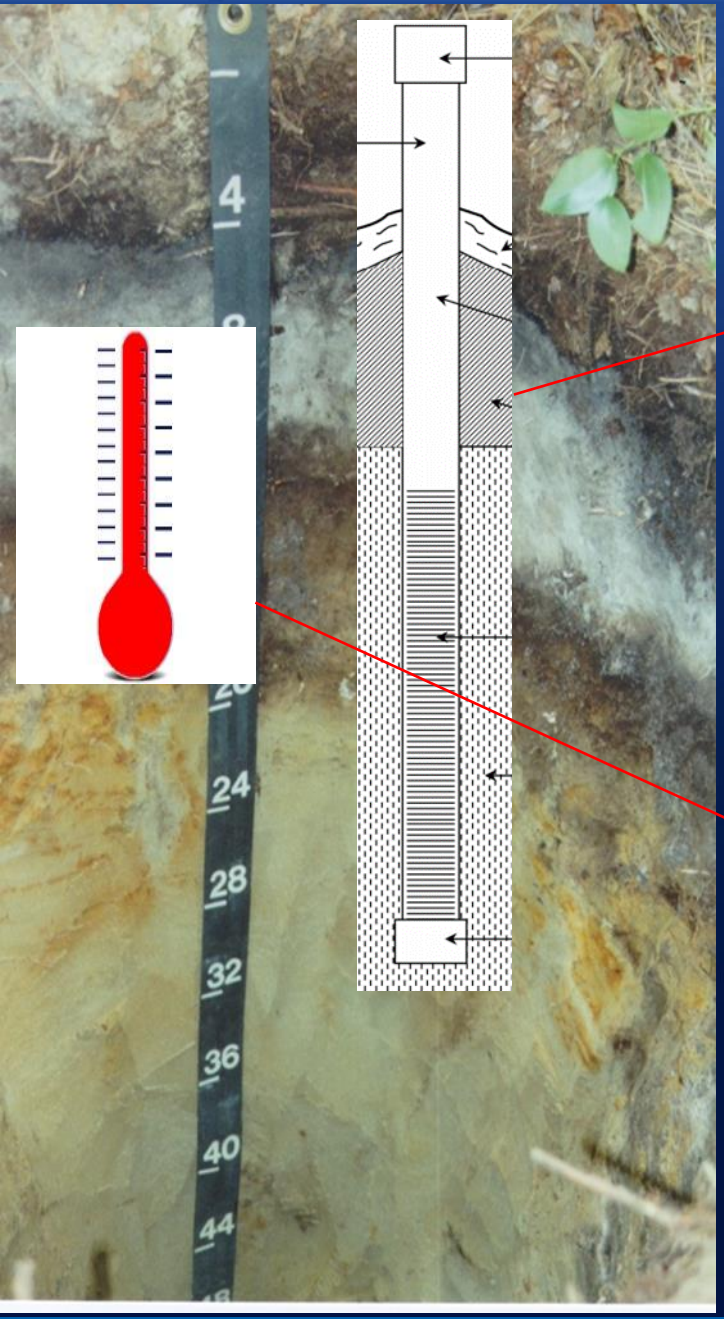


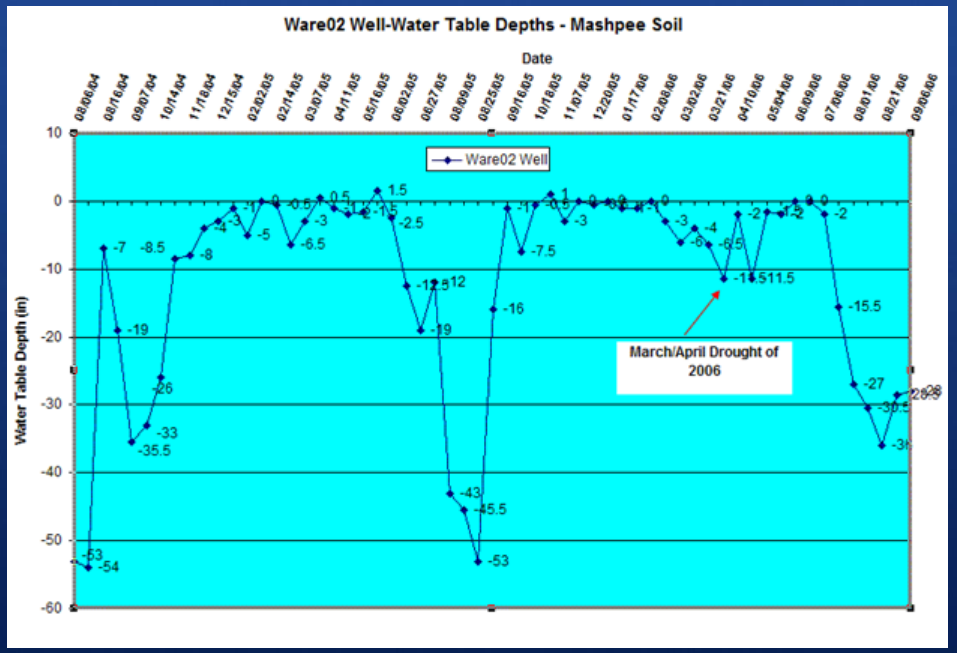
S1993MA023001 - Mattapoisett - 93P0704

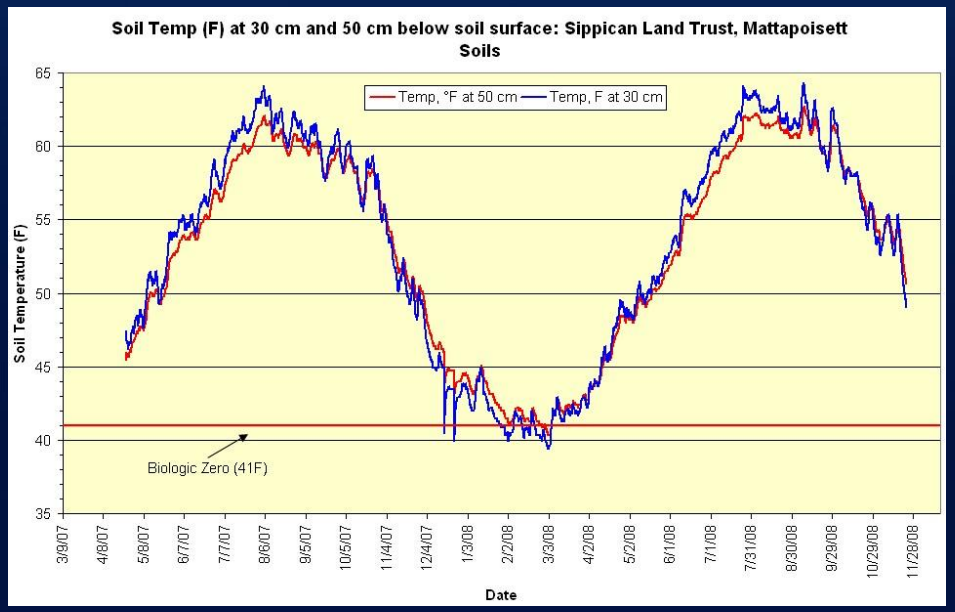
Soils Analyzed by:
NRCS Kellogg Soil Survey Laboratory & Cooperating University Laboratories

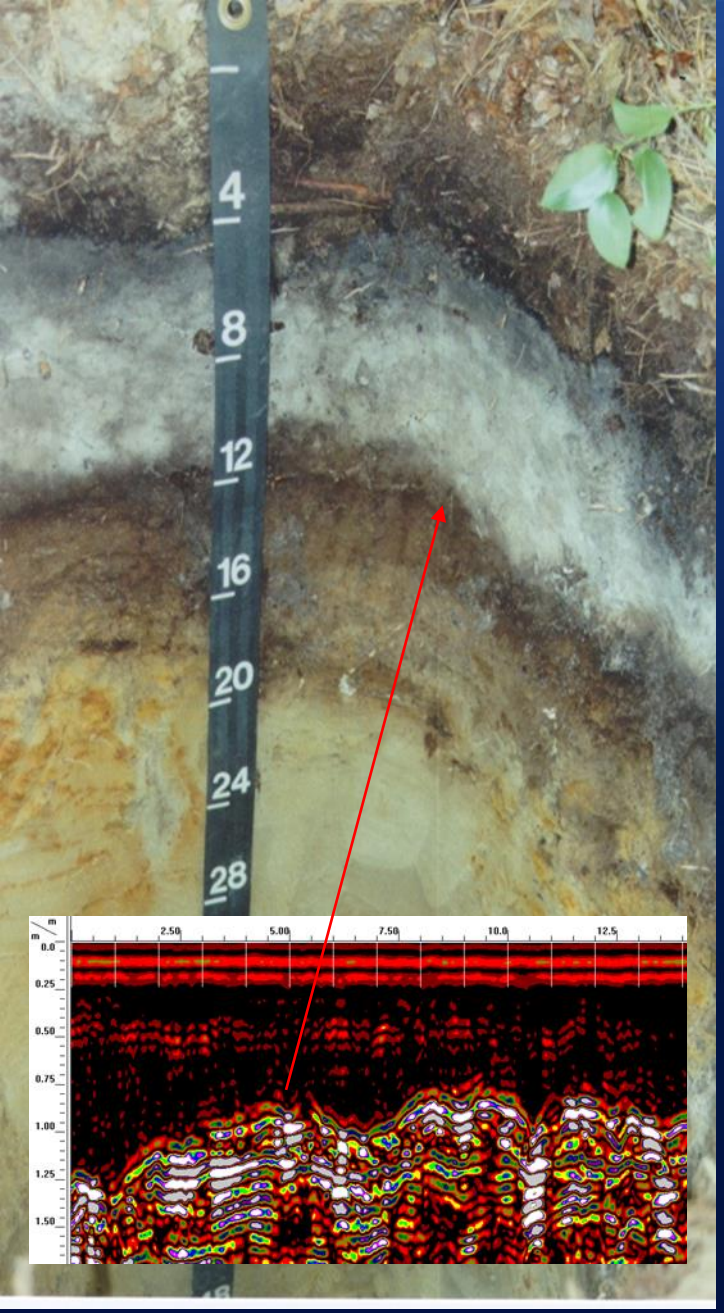
Sampled As Series Name: Mattapoisett
Correlated Series Name: Mattapoisett
Country: United States
State: Massachusetts
County: Plymouth
MLRA: 144A
Latitude: 41.6291656
Longitude: -70.8102798

Lab Data Report
Pedon Description Report
Complete Pedon Index: 6




Ware02 Well-Water Table Depths - Mashpee Soil
Date
Water Table Depth (in)
Ware02 Well
March/April Drought of 2006


Soil Temp (F) at 30 cm and 50 cm below soil surface: Sippican Land Trust, Mattapoisett Soils
Soil Temperature (F)
Temp, °F at 50 cm
Temp, F at 30 cm
Biologic Zero (41F)
Date



Physiognomy Key

Trees
- F Broad-lvd deciduous < 25 % conifers
- FC Broad-lvd deciduous 25-50 % conifers
- CF Conifers 50-75% w/ broad-lvd deciduous
- C Conifers 75-100 %

Shrubs
- SD deciduous broad-lvd s
- SE evergreen shrubs
- SC coniferous shrubs

Herbs & mosses
- N no distinctive character
- H herbs +/- graminoids
- G graminoids
- F ferns

Moss/Hepatic/Lichen
- M

Aquatics
- FL Floating
- SB Submersed
- MX Mixed

Structure & Physiognomy

phys. code (circle)	code	(ht. range)	Strata	actual height (m)	percent
F FC CF C	T1	(>20 m)	emergent tree	_____	0%
F FC CF C	T2	(10-20 m)	canopy tree	_____	75%
F FC CF C	T3	(5-10 m)	subcanopy tree	_____	2%
SD SC SE	S1	(2-5 m)	tall shrub	_____	10%
SD SC SE	S2	(0.5-2 m)	short shrub	_____	90%
N H G F M	H	(< 0.5 [2] m)	herbaceous	_____	50%
	M		mosses / hepatics / lichens		1%
FL SB MX	AQ		true aquatics		0%

Cover/abundance scales (choose)

ESA	xBB	
1	R	trace
2	+-	<1 %
3	1-	1-2 %
4	1+	2-5 %
5	2-	5-10 %
6	2+	10-25 %
7	3	25-50 %
8	4	50-75 %
9	5	75-95 %
10		95 – 100%

Sociability scale
1 growing solitarily, si
2 in small groups, tus
3 small patches
4 large patches, broke
5 great crowds, exten
.... (dotted underline) de
scattered groups or

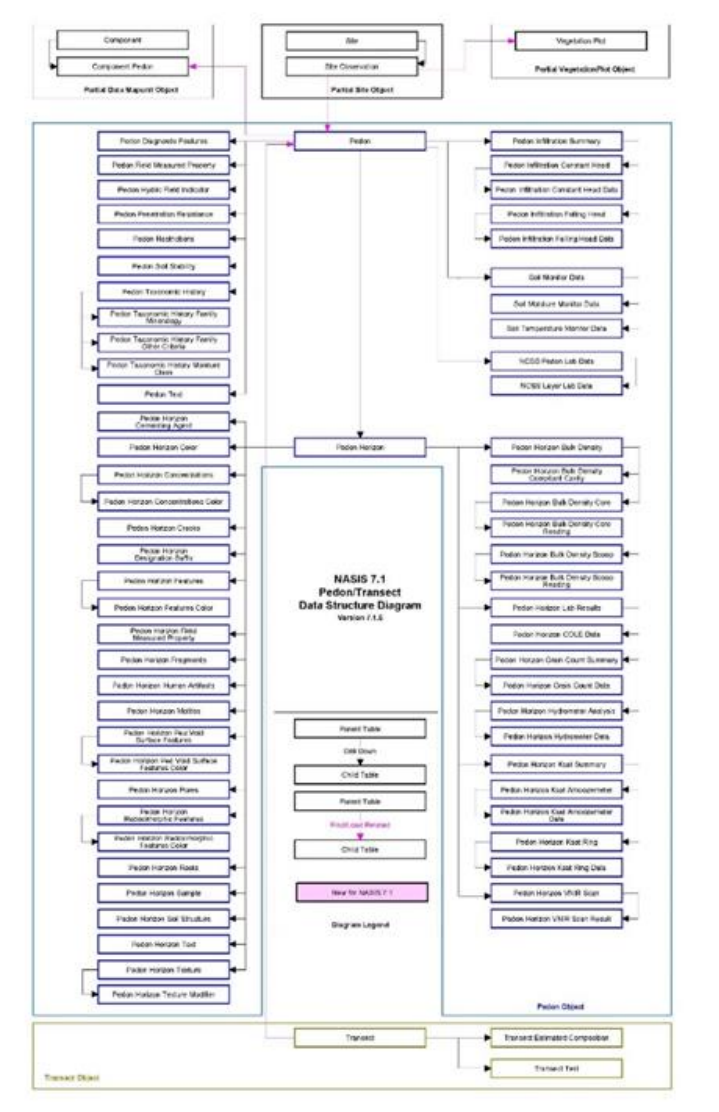
Phenology
- ✱ denotes flowering
- ❀ denotes fruiting
- o denotes loss of vigo

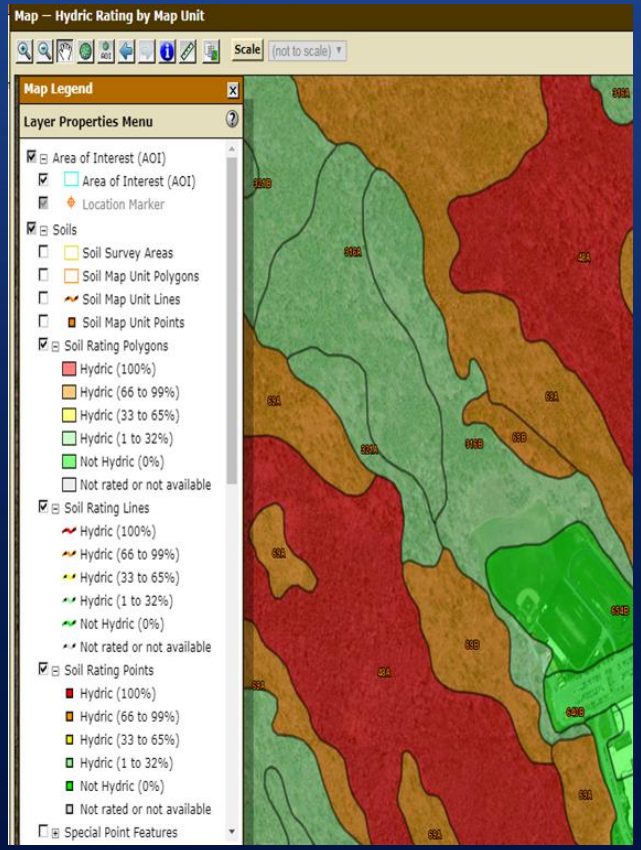
Plant composition listed by prevailing Stratum - [cover scale / sociability / phenology] Genus species (collect no.) . **Taxonomic standard:**

		Canopy			**Short shrub**		2	*Rubus hispidus* (Bristle dewberry)
	8	*Acer rubrum* (Red maple)		9	*Vaccinium corymbosum*		2	*Thelypteris simulata* (Bog fern)
	1	*Nyssa sylvatica* (Blackgum)		4	*Lindera benzoin*		1	*Trientalis borealis* (Starflower)
	1	*Quercus coccinea* (Scarlet oak)		2	*Smilax rotundifolia*		3	*Smilax rotundifolia*
				4	*Clethra alnifolia*		1	*Thelypteris noveboracensis* (New York
		Subcanopy						
	3	*Acer rubrum*			**Herbaceous**			
	1	*Quercus alba* (White oak)		3	*Onoclea sensibilis* (Sensitive fern)			
				4	*Symplocarpus foetidus* (Skunk cabbage)			
		Tall shrub		3	*Osmunda cinnamomea* (Cinnamon fern)			
	4	*Vaccinium corymbosum* (Highbush blueberry)		2	*Sphagnum* spp. (Peat moss)			
	3	*Lindera benzoin* (Spicebush)		4	*Maianthemum canadensis* (Canada mayflower)			
	2	*Smilax rotundifolia* (Roundleaf greenbrier)		4	*Clethra alnifolia*			
	1	*Clethra alnifolia* (Sweet pepperbush)		2	*Lindera benzoin*			
				1	*Rhododendron viscosum* (Swampa azalea)			

"All we do in Soil Survey is Collect Data"

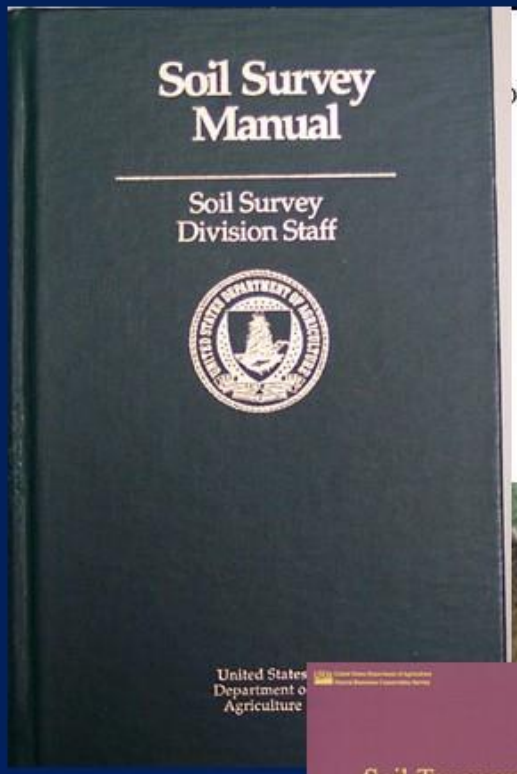
National Soil Information System NASIS - The Beast!

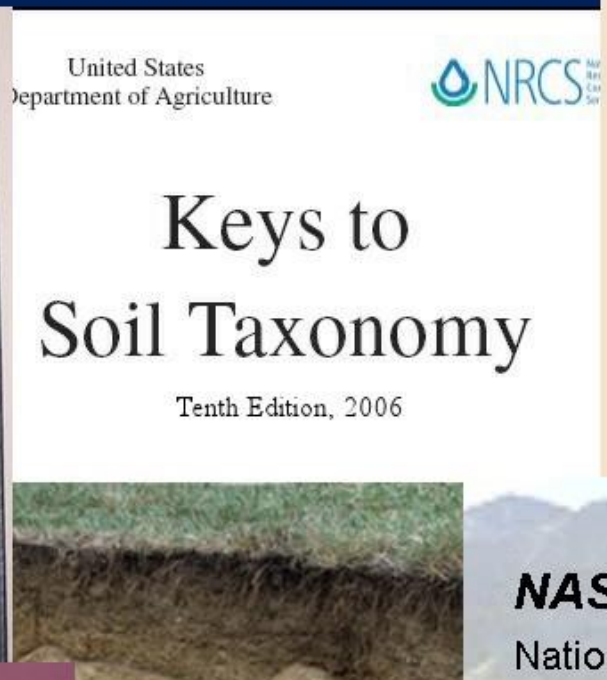




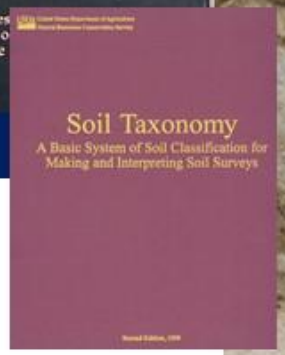
INTERPRETATIONS:

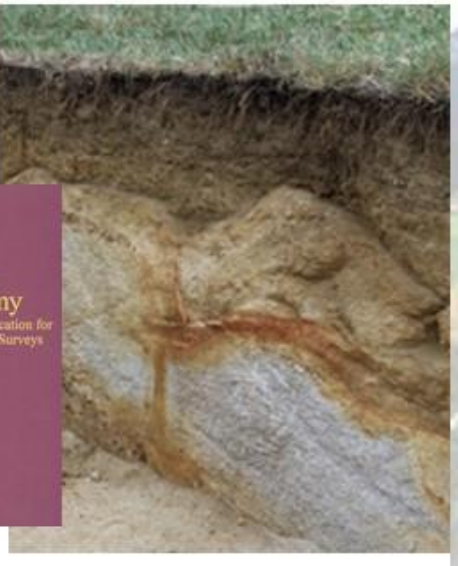
- Hydric Soil = Wetland
- High Watertable = Sever for most uses.
- Sandy soil – source of sand.
- Not Prime Farmland
- Hydrologic Group D
- Buried carbon = good riparian soils for nitrate removal.
- Site Index 55 for Red Maple
- High Pollinator Habitat – dominated by Clethera
- Well suited wetland wildlife habitat
- Suited for Blueberries/Cranberry
- Frequent Ponding (vernal pool)
- High carbon pools
- Low AWC
- Low Runoff
- 50 plus more interps!

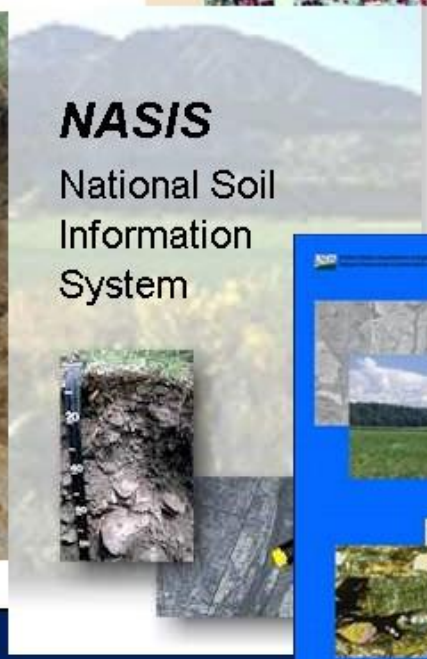

Soil Survey
Manual
Soil Survey
Division Staff

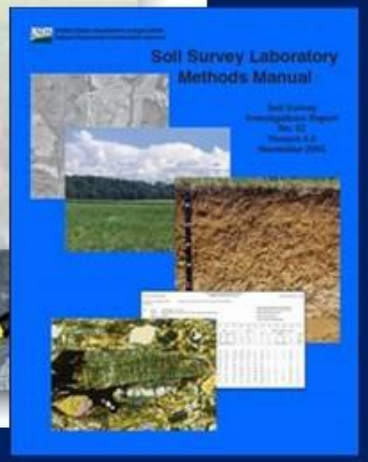

United States
Department of Agriculture
NRCS
Keys to
Soil Taxonomy
Tenth Edition, 2006

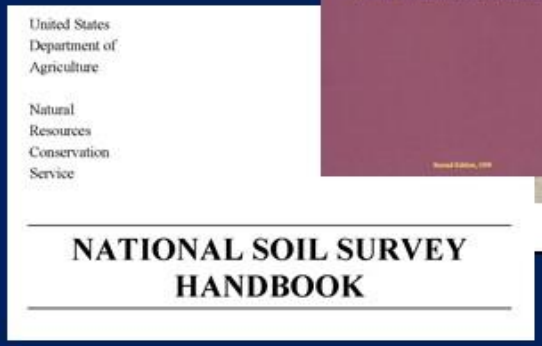
Field Book
for Describing and
Sampling Soils


Soil Taxonomy
A Basic System of Soil Classification for
Making and Interpreting Soil Surveys




NASIS
National Soil
Information
System


Soil Survey Laboratory
Methods Manual

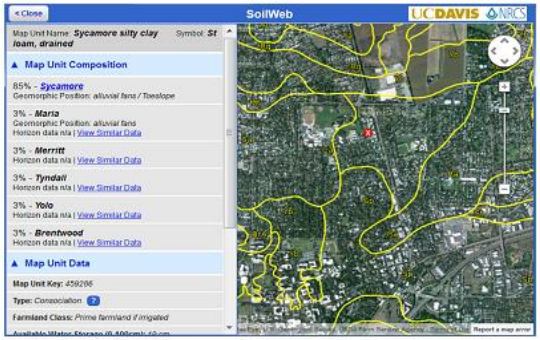

United States
Department of
Agriculture
Natural
Resources
Conservation
Service
NATIONAL SOIL SURVEY
HANDBOOK

SoilWeb Apps

SoilWeb products can be used to access USDA-NCSS detailed soil survey data (SSURGO) for most of the United States. Please choose an interface to SoilWeb:

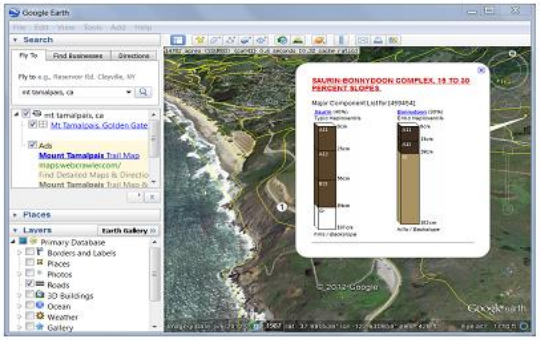
SoilWeb

Explore soil survey areas using an interactive Google map. View detailed information about map units and their components. This app runs in your web browser and is compatible with desktop computers, tablets, and smartphones.

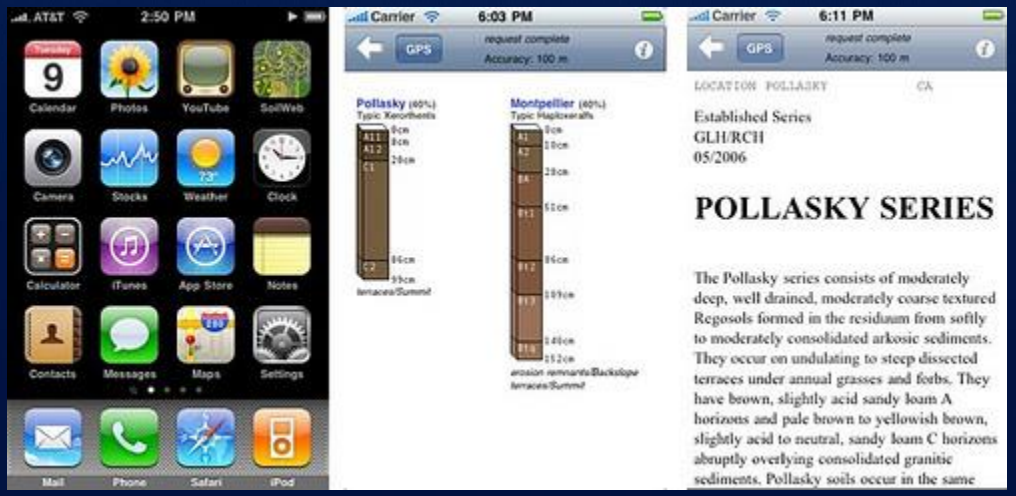


SoilWeb Earth

Soil survey data are delivered dynamically in a KML file, allowing you to view mapped areas in a 3-D display. You must have Google Earth or some other means of viewing KML files installed on your desktop computer, tablet, or smartphone.



Google: SoilWeb



Technical Soil Services (TSS)

MAPPING PARTNERSHIP FOR COASTAL SOILS AND SEDIMENT (MAPCOAST)

STEERING TEAM

Peter August, URI-CI-NRS
Michael Bradley, URI-NRS
Jon Boothroyd, URI-GEO
Giancarlo Cicchetti, USEPA
Christopher Deacutis, NBEP
Janet Freedman, CRMC
John King, URI-GSO
Cheryl Hapke, USDI-USGS
Warren Prell – Brown
Mark Stolt, URI-NRS
Carol Thornber – URI
Jim Turenne, USDA-NRCS

PARTNERS

SDA - Natural Resources Conservation
rvice
RI - Department of Natural Resources
ience

MEMORANDUM OF UNDERSTANDING FOR THE MAPPING PARTNERSHIP FOR COASTAL SOILS AND SEDIMENT (MAPCOAST)

PURPOSE:

The purpose of this agreement is to establish a partnership

OBJECTIVES:

MapCoast understands the need to develop a common hierarchal system of coastal soil and sediment classification that encompasses all disciplines including biology, wetlands, geology, and pedology. It is mutually agreed that MapCoast **will work cooperatively and partners will share resources, technology, equipment,** and knowledge to achieve the following objectives:

- Develop soil and sediment mapping standards and protocols to produce accurate and useful maps.
- Build multiple interpretations of the soil and sediment data to service the coastal resource management community.
- Ensure that the soil, sediment, and bathymetric data collected will be made available to all users. .
- Provide training and educate users about the soil and sediment data and maps.

Who Wants a CZSS?

Purpose:
To develop a 10-year plan for Coastal Zone Soil Survey (CZSS) through the National Cooperative Soil Survey (NCSS) with input from partners on standards, priority areas, and available resources.

Background:

A coastal zone soil survey is a seamless data set of soils information that encompasses inland soils, tidal marshes, and shallow subaqueous and submerged soils. Subaqueous and submerged soils are permanently covered by water. The 3-dimensional data set gives properties and characteristics of soils from the soil surface to a depth of approximately 2 meters (6 feet).

As a member of the National Cooperative Soil Survey, NRCS is the lead Federal agency for mapping and interpreting our nation's soil resources, including in our coastal zone areas. NRCS supports rigorous scientific content from field data gathering and research; diverse and uniquely effective partnerships; and modern techniques to produce spatial and tabular seamless soil surveys as well as timely distribution of the data to all users.

Planning Conference Topics are not reserved to the following, but will generally include:

1. Work Planning – Identify project priority areas and resources for southeast regions
   - Project plan development
   - Equipment/staffing needs

2. Developing Partnerships: opportunities for cooperators; protocols for Memorandum of Agreement/Work, methods of sharing resources.

3. Technical Planning and Resources:
   - **Topobathy:** existing resources and establishing future needs
   - **Laboratory Analysis for Coastal Zone Soil Survey**
     - Sampling guide to subaqueous soils.
     - Data needs for all coastal zone soil surveys including subaqueous soils, dunes, beaches, marshes and anthropogenic spoils.
   - **Guide to populating NASIS** - minimal population standards; Regional Office review and approval, Quality Control and Assurance.
   - **Updating OSDs** - Regional and National protocols.
   - **NCSS Proposals** – incorporating storm surge inundation; flooding phases; salinity/halinity classes

4. Future Needs
   - **Research needs/Interpretations** – Ecological Site Descriptions, properties, characteristics, TLD, coastal erosion; blue carbon; sulfides; surge inundation of salt water on crops/trees
   - **Interpretation needs**- establishing state, regional and national priorities.
   - **Training needs for staff and partners**
   - **Outreach/education needs for external customers**

Subaqueous