

A Soils Based Land Classification System for Maine

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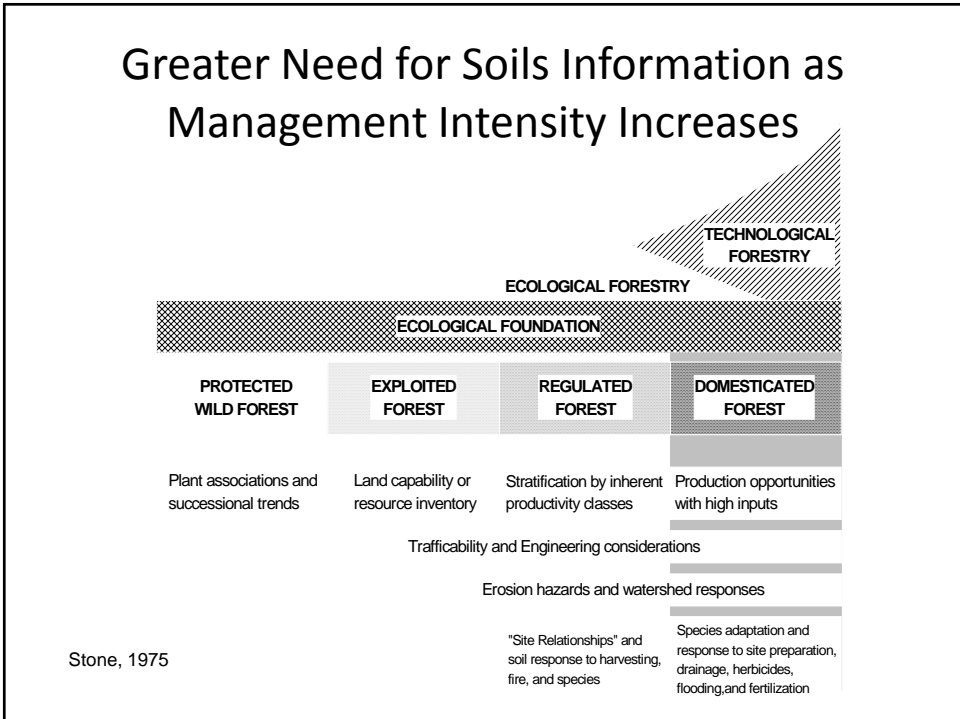
ProFOR Consulting
Cary, NC

Progressive Forestry for Production Forests

Why are soils important?

Why are soils important?

Soils are the foundation for
SUSTAINABILITY



Uses of Soils Information

- Management/Planning
 - Land acquisition/selling/trading
 - Growth and yield predictions
 - Suitability for biomass production, intensive management
 - Wetlands delineation
- Operations
 - Road location and material
 - Trafficability and other equipment limitations
 - Erosion hazard
- Silvicultural Prescriptions
 - Preferred species
 - PCT
 - Site preparation
 - Herbicide application
 - Fertilizer needs

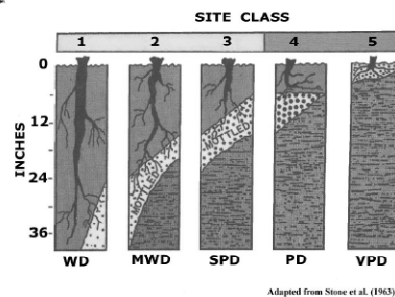
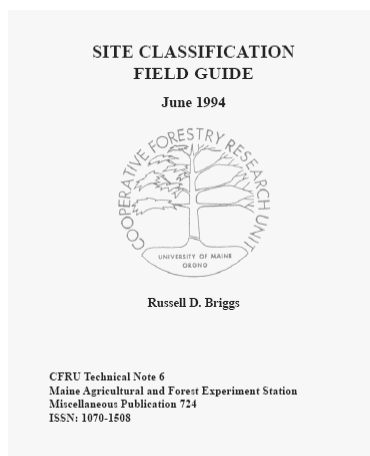
Attributes of a Land Classification System

- Soil properties/landscape attributes assessed must be:
 - Relevant for uses identified
 - Easy to measure or acquire remotely
 - Static – fixed, nonmanipulatable
 - Amendable to use as GIS layers

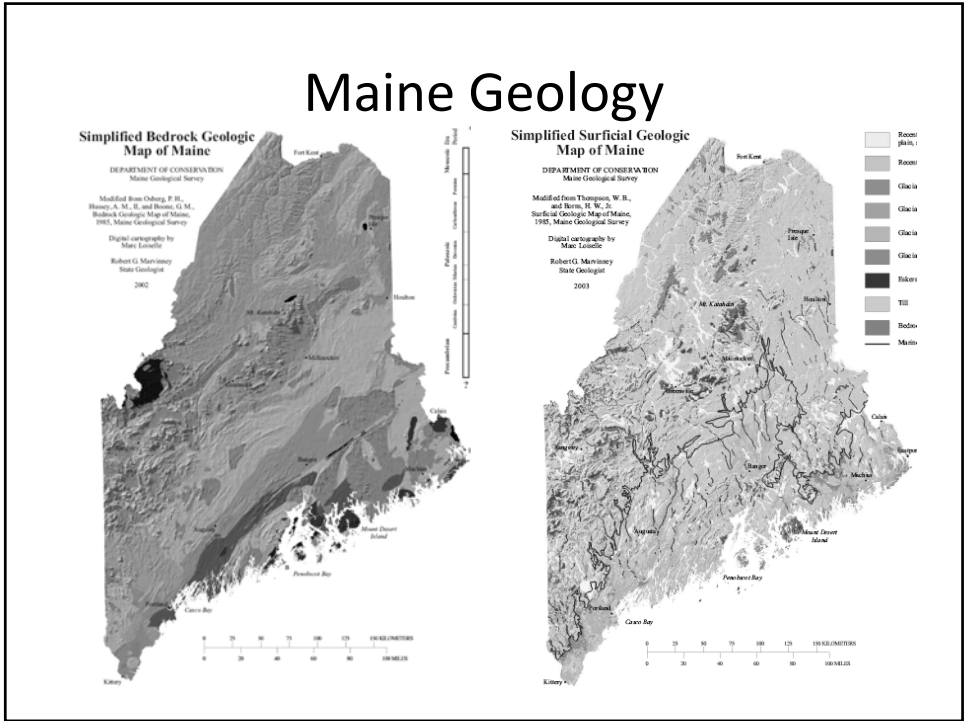
What Soil/Landscape Characteristics Are Important for These Uses?

- Drainage Class
 - Depth to water table or mottling
- Depth to a Restrictive Layer
 - Bedrock, compact basal till
- Parent Material
 - Glacial origin (till or outwash)
 - Bedrock geology
- Landform Position
 - Slope
 - Aspect

Drainage Class



Maine Geology



Soil Groups

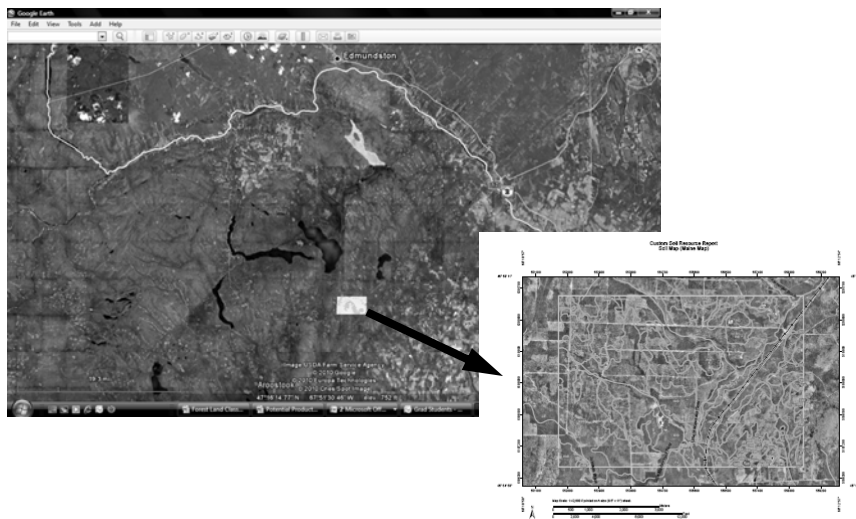
Drainage Class	Water Table (cm)	Parent Material				Outwash
		Till				
		Depth to compacted basal till or bedrock (cm)				
		<20	20-40	40-80	>80	
Very Poor	0					
Poor	0-20					
Somewhat Poor	20-40					
Moderately Well	40-100					
Well	>100					

Soil Groups with NRCS Soil Series


Drainage Class	Water Table (cm)	Parent Material				
		Till				Outwash
		Depth to compacted basal till or bedrock (cm)				
		<20	20-40	40-80	>80	
Very Poor	0		Burnham ^S	Peacham ^S		
Poor	0-20		Aurie ^S Monarda ^S Daigle ^S	Brayton ^S	Easton ^{Ca}	Naumburg
Somewhat Poor	20-40			Conant ^{Ca} Daigle ^S Telos ^S		Madawaska
Moderately Well	40-100			Conant ^{Ca} Chesuncook ^S Dixmont ^S Howland ^S Perham ^S Ragmuff ^S		Machias Madawaska
Well	>100			Bangor ^S Elliotsville ^S Mapleton ^{Ca} Monson ^S Plaisted ^S Penquis ^{Ca} Thorndike ^S	Caribou ^{Ca}	Adams Allagash Masardis Stenson

Till parent material: ^S=Slate and other dark sedimentary/metamorphic, ^{Ca}=Limestone or calcareous shale.

Example - Northern Maine



Example - Northern Maine



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies, including the Agricultural Experiment Stations, and local participants.

Custom Soil Resource Report for
Aroostook County,
Maine,
Northeastern Part

ThC—Thorndike shaly silt loam, 8 to 15 percent slopes

Map Unit Setting
 Elevation: 200 to 2,500 feet
 Mean annual precipitation: 36 to 46 inches
 Mean annual air temperature: 37 to 45 degrees F
 Frost free period: 100 to 150 days

Map Unit Composition
 Thorndike and similar soils: 80 percent

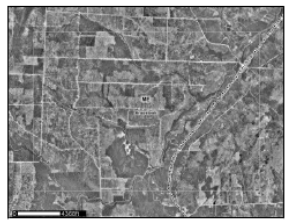
Description of Thorndike

Setting
 Landform: Drumlinoid ridges, drumlins, hills, ridges, till plains
 Landform position (two dimensional): Summit
 Landform position (three-dimensional): Crest
 Down-slope shape: Convex
 Across slope shape: Convex
 Parent material: Loamy melt out till derived from phyllite and/or loamy melt out till derived from slate

Properties and qualities
 Slope: 8 to 15 percent
 Depth to restrictive feature: 10 to 20 inches to lithic bedrock
 Drainage class: Somewhat excessively drained
 Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (1.00 to 0.26 in/hr)
 Depth to water table: More than 80 inches
 Frequency of flooding: None
 Frequency of ponding: None
 Available water capacity: Very low (about 2.6 inches)

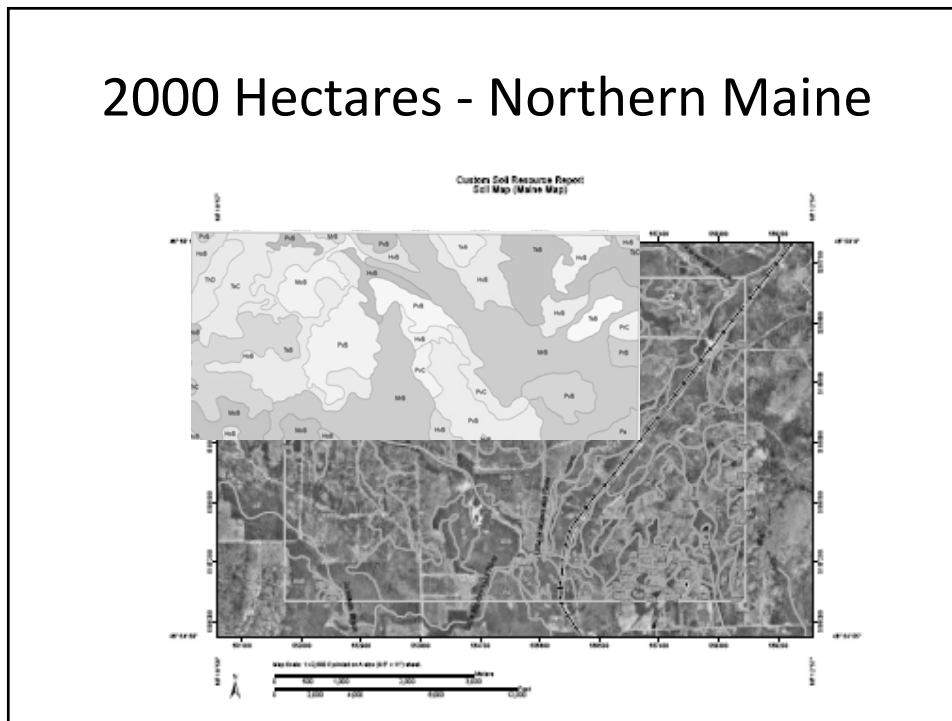
Interpretive groups
 Land capability (nonirrigated): 3c

Typical profile
 0 to 8 inches: Very channery silt loam
 8 to 15 inches: Very channery silt loam
 15 to 19 inches: Bedrock

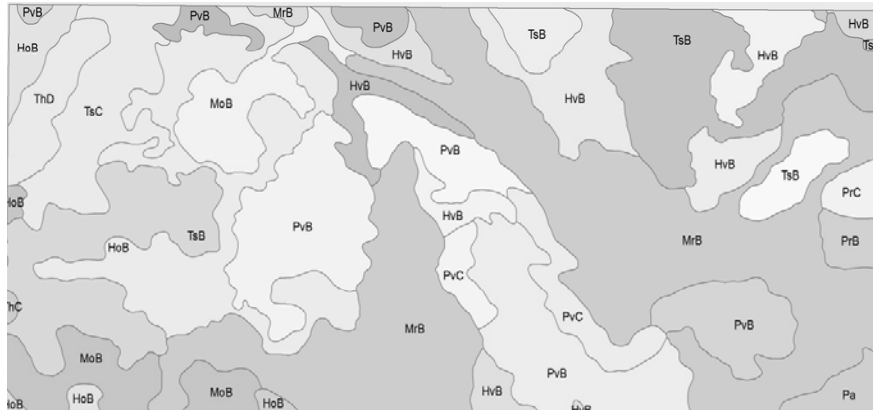


September 21, 2010

2000 Hectares - Northern Maine



NRCS Soil Series



Suitability for Intensive Management

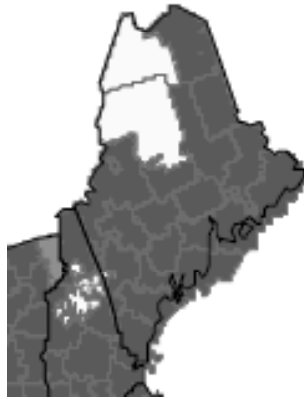
Drainage Class	Water Table (cm)	Parent Material				
		Till				Outwash
		Depth to compacted basal till or bedrock (cm)				
		<20	20-40	40-80	>80	
Very Poor	0	Red	Red	Red	Red	Red
Poor	0-20	Red	Red	Red	Yellow	Yellow
Somewhat Poor	20-40	Red	Yellow	Yellow	Green	Green
Moderately Well	40-100	Red	Yellow	Green	Green	Green
Well	>100	Red	Yellow	Green	Green	Yellow

Suitability for Intensive Management

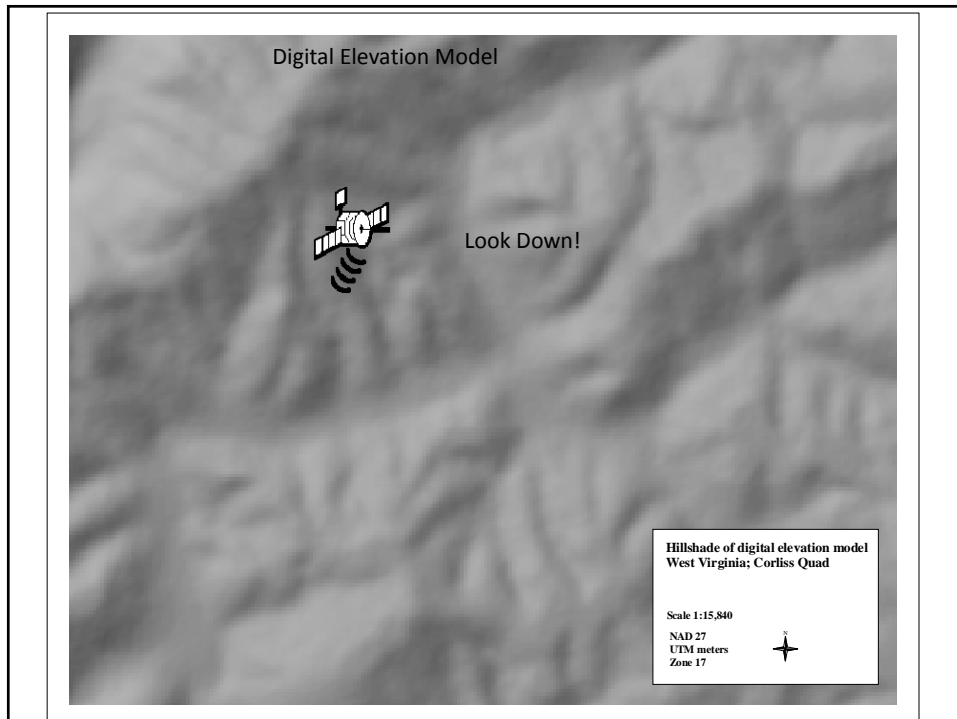


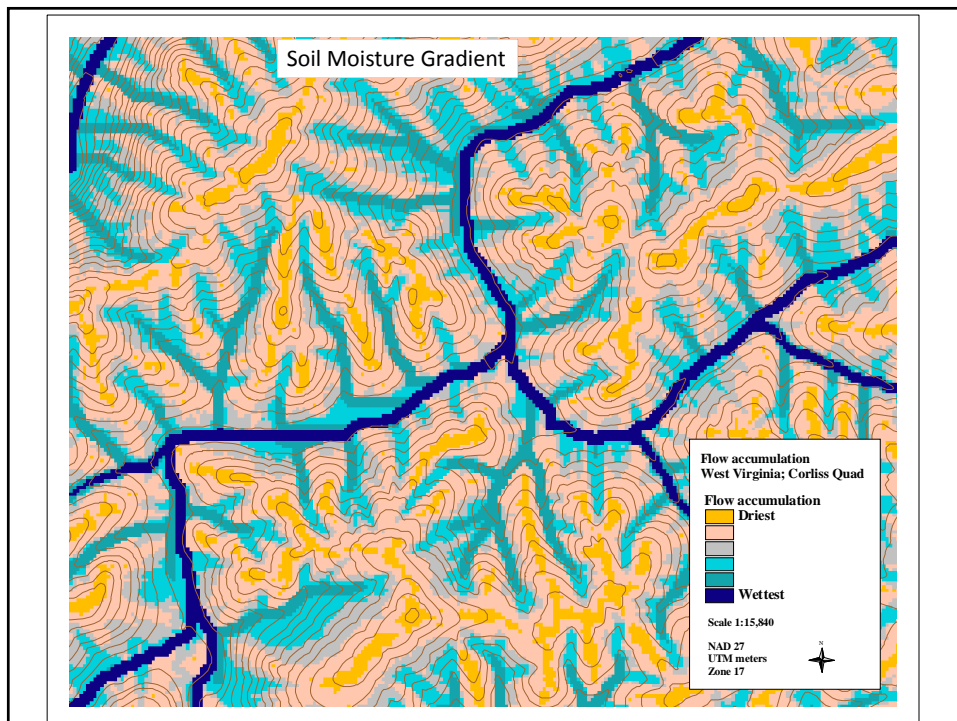
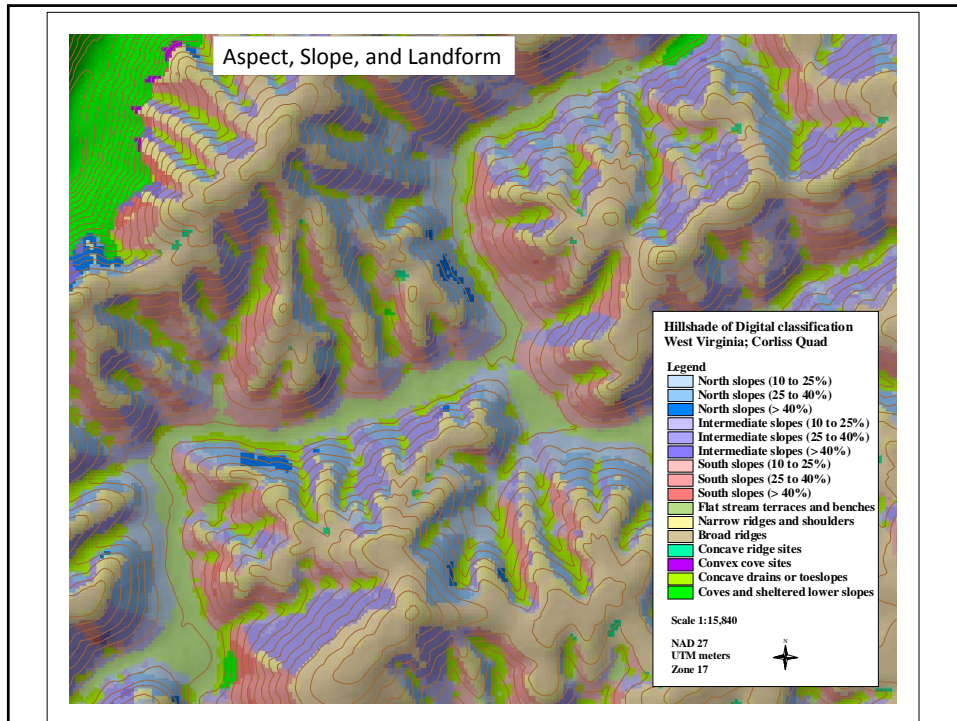
What if soils have not been mapped?

NRCS mapping in Maine



What if soils have not been mapped?





Wise use of soils information
provides the foundation for
sustainability and
cost effective forest management