National Park Service Soil Surveys in the NE NCSS Region

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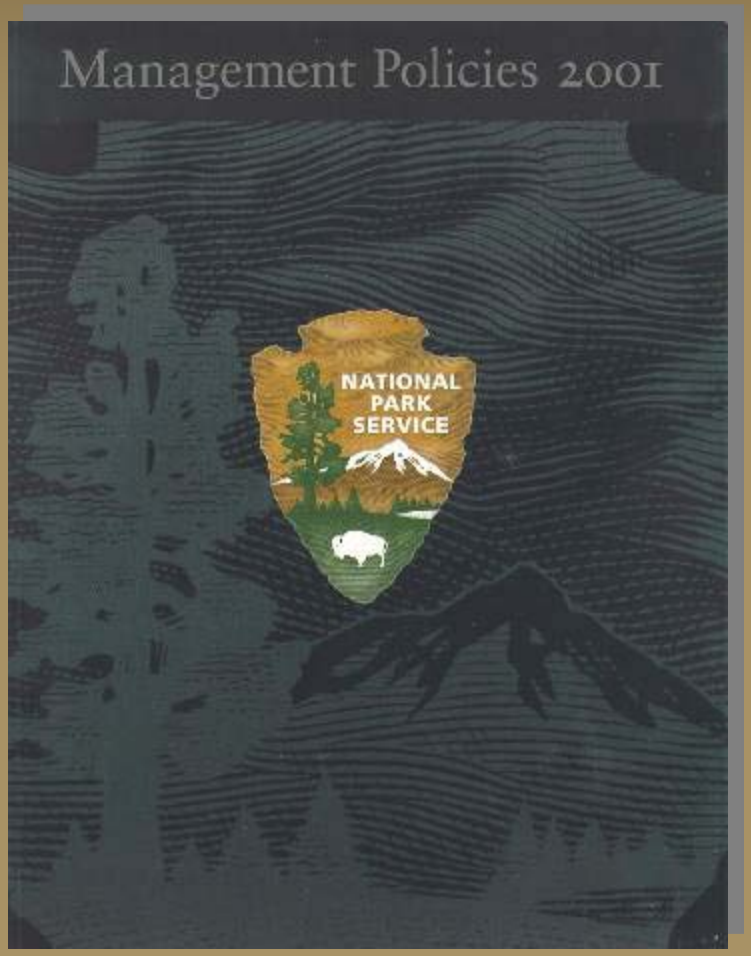
Overview

- 53 NPS properties in the NE Region are required by DOI to have soil surveys - required by NPS management policy



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Overview

In the NPS parks hold equal priority regardless of size

A small park in an urban area can have more management issues, higher user visibility and impact and political concerns than a remote large park

Management concerns vary across the country so data needs are different

72 acre Weir Farm, CT

WEFA

Status

In NE 3 parks under agreement with NRCS:

- NERI
- GARI
- BLUE

These 9 parks account for 184K acres

6 parks being clipped from existing SSURGO:

BOHA	GREE
CHOH	GWMP
DEWA	ROCR

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Status

- 3 parks in NE not scheduled at present:

- Appalachian Trail
- National Capitol Park East
- Shenandoah NP

Status

Of those three not scheduled two are the largest in NE accounting for half of NPS acreage in NE:

- 1. Appalachian Nat'l Scenic Trail (220,000 acres)
- 2. Shenandoah Nat'l Park (~200,000 acres)

Status

- Shenandoah National Park, Virginia - currently part of 8 non-MLRA soil survey areas

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Status

	2007	2010
■	26 NE parks completed*	41 NE parks completed*

"completed" = soil datasets supplied to park; clipped and packaged; accessory data supplied also when available

*need NY part of GATE

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Collaboration

- Subaqueous soils – from Acadia, Cape Cod, Fire Island, Gateway, Assateague, Colonial all have major acreage of maritime subaqueous soils
- Ecological site descriptions – some parks offer excellent locations for study of state and transition theory and ESD development
- Soil Carbon assessments – NPS is using present SSURGO data for park carbon stocks; USGS LandCarbon; Rapid Carbon on Federal Lands?
- Training to NPS staffs

Soil Carbon Assessments

- Why? For NPS - slightly different reasons

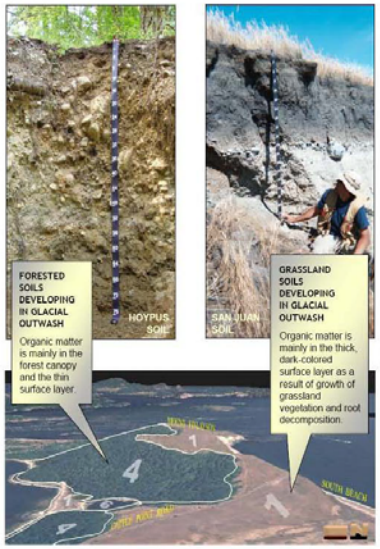
1. Education – NPS role in translating nature

2. Political – reason for existence, expansion

3. Restoration justifications

SOIL ORGANIC CARBON
AN ECOLOGICAL THUMBPRINT

The San Juan soil series is an example of a native prairie soil with relatively high amounts of organic carbon within the soil profile. Prairie vegetation is naturally incorporated into the soil profile year after year, creating a zone that is enriched in carbon and visually striking for its dark color. Carbon stored in a soil profile naturally improves soil health, productivity, and stability as well as enhancing water quality.



Pictured above, an oblique aerial view of Mount Finlayson illustrating where the Hoypus and San Juan soil series are mapped adjacent to each other, distinguished by vegetative cover. Numbers on the map correspond to general soil map unit numbers found in the Soil Survey of San Juan Island National Historical Park.

The Hoypus soil series is an example of a native forest soil with the majority of its organic carbon stored at the top of the soil profile in the forest litter layer. Although visually much different than the San Juan soil, the Hoypus soil shares nearly identical physical properties and serves an equally important ecological role. Although these two soils have formed under different vegetative cover, they have both formed in the sand and gravel of glacial outwash.

Soil Carbon Assessments by NE Map Units

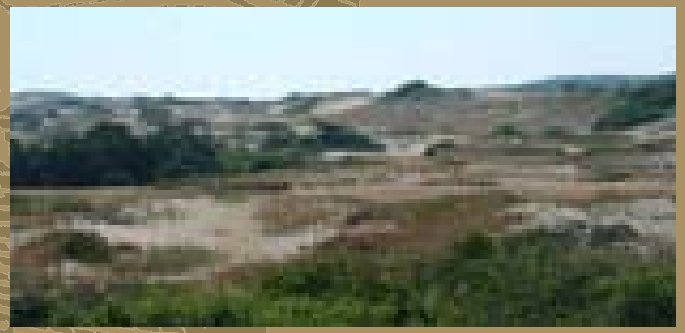
The top SOC content of 1367 map units used in 41 NE parks

1. MA001 MU 54A Cape Cod Nat'l Seashore

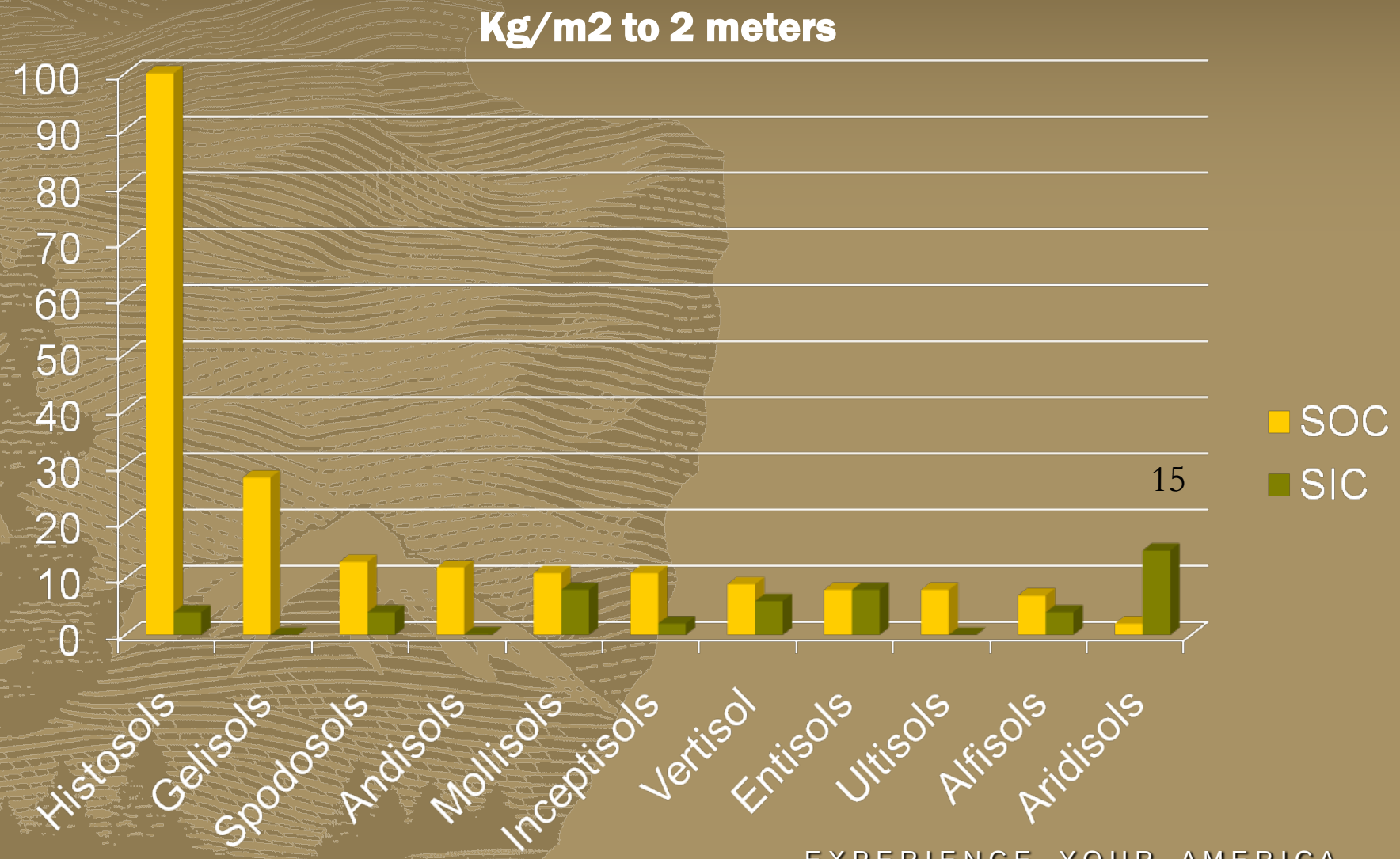
Freetown: Typic Medisaprists

Swansea: Terric Medisaprists

171 kg/m2 SOC

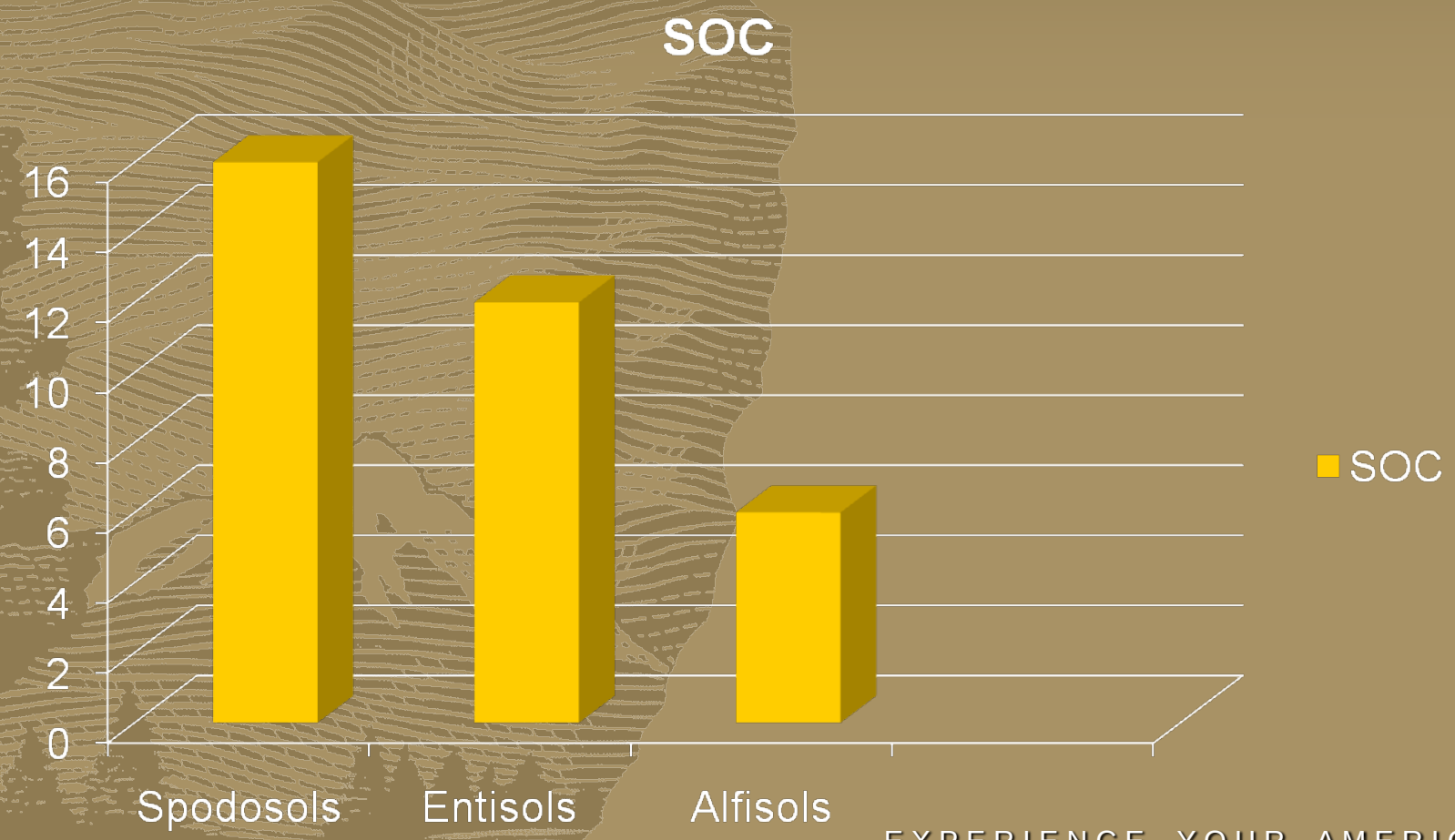


Soil Carbon Assessments Nationally



SOC Assessments by Soil Order

NE Parks



Soil Carbon Assessments

Here in PA 10,000 house Carbon equivalents in

Friendship Hill National Historic Site

Gettysburg National Military Park

Fort Necessity Nat'l Battlefield

Eisenhower Nat'l Historic Site

4,200 acres

NE SOC Assessments by Soil Order

- Entisols max SOC in NE NPS Bohicket (Typic Sulfaquent) in Colonial NHP, VA 217 kg/m2
- Only 1 Entisol in NE has any SIC Fluvaquents of Harper's Ferry NHS, WV 175 kg/m2
- Spodosols max SOC is in Berryland (Typic Alaquod) mapped in Assateague Island NS, MD 53 kg/m2

NE SOC Assessments by Soil Order

- Alfisols – Vergennes (Glossaquic Hapludalf) has highest SOC (19.6 kg/m2) AND highest SIC (26kg/m2)

Mapped on calcareous estuarine and glaciolacustrine clays of Roosevelt-Vanderbilt NHS, NY

Soil Carbon Assessments

Teaching Moment

- 6,000 board-ft in 2,000 ft^2 house
- ~1# C per board-ft lumber
- 3 Tons C in a house
- Kg/m2 to tons/acre * 4.45

Soil Carbon Assessments

Carbon Source	SOC tons/acre MU average	Houses per acre "sequestered" in soil
Harper's Ferry NHS Map Units (HAFE)	17	~6
NE Region Map Units	44.5	~ 13
Acadia National Park, ME Map Units (ACAD)	104	~ 35
Freetown – Swansea Medisaprists (CACO)	760	250

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Summary

- 53 NPS properties in NE – 41 done, 3 not scheduled, 3 under agreement, 6 being “harvested” this FY
- Collaboration – ESDs, providing training (TSS role for Federal Lands), subaqueous soils, SOC rapid assessement
- NPS use of NRCS SSURGO data for baseline Carbon stocks for educational and political purposes, park planning, management justifications

Thank you!

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