National Park Service Soil Resources Inventory

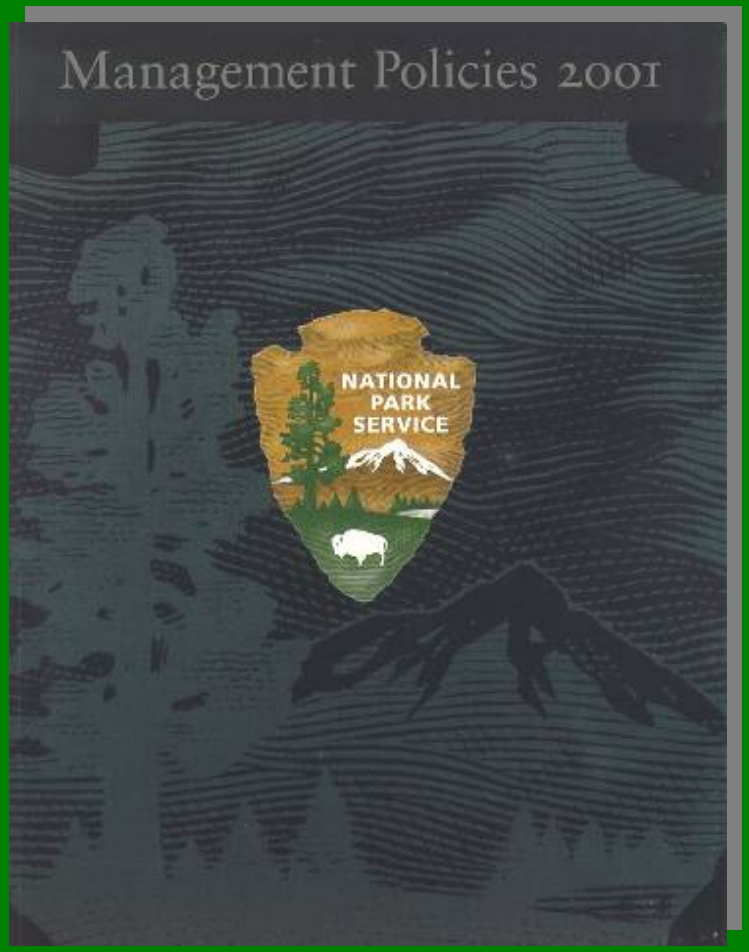
Pete Biggam

Soils Program Manager

Natural Resources Program Center

Denver, Colorado

NPS Soil Resources Management



"The Service will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources".

Excerpts from, NPS Management Policies 2001, Part 4.8.2.4 - Soil Resource Management

NPS Soils Related Management Issues

General / Resource Management Plans

Interpretation/Information and Education

Park Development and Maintenance

Cultural Resources and Landscapes

Abandoned Mine Lands Program

Landscape Restoration Projects

Soils Related Management Issues

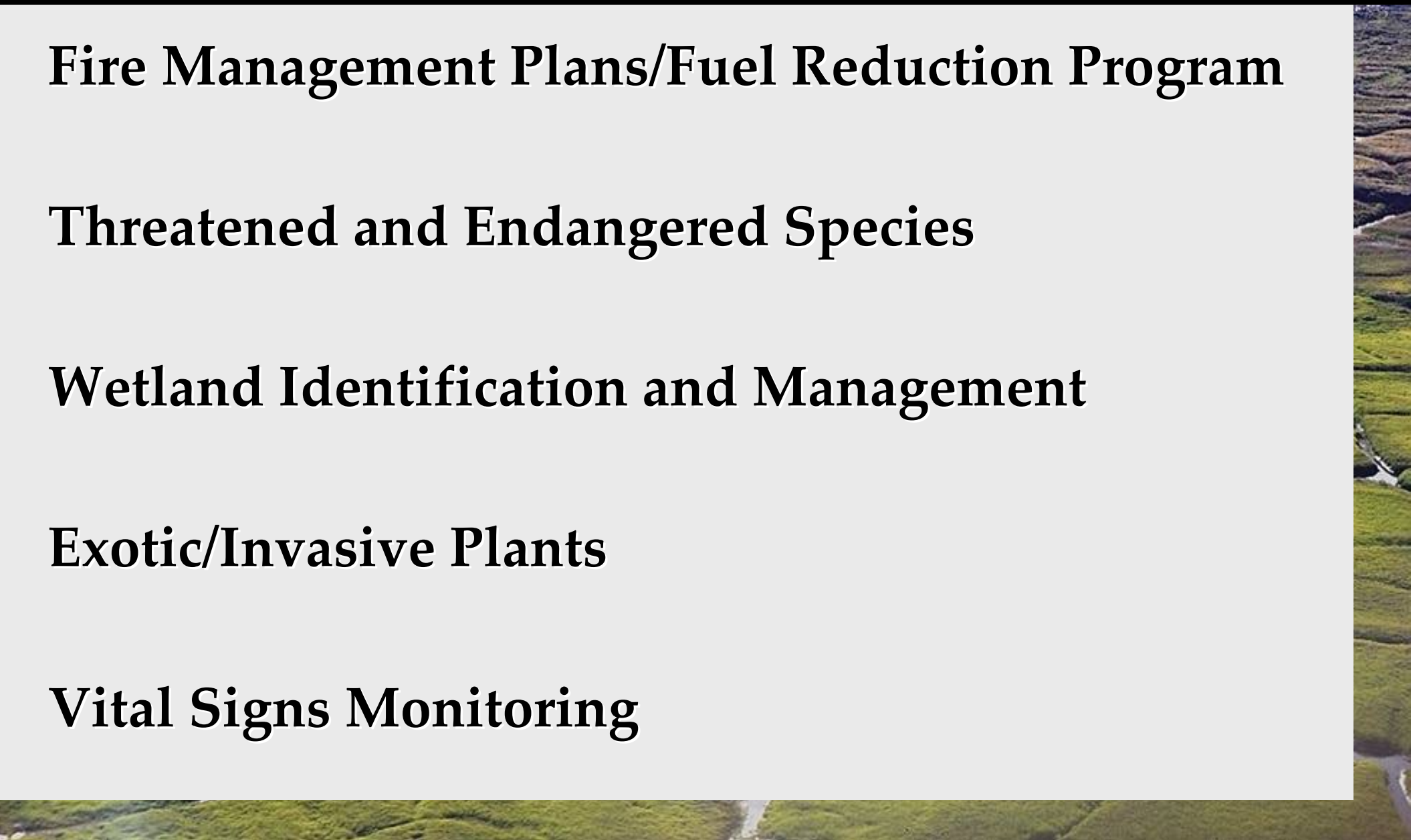
Fire Management Plans/Fuel Reduction Program

Threatened and Endangered Species

Wetland Identification and Management

Exotic/Invasive Plants

Vital Signs Monitoring



Soil Resources Management

"Only by having reliable scientific information can park managers take corrective actions before those impacts severely degrade ecosystem integrity or become irreversible"

NPS Soil Resources Inventory

The NPS Inventory and Monitoring Program is obtaining applicable soil surveys on Park Units through agreements with other federal agencies such as the Natural Resources Conservation Service (NRCS) and with private contractors

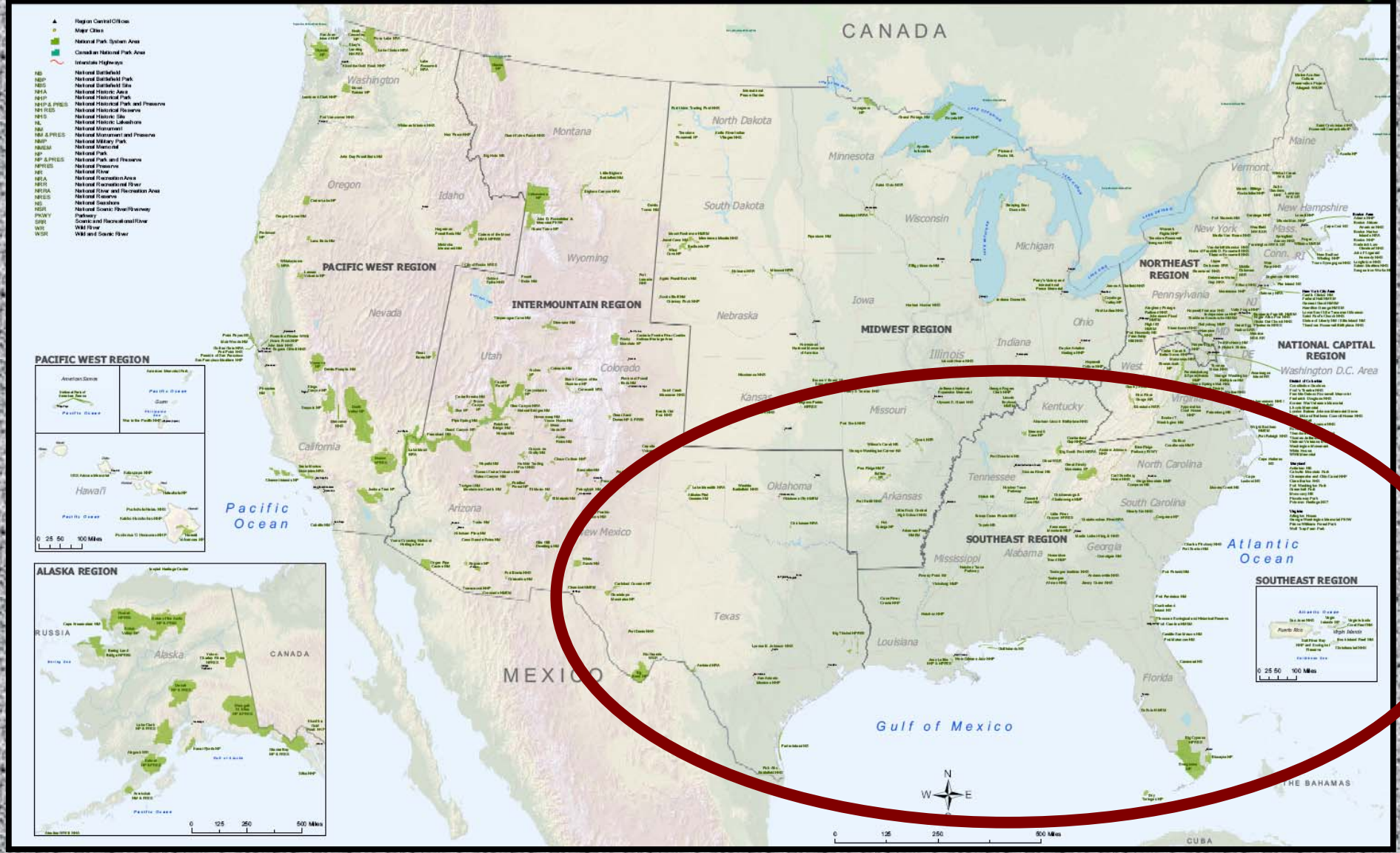
NPS Soil Resources Inventory

"All soil surveys will follow National Cooperative Soil Survey (NCSS) Standards"

"Mapping will generally be at 1:24,000, except where more detailed surveys are required for park management"

National Park System

U.S. Department of the Interior



Status of NPS Soil Surveys

National Level

Parks to be mapped	270
Acres to be mapped	84.5 Million
Parks mapped thru FY05	70 (29%)
Acres mapped thru FY05	24.5 Million (29%)
*Alaskan Parks	16 (6%)
*Alaskan Acres	54 Million (64%)

Status of NPS Soil Surveys in South Region

Parks to be mapped	63 (24% of total)
Acres to be mapped	5.2 Million (6% of total)
*Parks mapped thru FY05	38 (60%)
*Acres mapped thru FY05	1.8 Million (35%)

Status of NPS Soil Surveys in South Region

Interagency Agreements currently in place addressing 4 parks, covering 1.6 Million acres, in 4 states

Great Smoky Mountains National Park, TN-NC

Big Bend National Park, TX

Padre Island National Seashore, TX

Big South Fork National Recreation Area, TN-KY

Issues Regarding "Complete Status"

"Parks which reside in multiple states without a comprehensive park legend - Examples"

Gulf Islands NS	FL-MS	137,991 acres
Cumberland Gap NHP	KY-TN-VA	20,508 acres
Blue Ridge Parkway	NC-VA	93,390 acres
Natchez Trace Trail	MS-TN	10,995 acres

Issues Regarding "Complete Status"

"Parks which reside in multiple soil survey areas without a comprehensive park legend - Examples"

Mammoth Cave NP	KY	52,830 acres
Canaveral National Seashore	FL	57,662 acres
Big Thicket National Preserve	TX	97,247 acres

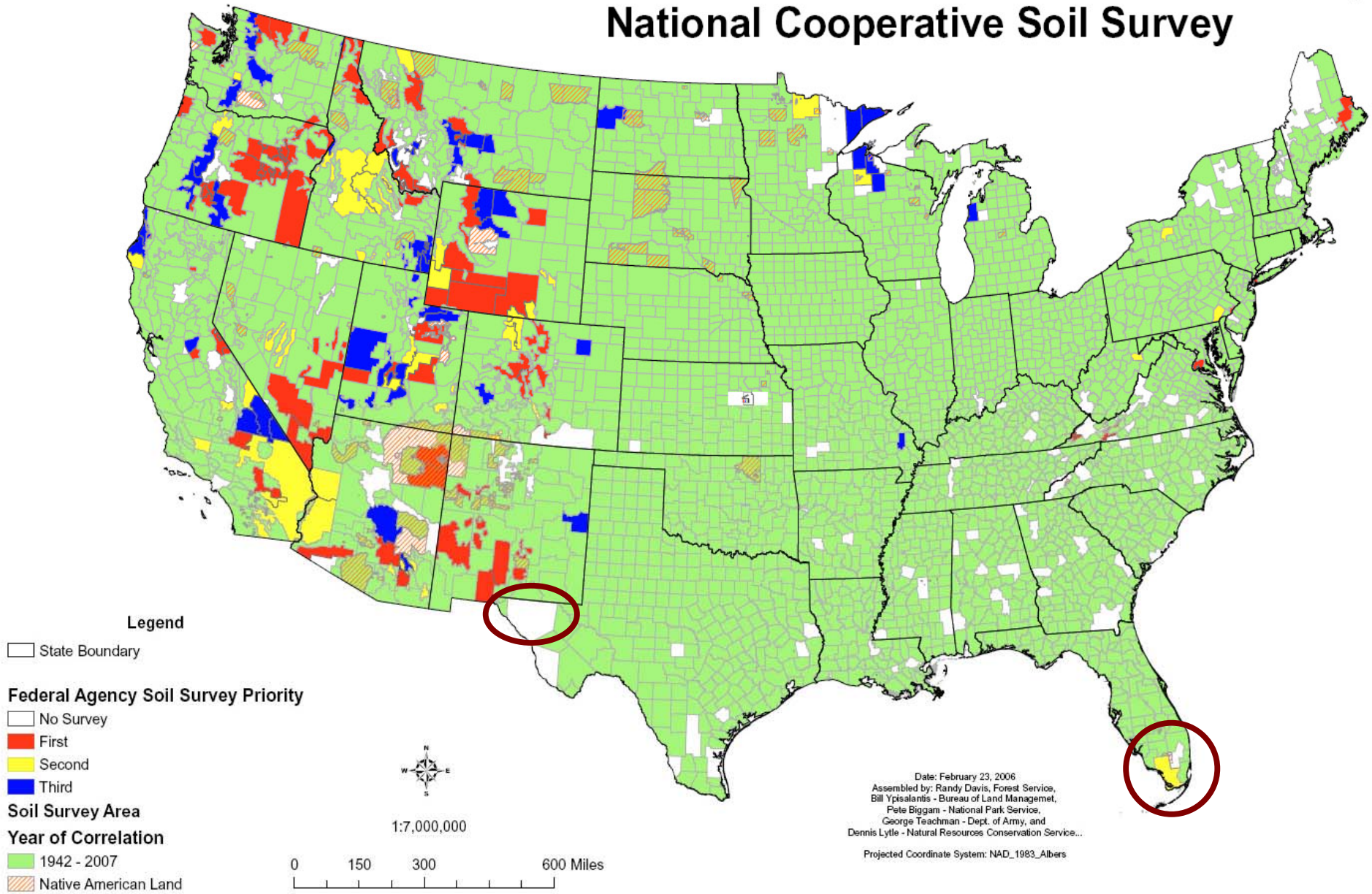
Issues Regarding "Complete Status"

"Parks in which mapping has yet to be initiated"

Everglades NP	FL	1,508,537 acres
Big Cypress National Preserve	FL	720,567 acres
Guadalupe Mountains NP	TX	86,416 acres

***2.3 Million acres (44% total)**

Priorities for Soil Survey on Federal Lands with Native American Land Boundaries Overlay National Cooperative Soil Survey



Fort Jefferson, Dry Tortugas National Park

NPS Strategy to Complete South Region Parks

Coordinate with NRCS to acquire a NPS Soil Database Manager/Interpretations Specialist to handle Parks that cross state lines or exist in multiple soil survey areas.

Continue interactions with NRCS State Soil Scientists and Cooperators to address parks without initial mapping, and develop budget and staffing plans to complete them by 2012.

Soil Resources Inventory at Padre Island National Seashore

Soil Relationships

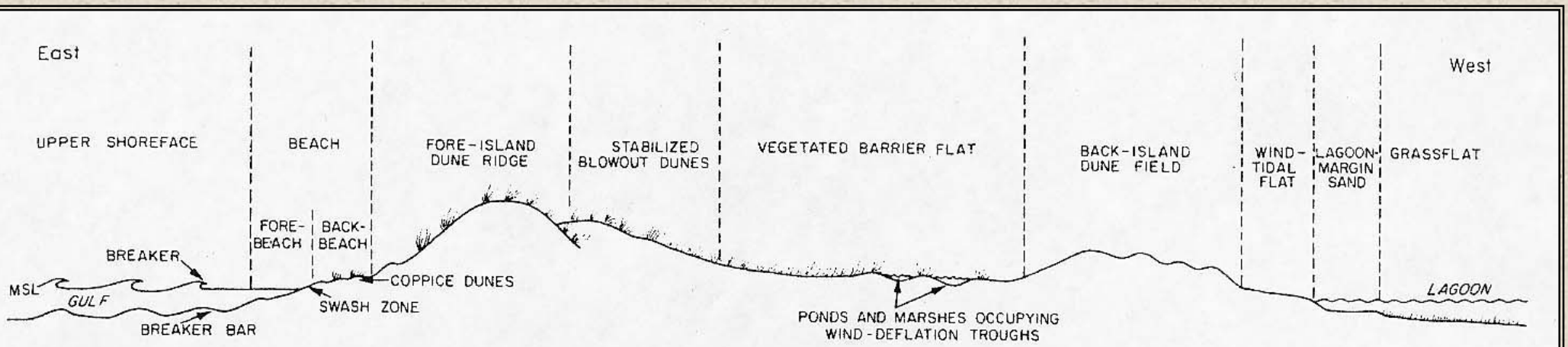


Figure 2. Generalized cross section of north Padre Island environments, from the Gulf shoreline to Laguna Madre (modified from McGowen and others, 1977).

A landform/soil classification/vegetative/hydrologic classification and characteristics genetic key was developed to not only to familiarize the soil scientists with the soils as they occur across the landscape, but will also be available to all users as a "deliverable product" to help them visualize how these things are changing across a dynamic landscape.

Map Unit 291 - Mustang – Padre complex, 0 to 2 percent slopes

The flat to concave areas result in soils which are poorly drained, slightly acid to neutral, with a permanent water table (saline) at depths at the surface to 40 inches.

Mustang Soils

These are hydric soils, with a characteristic vegetation type dominated by marsh hay cordgrass and seashore saltgrass

Map Unit 291 - Mustang – Padre complex, 0 to 2 percent slopes

A very subtle change in topography can result in dramatic differences in soil development and vegetation relationships

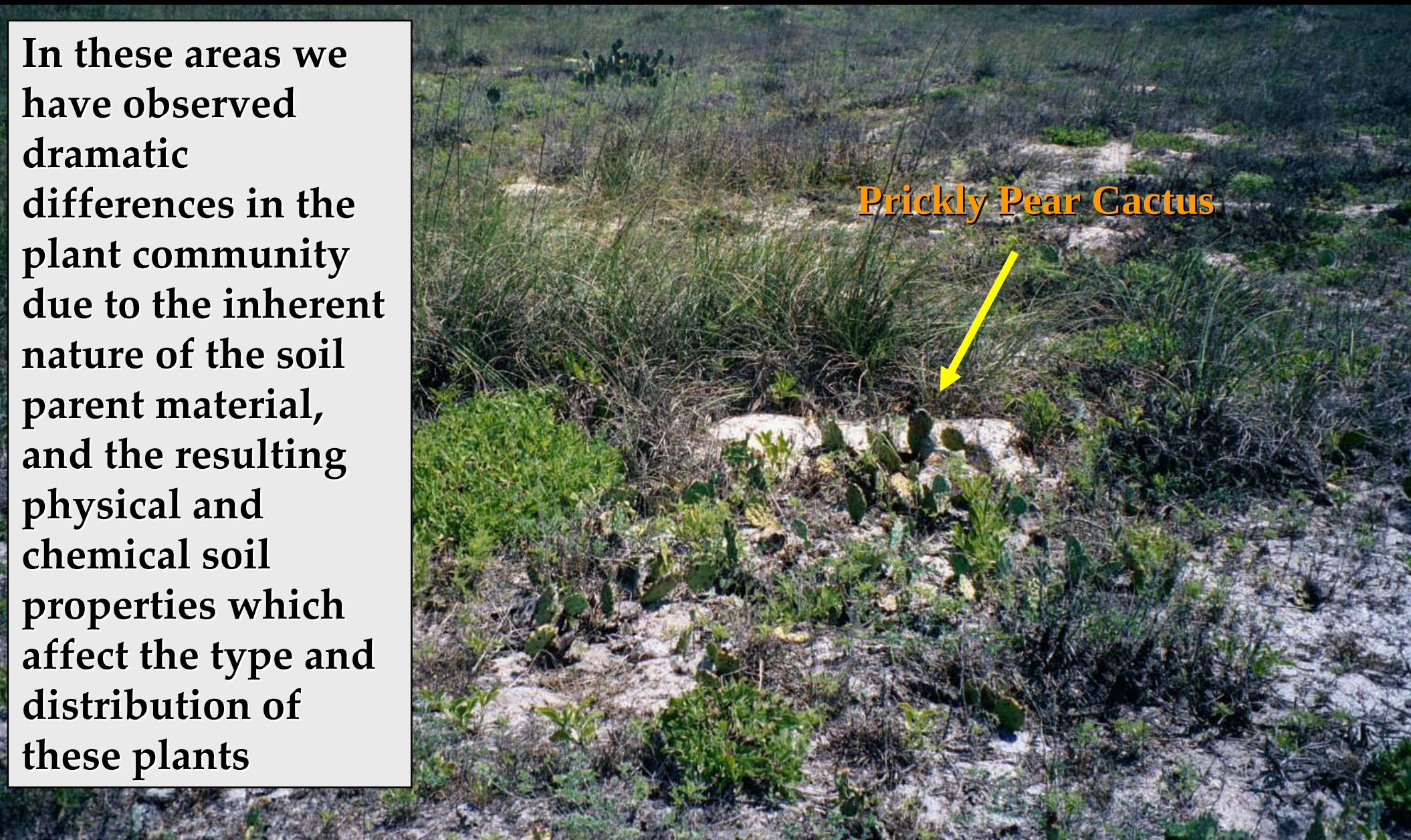
Padre Soils

Convex mounds approximately 1 meter in height result in soils which are somewhat poorly drained, strongly acidic, with water table depths at 35 to 80 inches.

These are non-hydric soils, with a characteristic vegetation type dominated by the shrub false indigo, and seacoast bluestem

Coarse Textured Wash Over Deposits

In these areas we have observed dramatic differences in the plant community due to the inherent nature of the soil parent material, and the resulting physical and chemical soil properties which affect the type and distribution of these plants



Coarse Textured Wash Over Deposits

The high content of shell fragments and coarser sand sizes result in soils which are excessively drained, have a higher soil pH, lower organic matter content, and do not have a water table depth within 80 inches.

Any vegetative restoration activities in these areas would require "more aggressive" planning and management.

Wind Tidal Flats

Traditionally, these areas never were investigated in great extent as to the physical, chemical, and biological properties they have, or their ecological importance.

The overlying management issue was the fact that they were usually always wet enough to support little or no vegetation, and required little management.

Beaches

Beaches were investigated and 4 different map units were developed based upon different parent materials (big shell, little shell, mineral, etc.) as well as potential management issues such as trafficability.

“Soil Forming Factors” Table Showing Relationships

Climate, Landscape, Parent Material, and Vegetation
Padre Island National Seashore

Map symbol and Soil Name	Slope	Elevation	MAP	MAAT	Frost Free Days	Landscape	Landform	Parent Material	Ecological Site	Characteristic Native Vegetation	Composition	
											Forestland	Rangeland
291:	pct	ft	in	F								
Mustang	0-1	0-5	25-35	71-73	310-350	barrier island	barrier flat on barrier island	sandy eolian and storm washover sediments of Holocene age	LOW COASTAL SAND PE 31-44 R150BY650TX			
										bushy bluestem		5
										gulfdune paspalum		10
										marshhay cordgrass		30
										other perennial forbs		10
										other perennial grasses		5
										scribner's panicum		5
										seacoast bluestem		5
										seashore dropseed		5
										sedge		25
	pct	ft	in	F							pct	pct
Padre	0-2	3-10	25-35	71-73	310-350	barrier island	low dune on barrier flat on barrier island	sandy eolian and storm washover sediments of Holocene age	COASTAL SAND PE 31-44 R150BY648TX			
										broomsedge bluestem		5
										brownseed paspalum		5
										false indigo		5
										gulfdune paspalum		10
										marshhay cordgrass		5
										other perennial forbs		15
										other perennial grasses		5
										partridge pea		5
										scribner's panicum		5
										seacoast bluestem		40